PHILIPPINE SCIENCE & TECHNOLOGY ABSTRACTS

SCIENCE AND TECHNOLOGY INFORMATION INSTITUTE
INFORMATION RESOURCES AND ANALYSIS DIVISION
Department of Science and Technology
Bicutan, Taguig City, Metro Manila
Philippines

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Bimonthly classified abstracts of Philippine publications in the field of science and technology

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AGRICULTURE

0001

Approaches to dissemination of ACIAR 9414 phosphorus fertilization technology on acid uplands

Duque, Sr., Conrado M., Cagmat, Rebecca B., Mugot, Isabelo O.

After conducting 4 croppings of corn in two years in the experimental area in Bantuanon, Lantapan, the ACIAR 9414 research project found that application of 50 kg per hectare + lime on an acidic upland soil gave the highest return above cost. This rate of P per hectare was then adopted as the ACIAR 9414 technology for dissemination to other corn farmers in the Municipality of Dangcagan in Bukidnon. Four project field days were also conducted in the ACIAR 9414 experimental area. Farmers' evaluations of the treatments indicated that most of them selected the application of 50 kg P/ha + lime to raise soil pH to 5.5. About 83% of the farmers who chose this treatment likewise indicated their interest to adopt the same. In all demo sites, ACIAR 9414 technology of 50 kg P per hectare of which 50% of P is supplied by chicken manure and the other half is supplied by DAP (18-46-0) plus a blanket application of 120 kg N and 30 kg K per hectare out yielded the farmers' practice. Economic analysis showed that the same ACIAR 9414 technology gave higher return above costs in two farmer demo plot while in one demo plot, the farmers' practice gave slightly higher returns above cost. **(Author's abstract)**

Keywords: *Project field day, Farmers field day, Techno demo plot, Agriculture*

CMU Journal of Science, Volume No. 10 Issue No. 2, 77-92
(Filipiniana Analytics)
Fil(S) Q1 C311 10/2 2002

0002

Biomass composition and sugar content of sweet sorghum (*Sorghum bicolor* (L.) Moench) at different developmental stages

Calica, Dane Mikhael S., Bitanga, Glory S., Balagso, Jezzica R., Domingo, Marachel Grace, Agrupis, Shirley C.

Sweet sorghum is a water-use efficient crop that has great potential as feedstock for bioethanol and pulp production. As a bio-based crop, it is important to determine the best growth stage of the plant to harvest the biomass for optimum yield in sugar and structural carbohydrates. This study was conducted to determine the sugar content and biomass constituents of the stalk juice at different developmental stages. Stalks of sweet sorghum v. ICSR 93034 were collected from the MMSU Sweet Sorghum project. Samples were collected from vegetative (before panicle formation), reproductive (during grain formation) and post-reproductive stages (after grain harvest). Fresh juice was extracted to analyze the brix value before they were dried, cut, and ground to 40 mesh. Analyses of the biomass constituents; cellulose, hemicellulose, and lignin, of the extractive-free stalks was carried out following the TAPPI standard procedures. Brix value (°Bx) was lowest at vegetative stage (5), followed by post-reproductive (11.5), then reproductive (14.5). The structural carbohydrates increased with the sweet sorghum plant's growth maturity. The variety under study contains more hemicellulose then cellulose. Cellulose, which contains a long chain glucose sugar, was lowest at vegetative stage, 29.69% while 32.27% was determined in reproductive and post reproductive stalk samples. Hemicellulose, which is a polymer of glucose and pentoses (*e.g.* xylose), was found highest during the vegetative stage, 44.5%, while 39.44% in both the reproductive and post-reproductive stages. Lignin, the complex binding material for the structural sugars, was found to be present in the following order: vegetative < reproductive and post-reproductive. **(Author's abstract)**

Keywords: *Agriculture, Sweet sorghum, Structural carbohydrates, Bioethanol, Pulp, Sugar feedstock*

Transactions of the National Academy of Science and Technology, Volume No. 34 Issue No. 1, 29
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0003

Comparative effects of gamma radiation and the vapor heat treatment on fruit quality of 'carabao' ('Manila Super') mangoes

Lizada, Ma. Concepcion C., Esguerra, Elda B., Brena, Susan R., Fuentes, Rachel A.

'Carabao' mango fruits subjected to gamma radiation at 100, 150 or 250 GY resulted in fruits of an acceptable quality. In contrast to the vapor heat treatment, no internal breakdown was observed even in the fruits irradiated at 350 Gy. At this dose, a low but significant incidence of pulp discoloration was found, albeit in only one trial. Both the vapor heat treatment and gamma radiation need to be supplemented with hot water treatment for effective and more consistent disease control. Although irradiation appears to delay ripening, its effect seems to be largely on peel color development. The results of this study indicate that irradiation might be an appropriate quarantine treatment for the 'Carabao' mango. **(Author's abstract)**

Keywords: *Agriculture, Food irradiation, Quarantine treatment, Carabao (Manila Super) mangoes, Vapor heat treatment*

Philippines Nuclear Journal: A publication of the Philippine Nuclear Research Institute, Volume No. Issue No. , 9-19
(Filipiniana Analytics)
Fil(S) QC173 P55 v7 1990

0004

Considering farmers' preferences in breeding and dissemination of white corn varieties as staple food

Labios, Romeo V., Labios, Jocelyn D., Manguiat, Proceso , Malayang, Dona Bae, Cia, Bernabe, Tamisin, Leonardo L., Rosales, Avelita, Mangaya-ay, Teresita, Lumbao, Jessie

Farmers' evaluation, through participatory approaches, of the performance of improved open-pollinated white corn varieties was conducted in wet season 2011 in selected municipalities of Isabela, Quezon, Bohol, and North Cotabato. Eleven improved open pollinated white corn varieties and farmers' variety, as local check, were included in participatory varietal selection (PVS) trials. The study aims to increase productivity, yield and income of farmers utilizing the PVS approach and technology innovation systems. Using the PVS trials, preference analysis (PA) involving male and female farmers was conducted at physiological maturity. Based on visual evaluation, the following characteristics were mostly preferred: resistance to pests and diseases, plant height, ear size and weight, grain quality, and good root anchorage. PA further revealed that both male and female farmers strongly agreed on their preferences for the best performing varieties (r=0.635; r=0.141). In addition to PVS, sensory evaluation (SE) was also conducted to solicit farmers' opinion on the eating quality of the different white corn varieties. This process of selecting the most preferred varieties involving farmers facilitates varietal improvement, adoption, and dissemination. Findings from this study also reveal that PVS approach requires an understanding of the biophysical, socio-cultural, and economic circumstances of white-corn farming communities. This could contribute to addressing food security and nutrition, as well as providing farmers with suitable varieties in their locality. **(Author's abstract)**

Keywords: *Agriculture, White corn, Participatory varietal selection, Preference analysis, Sensory evaluation*

Transactions of the National Academy of Science and Technology, Volume No. 34 Issue No. 1, page 159
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0005

Control of egg hatchability and adult emergence of three fruit fly species in papayas by gamma irradiation

Resilva, Sotero S., Moy, James H., Pasion, Wilma B.

The effects of gamma radiation on the Oriental fruit fly, Bactrocera dorsalis (Hendel), melon fly, Bactrocera cucurbitae (Coquilett0, and Mediterranean fruit fly, Ceratitis capitata (Weidemann) were studied. Melon fly was determined to be the most susceptible of the three species. A dosage of 550 Gy rendered the eggs 100% sterile when irradiated in papayas at 4-6 hours before hatching. Oriental and Mediterranean fruit flies were found to be more resistant, requiring doses of 750 and 850 Gy, respectively. A dose of only 100 Gy was needed to inhibit adult eclosion when the three species were treated at third instar larvae. Warm water treatment at 49°C for 20 minutes was found sufficient in preventing the hatching of any egg in the infested papaya fruits. However, since eggs may hatch before the warm-water treatment can be applied, a combination of irradiation treatment using 100 Gy is recommended for disinfestation of papaya fruits. **(Author's abstract)**

Keywords: *Agriculture, Bactrocera cucurbitae, Ceratitis capitata, Oriental fruit fly, Gamma radiation, Bactrocera dorsalis*

Philippines Nuclear Journal: A publication of the Philippine Nuclear Research Institute, Volume No. Issue No. , 1-8
(Filipiniana Analytics)
Fil(S) QC173 P55 v8 1991

0006

Corn processing and products

Rodulfo, Jr., Vic

Keywords: *Agriculture, Zea mays indentata (Dent corn), Glycemic index, Zea mays indurate (Flint corn), Waxy corn, Zea saccharata (Sweet corn), Zea rugosa (Green corn), Zea mays everta (Pop corn), Zea mays amylacea (Flour corn)*

Philippine Agricultural Mechanization Bulletin, Volume No. 10 Issue No. 3, 18-24
(Filipiniana Analytics)
Fil(S) S671 P539b 10/3 2003

0007

Design modification and testing of a LI-1400-compatible tipping bucket raingauge

Dalanao, Genevieve G.

A ruined tipping bucket was modified and made compatible with the LI-1400 data logging system. The funnel collector of the tipping bucket rain gauge was fabricated from GI sheet. A magnetic reed switch was used as sensor for the tipping mechanism. Laboratory and field calibrations were undertaken to test the instrument performance. Field installation and testing was also done to correctly calibrate the and adjust the bucket to make it more precise and accurate under actual field weather conditions.

Results showed that the ruined tipping bucket could be modified using locally available materials to reduce cost of instrument's repair. The laboratory calibration showed a uniform bucket calibration of 20 ml water equivalent to 0.5 mm rainfall depth. Field calibration also showed that the response time of the logger was equivalent to that of the first tip of the bucket but with time delay preceding it. **(Author's abstract)**

Keywords: *Agriculture, LI-1400, GI sheet, Tipping bucket raingauge*

Philippine Agricultural Mechanization Bulletin, Volume No. 10 Issue No. 3, 26
(Filipiniana Analytics)
Fil(S) S671 P539b 10/3 2003

0008

Detection of rice tungro viruses by conventional reverse transcriptase polymerase chain reaction (RT-PCR)

Madayag, Clarence M., Fernando, Trinidad C., Galang, Rosellie L., Romero, Gabriel O.

Tungro is the most destructive viral disease of rice. The disease shows chlorotic leaf and dwarfing symptoms that dramatically reduce yield. Tungro is primarily caused by rice tango spherical virus (RTSV) interacting with rice tungro bacilliform virus (RTBV). RTSV has a ribonucleic acid (RNA) genome while RTBV has a deoxyribonucleic acid (DNA) genome. Accurate detection of viral infection is imperative in screening for resistance in breeding materials. RTBV infection is amenable to detection by polymerase chain reaction (PCR), which can amplify *in-vitro* parts of its DNA genome. Through the use of reverse transcriptase (RT), parts of the RTSV RNA genome can be converted to cDNA, which then becomes amplifiable by PCR. Multiplexing or adding virus-specific primers in the same reaction - called multiplex or mRT-PCR - makes it possible to detect both viruses simultaneously. Furthermore, unlike the serological method Enzyme Linked Immunosorbent Assay (ELISA), RT-PCR has great advantage when it comes to procedure, time and efficiency. Our laboratory has succeeded in mRT-PCR detection of RTBV and RTSV in infected samples using commercial kits. This study now demonstrates that conventional RT-PCR with separate reagents can also efficiently amplify RTBV and RTSV genomic fragments from infected samples. CP1F1/R1 is the most suitable primer for RTBV detection, producing the virus-specific 0.62 kb band in infected samples. On the other hand, CP3F1/R1 was the most consistent pair in producing the RTSV-specific 0.55 kb band in infected samples. The best annealing temperature was 56°C for both RTBV and RTSV primers. Based on Kappa value analysis, RT-PCR is comparable to ELISA for RTBV detection, but it is superior to ELISA for RTSV detection. Therefore, the use of conventional, separate PCR reagents proved effective in screening for the tungro viruses, thus rendering RT-PCR more affordable. The optimal procedure can now be applied to routine tungro screening of breeding materials. **(Author's abstract)**

Keywords: *Agriculture, ELISA, RTBV, RTSV, Multiplex PCR*

Transactions of the National Academy of Science and Technology, Volume No. 31 Issue No. 1, 9-10
(Filipiniana Analytics)
Fil(S) Q149 P5N25 31/1 2009

0009

Development of a computer vision system for brown rice quality analysis

Tuates, Jr., Andres M., Ligisan, Aileen R., Bulaong, Manolito C.

Conventional brown rice analysis is done by visually inspecting each grain and classifying according to their respective categories. This method is subjective and tedious leading to errors in analysis. Computer vision could be used to analyze brown rice quality by developing models that correlate shape and color features with various classification. The objective of the study was to develop a computer vision system (CVS) for predicting quality parameters of brown rice. Brown rice training samples were collected in Nueva Vizcaya, NFA Binalonan, Pangasinan, and SM supermarket. An ordinary flat bed scanner was used as image acquisition device coupled to a laptop computer equipped with image processing and analysis software developed at PHilMech. The CVS set-up was tested using samples collected at the regional NFA warehouses. The performance of the CVS was compared to human inspection based on their capability to classify brown rice samples. An artificial neural network using probabilistic neural network (PNN) model was developed. Sensitivity analysis revealed a true positive proportion ranging from 0.8792 to 1.00. Likewise, a weight prediction model based on the projected area was made using linear regression. The developed equation is $y = 0.00148A - 0.00018$ with a R^2 of 0.854. The results of performance testing revealed that the CVS could predict the weight of brown rice and detect color-related quality of brown rice such as: sound, damaged, chalky/immature, yellow fermented, red and paddy. Processing time for classification using the developed CVS has an average of 18.53 minutes and sixty percent of its time (equivalent to 11.24 minutes) was consumed in the manual arranging of grain samples. If a digital separation could be developed, the total time can be reduced to 7.11 minutes compared to 40.07 minutes of manual assessment. Moreover, CVS classification is more accurate compared with the human inspection. **(Author's abstract)**

Keywords: *Agriculture, Brown rice, Computer vision system, Human inspection, Accuracy, Repeatability*

Transactions of the National Academy of Science and Technology, Volume No. 34 Issue No. 1, page 142
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0010

Development of high yielding and bunchy top virus resistant abaca (*Musa textilis* Nee.) cultivars

Lalusin, Antonio G., Manguiat, Proceso H., del Rosario, Edwin E., Dizon, Teodora O., Laurena, Antonio C., Mendoza, Evelyn Mae T.

Abaca (*Musa textilis* Nee.), a plant endemic to the Philippines, is the source of fiber known internationally as Manil hemp. It is often used as raw material for cordage, clothing, various handicrafts, specialty papers such as currency notes, filter papers, stencil papers, tea bags among others. The abaca industry is a major dollar earner of the country. Due to the current concern for biodegradable products and forest conservation, it is expected that the abaca industry will continue to flourish in both domestic and international markets. With the advent of new uses of abaca, the crop will be extensively utilized for more industrial applications because ii is a natural and superior material. However, the abaca industry is still relying solely on traditional varieties for its survival. One reason for the decline in the abaca industry is the limited attention devoted to varietal improvement. The old abaca varieties have become susceptible to bunchy top virus disease. This study aims to develop abaca varieties with high fiber quality and resistance to abaca bunchy top virus through conventional breeding.

In 1981, the Institute of Plant Breeding (IPB), resumed work on the abaca breeding program started at the Division of Plant Breeding in the late 1950's. Crosses between abaca and its wild relatives were produced. In 1986, six F1 hybrids between Pacol and abaca were released. These hybrids have resistance to bunchy top virus but of inferior fiber quality. To recover the superior finer qualities of abaca, several backcross (BC1) lines were generated but crossing work was ended due to unavailability of funds. It was only in 2006, that the breeding work was continued although to a limited extent, and several BC1 crosses were evaluated. BC2 progenies, produced from cross-pollinating four promising backcross lines (BC1) and two abaca varieties as recurrent parents were established in the field for screening of virus disease resistance and evaluation of finer quality. Four BC2 populations were generated from the following crosses: 'BC1-19 X Abuab' 'BC1-20 X Abuab', 'BC1-21 X Abuab' and 'BC1-19 X Musa tex 51'. One hundred sixty six (166) inoculated seedlings (12 from BC1-19 X Abuab; 132 from BC1-20 X Abuab', and 22 from 'BC1-19 X Musa tex 51) were selected for field planting based on bunchy-top virus resistance, plant vigour and resemblance of morphological characters to true abaca. Characterization of agro-morphological traits was initiated on mature BC2 plants. The BC2 progenies were compared to the abaca parent on the following traits: plant height, plant diameter, fresh weight of stem, number of leaf sheaths and dry weight of fiber. Other visible traits indicative of resemblance to the true abaca were also observed. Abaca fiber samples were collected from each of the characterized BC2 plants and processed for determination of finer quality. Data on finer length, fiber recovery and fiber breaking load of BC2 selections were gathered. Superior BC2 sergeants exhibiting good finer qualities and desirable afro-morphological traits were selected for multi-location testing and clonal propagation. **(Author's abstract)**

Keywords: *Agriculture, Abaca (Musa textilis Nee), Abaca bunchy top virus, Abaca fibers, BC1-first backcross progeny, BC2-second backcross progeny*

Transactions of the National Academy of Science and Technology, Volume No. 31 Issue No. 1, 14-15
(Filipiniana Analytics)
Fil(S) Q149 P5N25 31/1 2009

0011

Development of improved varieties of mungbean (NSIC Mg14 and NSIC Mg15)

Jarilla, Flora A., Buctuanon, Eugenia M., Alonzo, Ma. Anna M.

Mungbean is one of the popular and important 4crops in the Philippines. It can be processed into noodles, "togue", delicacies, novelty products etc. Its importance in agriculture and industry becomes the basis to conduct varietal development at BPI-LBNCRDC.

Promising lines of mungbean were field evaluated under the Preliminary Yield Trial (PYT) in 1996 to 2000 and General Yield

Trial (GYT) in 1997 to 2004. Potential varieties from the GYT were further screened in different regions of the country under the National Cooperative Trial (NCT) in 2002 to 2006. Evaluation was conducted to screen and develop varieties with high been yield, early and uniform maturity, resistant to lodging/shattering and resistant to natural occurrence of pests.

Based on the outstanding performance on-station/across locations, two (2) varieties were approved and released by the National Seed Industry Council (NSIC) in 2004 and 2007 as seedboard varieties for commercial production. Lines EGM 93-266 was approved in 2004 as NSIC Mg14 with local name "Kulabo" and EGM 93-293 as NSIC Mg15 locally named as "Kinang" in 2007.

A total of 217.45 kg breeder and foundation seeds of NSIC Mg14 and NSIC Mg15 were distributed by BPI-LBNCRDC in different regions of the country. Bulk of the distribution amounting to 168.95 kg was recorded in Region 4 particularly in Los Baños, Laguna. **(Author's abstract)**

Keywords: *Agriculture, Preliminary yield trial, General yield trial, National cooperative trial, National seed industry council, Varietal improvement*

Transactions of the National Academy of Science and Technology, Volume No. 31 Issue No. 1, 15-16
(Filipiniana Analytics)
Fil(S) Q149 P5N25 31/1 2009

0012

Effect of mulching corn with hedgerow species on soil erosion

Elmundo, Elizar M., Pava, H.M.

A field experiment was conducted to evaluate the effects of mulching corn with hedgerow species on soil erosion.

The study was laid out in a Randomized Complete Block Design (RCBD) with five treatments replicated three times.

Results of the study revealed that mulching highly reduced soil loss and surface run-off. Plots with strip + mulched with flemengia hedgerow significantly showed the least soil loss of 0.987 tons/ha in the wet and 0.822 tons/ha in dry seasons, respectively, while the control (without strip-without mulch) had the highest average of 8.64 and 8.53 tons/ha of soil loss in both cropping seasons. Those with strip and mulch had statistically lower soil losses of 1.02 to 1.07 tons/ha. Mulching treatments had similar effects on soil surface run-off but was significantly higher during wet (24.92 m^2) than in dry (8.84 m^2) season.

Among hedgerow species, madre de cacao mulched on corn grown in strips significantly exhibited best results. **(Author's abstract)**

Keywords: *Agriculture, Mulching corn, Soil erosion, Randomized complete block design (RCBD), Hedgerow species*

CMU Journal of Science, Volume No. 9 Issue No. 1, 16-32
(Filipiniana Analytics)
Fil(S) Q1 C311 9/1 2001

0013

Effectiveness of commonly available plastic nets in minimizing open evaporation

Ganotisi, Noel D., Castro, Reynaldo C., Cabalar, Leila M.

A study was conducted to evaluate the effectiveness of commonly available plastic nets in minimizing open evaporation at the Experimental Farm of PhilRice Batac, Ilocos Norte during the dry season 2003-2004. Plastic nets in the local market were surveyed for their availability and prices. The five available plastic nets were procured and fully characterized. The study used 18 pieces of 11" x 11" x 15" cans, dug in an open field and were laid out in Randomly Completely Block Design (RCBD) with three

replications. The cans were calibrated for one week to eliminate abnormal measurements. Plastic nets were cut into 11" x 17" to cover the cans. The control cans were left uncovered. The water level in the cans was monitored everyday at 8 Am and at 5 PM.

Result of plastic net characterization revealed that the nets had the following sieve numbers which served as the treatments: Control Sieve (S)#5, S#7, S#18, S#25 and S#40. S#5 and S#7 are used in making baskets for onion and other crops. S#18 is used for window screen, S#25 is used for mosquito net and S#40 is for net drier of palay. Except for S#18 which costs P45.00/m, all the other plastic nets cost P20.00/M.

Statistical analysis revealed that the different plastic nets significantly reduced open evaporation by 0.66 to 1.62 mm/day depending on wire mesh density. Least evaporation was observed in cans covered with plastic nets with Sieve #40 and #25 with 0.62 and 0.64 mm/day, respectively, against the control of 2.25 mm/day. Likewise, plastic nets with Sieve #40 had the highest savings on evaporation of 72.59% followed by the use of Sieve #25 (71.45%), #18 (53.01%), #7 (29.33%) and #5 (29.32%) in a decreasing manner. On the other hand, regression and correlation analysis revealed that there was a strong relationship and high degree of association between the plastic nets with different wire mesh densities and the rate of open evaporation. **(Author's abstract)**

Keywords: *Agriculture, Randomly completely block design (RCBD), Plastic nets, Average daily evaporation*

Philippine Agricultural Mechanization Bulletin, Volume No. 11 Issue No. 1, 18-23
(Filipiniana Analytics)
Fil(S) S671 P539b 11/1 2004

0014

Effects of grain moisture content on milled rice quality and storage

Guese, Katherine dC.

This study was conducted to determine the relationship between moisture content and the quality of milled rice and its storage. One hundred and ten kilogram rough rice samples was shade-dried and four levels of moisture content namely: 13%, 14%, 15%, and 16% were gradually obtained. Samples at different moisture levels were bagged separately. Laboratory milling analysis was done immediately after the desired moisture levels were obtained. In the milling analysis, three replicates of 250-gram sample for each treatment were used. The remaining sample from each bag of treatment was commercially milled using the Satake rubber roll huller. After milling, the milling recovery and percent head rice of each treatment was obtained then the milled rice was stored for seven months.

Laboratory and commercial milling results showed that the milling recovery and percent head rice are inversely proportional to the moisture content prior to milling. If the moisture content is high, the percent head rice as well as milling recovery is low. It was found out that rice at high moisture level was easily attacked by insects.

Results of the study show that it is not recommended to mill rice at 16% moisture content because it yields low milling recovery and percent head rice. Millers run the risk of losing when they mill at 16% moisture content. The optimum moisture content that was obtained in the experiment was 14% with milling recovery of 67.7% and 84.5% head rice. **(Author's abstract)**

Keywords: *Agriculture, Satake rubber roll huller, Grain moisture content, Milled rice quality and storage*

Philippine Agricultural Mechanization Bulletin, Volume No. 10 Issue No. 3, 25
(Filipiniana Analytics)
Fil(S) S671 P539b 10/3 2003

0015

Factors influencing the adoption of recommended cultural practices in sugarcane farming in Ishurd areas of Bangladesh

Pal, S. K., Halim, M. A., Kashem, M. A., Karim, ASM. Z.

The study was undertaken in Ishurdi areas of Bangladesh in 1996 to determine the extent of adoption of recommended practices by sugarcane growers and to explore the relationship of ten independent variables with the extent of adoption of recommended practices in sugarcane cultivation. There were 124 sugarcane growers selected randomly from a population of 826 sugarcane growers. Data were collected with the help of a pre-tested interview schedule. The adoption of recommended practices score was 10-35 against the possible score of 0-50. The average score of adoption of recommended practices was 20.99, with a standard deviation of 4.79. Out of ten independent variables included in the study, farmers' age, education, farm size, annual income, cosmopoliteness, extension contact, organizational participation and fatalism showed significant relationship with the adoption of recommended practices in sugarcane by the farmers. The findings on the step-wise multiple regression analysis showed education alone explained 25.97 percent of the total variance followed by fatalism explaining 5.16 percent and organizational participation explaining 3.03 percent of the total variation in the adoption of recommended practices in sugarcane cultivation. **(Author's abstract)**

Keywords: *Agriculture*

CMU Journal of Science, Volume No. 9 Issue No. 1, 61-82
(Filipiniana Analytics)
Fil(S) Q1 C311 9/1 2001

0016

Food and feed production by smallholder corn farmers

Robles, A. Y., Valencia, G.Z., Labios, R. V., Tamisin, L. L.

Corn is a crop that can be used either as food or feed. Every part of the plant can be transformed into various products utilizable by man and animals. About 20 percent of the Filipinos use corn as food, especially the white corn variety. Sixty to seventy percent of the yellow corn are used in feed formulation. The remainder is processed into various industrial products. Corn forage is another product primarily use as feedstuff for ruminants. Six to eight animal units per hectare can be supported by baby and green corn forage for three months feeding. Staggered planting is proposed to implement a system of feeding under smallholder farmer without the necessity of a forage chopper. **(Author's abstract)**

Keywords: *Agriculture, Corn, Corn forage, Yellow corn, Baby corn, Green corn*

Philippine Agricultural Mechanization Bulletin, Volume No. 10 Issue No. 1, 3-9
(Filipiniana Analytics)
Fil(S) S671 P539b 10/1 2003

0017

Genetic diversity analysis using SSR markers of varieties of rice (*Oryza sativa* L.) from Indonesia and Arakan, Cotabato, Philippines in relation to resistance to rice blast pathogen (*Magnaporthe grisea*) races found in the Philippines

Bartolata, Francia C., Vera Cruz, Casiana M., Manuel, Ma. Carmina C.

Genetic diversity of the traditional and improved traditional varieties of rice (*Oryza sativa* L.) from Indonesia, as well as varieties from Arakan, Cotabato, Philippines was screened using Simple Sequence Repeat (SSR) markers. A total of 30 SSR markers were used for the Indonesian rice varieties, and 33 markers were used for the Arakan rice varieties. The polymorphic information content (PIC) value of the markers ranged from 0 to 0.855 for Indonesia varieties, while the PIC value range in the

Arakan varieties was from 0 (RM504) to 0.814 (RM507). A phenotypic tree plot was constructed based on diseased leaf area response (DLA) to nine rice blast races in the Philippines using the Numerical Taxonomy System (NTSYS) software. The phenotypic similarity within Indonesian varieties ranged from 0.08 to 1, while the Arakan estimate for phenotypic similarity ranged from 0.09 to 0.89. Based on the genetic tree plot constructed, the estimate for genetic similarity ranged from 0.24 to 0.91 (between Sirendah 7A and Sirendah 7B) and 0.21 to 0.94 (between Dinorado 35 and Dinorado 36) for Indonesian and Arakan varieties, respectively. These figures suggest that both germplasm are phenotypically and genetically diverse. Using the Statistical Analysis System (SAS) software, the stepwise regression analysis between the SSR markers and phenotypic response for each rice blast race was calculated. The data showed that 59 alleles in the Indonesian rice germplasm, and 91 alleles in the Arakan rice varieties amplified by the SSR markers were significantly correlated to rice blast resistance at 5% level of significance. **(Author's abstract)**

Keywords: *Agriculture, Oryza sativa L., Genetic diversity, SSR markers, Rice blast resistance, Phenotypic similarity, Genetic tree plot*

Transactions of the National Academy of Science and Technology, Volume No. 31 Issue No. 1, 8-9
(Filipiniana Analytics)
Fil(S) Q149 P5N25 31/1 2009

0018

Genetic mapping of tungro resistance and introgression into new rice varieties

Romero, Gabriel O., Fernando, Trinidad C., Ordonio, Reynante L., Revita Melanie I., Adeva, Cheryl C., Uera, Raynato B., Messing, Joachim

Many of the new rice varieties, while high-yielding and often of acceptable grain and eating qualities, succumb to tungro, a devastating viral disease of rice causing staggering if not complete yield loss. Incorporating tungro resistance is an appropriate breeding target to secure farmers' yields with these varieties especially in tungro hotspot areas. The tungro resistance found in the Indian landrace, ARC11554, was localized on chromosome 4 flanked by markers RM8213 and RM3471 through quantitative trait loci (QTL) analysis. Marker-assisted breeding was carried out by crossing four varieties with ARC11554, followed by backcrossing with the recurrent parents to produce BC_1F_1 seeds. Two BC_1F_1 plants from ARC11554 x PJ25, three from ARC11554 x RC15, three from ARC11554 x RC130 and 1 from ARC11554 xPJ7 were heterozýgous for RM8213 and RM8213 and RM3471 and further advanced to BC_2F_1. Genotyping was again performed and a few hetorozygous plants were selected. Their BC_2F_2 families were screened for tungro reaction and characterized for important morpho-argronomic traits. A number of tungro resistant near-isogenic lines (NIL) were obtained with either strong or poor morpho-agronomic resemblance to the respective original recurrent parents. This indicates that the resistance gene in ARC11554 was transmitted through marker selection. Based on morpho-agronomic evaluation, the selected lines of PJ7, PJ25 and Rc15 denotes high similarity with the recurrent parent in number of days of heading and maturity, plant height, culm length, total tillers, unproductive tillers and productive tillers. With the Rc130-derived progeny, there were lines closely comparable to Rc130 while some were still dissimilar. These results demonstrate the successful application of molecular markers in transferring genes to outstanding varieties with minimal, deferred phenotyping, which is especially useful for traits with tedious screening procedures such as tungro reaction. Future varieties that are susceptible to tungro can be similarly conferred by such resistance through marker-aided strategy. **(Author's abstract)**

Keywords: *Agriculture, MAS, QTL, ARC11554, Backcrossing*

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0019

A geographic information systems-based approach in the assessment of groundwater NO_3-N dynamics under intensive cropping systems

Pascual, Carlos M., Baga, Maria Corazon S., Valencia, Dante P.

The groundwater resources in a 265 hectares of highly diversified and intensive rice-based environment was endangered to NO_3-N contamination with spatial degree of influence and temporal vulnerability risks as affected by intensive cropping systems with application of high N-fertilizer and judicious use of groundwater for irrigation. Such nitrate contamination levels were above the World Health Organization's maximum contamination level of 10 ppm for drinking water. Tree-joining, complete cluster analysis of monthly groundwater depths from 1994 to 2002 on observation wells revealed three distinct groups of wells differentiated by groundwater depths. Planting of nitrate catch crops such as legumes to reduce groundwater contamination and vigorous information dissemination on ill-effects of high NO_3-N as well as groundwater recharging were considered to reduce NO_3-N levels. The combined-use of GIS and GPS proved useful for spatial and temporal risk assessment on groundwater nitrate vulnerability among other geo-referenced attributes of groundwater at the study site. Such systems analysis tools can be used by planners, researchers, extensionists, research students and farmers for thematic mapping, assessment, extrapolation analysis and strategic planning. **(Author's abstract)**

Keywords: *Agriculture, NO3-N, Legumes, Irrigation*

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(Filipiniana Analytics)
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0020

GIS-based microclimate modeling for different coconut farming systems

Ramirez, Avelino M., Enciso, Ma. Cecilia T.

Geographic Information System (GIS) and CERES-Maize simulation modeling are high tech tools used to analyze and model the microclimate of the province of Quezon for different coconut farm areas.

Different maps of rainfall conditions, solar radiation and air temperature were generated by the GIS model and are now available in digital formats as overlay maps. This can be used in determining suitable sites for coconut crop systems. The lack of climatic data under the coconut canopy called for the use of the CERES-Maize simulation model to predict the potential yield of corn if planted as an intercrop under a coconut cropping system. However, the results need further field validation. The generated outputs could be used by policy-makers in developing plans to improve the plight of our coconut farmers in the country in general and in the province of Quezon in particular.

The generated agroclimatic intercrop suitability maps indicate that Quezon province is suitable for growing coconut and corn. **(Author's abstract)**

Keywords: *Agriculture, Climatic maps, Geographic information system (GIS), Crop modeling, Simulation*

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(Filipiniana Analytics)
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0021

Growth performance of sheep and goat fed with stargrass (Cynodon plectostachyus Schum. Pilg.) hay

Intong, Reynaldo L., Robles, A. Y.

Average daily gain (ADG) feed efficiency (FE) and feed intake were studied using both sheep and goats for stargrass cut at 30 days.

Significant differences (P<.05) were observed in terms of daily DM intake, ADG and FE. Sheep had lower daily DM intake (354.29 g vs. 363.10 g), but had better FE (12.36 vs. 13.73 g) and ADG (28.76 g vs 26.61 g) compared to goats. Intake expressed in percent body weight and in g feed/kg metabolic body weight ($BW^{0.75}$) were not statistically significant. Percent DM intake based on body weight is higher in sheep (2.95% vs. 2.90%) than in goats, and intake expressed in g feed/kg metabolic body weight followed the same trend. Sheep consumed 54.98 g feed per kilogram metabolic body weight compared to 54.71 g for goat. **(Author's abstract)**

Keywords: *Agriculture, Cynodon plectostachyus Schum. Pilg., Feed efficiency, Average daily gain*

CMU Journal of Science, Volume No. 9 Issue No. 1, 1-15
(Filipiniana Analytics)
Fil(S) Q1 C311 9/1 2001

0022

Irradiation as a quarantine treatment of 'carabao ('manila super') mangoes

Manoto, Eugenia C., Resilva, Sotero S., Del Rosario, Ma. Salome E., Casubha, Loreta C.

Researches using gamma radiation for disinfestation of Oriental fruit fly in 'Carabao' ('Manila Super') mangoes were undertaken using the Probit 9 or 99.9968% mortality test. The results showed that the mature larvae of the fruit fly are the most tolerant stage of this insect to irradiation with the eggs as the most sensitive. On treating more than 100,000 mature larvae in mangoes, a minimum dose of 100 Gy was found to prevent emergence of adult fruit flies and maintain quarantine security or a complete elimination of the possibility of introducing this pest into the importing country. Therefore, the use of 100-Gy irradiation as a quarantine treatment against Oriental fruit fly in the mature green Philippine 'Carabao' mango fruits is recommended. **(Author's abstract)**

Keywords: *Agriculture, Gamma radiation, Quarantine treatment, Carabao mangoes, Food irradiation*

Philippines Nuclear Journal: A publication of the Philippine Nuclear Research Institute, Volume No. Issue No. , 1-7
(Filipiniana Analytics)
Fil(S) QC173 P55 v7 1990

0023

Land cover change and water yield of Silang-Santa Rosa River subwatershed, Laguna, Philippines

Magcale-Macandog, Damasa B., Engay, Kathreena G.

Patterns of land cover changes in the Silang-Santa Rosa River Subwatershed were documented through conduct of Participatory Rural Appraisal approaches and GIS mapping. 1993 and 2008 Land cover maps were generated from classified satellite images using ArcGIS with four identified cover classes that include perennials and coconut, cultivated or tilled areas, fallow and grassland, and built-up. Land cover patterns in the subwatershed begun from perennials to grassland to built-up and from farmlands to idle lands then to built-up. A GIS-based water balance model of the subwatershed that predicts water discharge was derived from PCRaster's DISCHARGE MODEL with component parameters including rainfall, evapotranspiration, cover coefficient, and soil field capacity. Results of sensitivity analysis showed that the volume of water discharge changes with varying land cover coefficients. The model can be used to simulate various scenarios of land cover change and its impact to water yield. Simulation results show that increase in built-up areas resulted to increase in water yield implying reduction in groundwater recharge. **(Author's abstract)**

Keywords: *Agriculture, Silang-Santa Rosa Subwatershed, Participatory Rural Appraisal, Land cover change, Land cover patterns, Water balance model*

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0024

Mapping of the *Rf* gene of a cytoplasmic male sterile line of rice (*Oryza saliva* L.) developed from a mutagenized source

Agdaca, Cheryl D., Mendioro, Merlyn S., Nas, Tamerlane Mark S., Singh, Rakesh K.

The cytoplasmic-genetic male sterility (CMS) and fertility restoration system has proven to be the most effective method in hybrid rice breeding. CMS system is controlled by the interaction of cytoplasmic genes and *Rf* gene in the nucleus. The inheritance and location of the *Rf* gene governing the pollen fertility restoration of IR73328A, a CMS-WA line with a mutagenized cytoplasm source, were determined in this study. The BC1 population from a IR73328A/IR73330-83-1-2R/IR73328A cross consisting of 202 individuals were evaluated for both pollen and spikelet fertility. The segregation for pollen fertility of the population followed the 1 sterile: 3 fertile ratio expected for duplicate gene action in a backcross population. Bulked sergeant analysis was performed to screen for polymorphic SSR markers to be utilized in the construction of the molecular map of the two *Rf* genes. The DNA of 20 completely sterile individuals (0-1% pollen fertility) and 20 fully fertile individuals (80-100%) from the population were pooled together to constitute the sterile and fertile bulks, respectively. The data from polymorphic markers along with the pollen fertility data were used to construct a linkage map with Mapmaker/Exp Ver. 3. Subsequent interval mapping done with Mapmaker/QTL revealed that one of the genes, *Rf*-4, is on the long arm of chromosome 10. It was determined to be flanked by SSR markers, RM6132 and RM171, in chromosome 10. It was detected to be 3.0 cM from RM6132 and 1.5 cM from RM171 (LOD = 13.08). The other *Rf* gene could not detected by the set of polymorphic markers used in this study. It was also confirmed that the STS marker S10019/BstUI was reliable for identifying a restorer line possessing the *Rf*-4 gene. Results of this study indicate that the genetic mechanism of fertility restoration in the mutagenized CMS-WA line, IR73328A, does not differ from that observed in other CMS-WA lines. **(Author's abstract)**

Keywords: *Agriculture, Cytoplasmic male sterility, Fertility restorer, Duplicate gene action, Interval mapping, Linkage map, Bulked sergeant analysis*

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(Filipiniana Analytics)
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0025

Mapping quantitative trait loci associated with resistance to pre harvest sprouting in wheat

Rigor, Alex T., Anderson, James A.

Preharvest sprouting (PHS) is the precocious germination of the grains in the spike following physiological maturity. In wheat, the main problem associated with PHS is reduction in end-product quality. White wheats are the most susceptible class of wheat to PHS whereas the red wheats have high levels of resistance due to the pleiotropic effect of the red colour genes with dormancy. However, recent studies reported that several sources of resistance to PHS are available in white wheat germplasm. Our objective was to map quantitative trait loci (QTL) associated with PHS resistance in a recombinant inbred population of 94 lines from a cross between Grandin*5/ND614-A, an elite hard white spring wheat susceptible to PHS and NY6432-18/Clark's Cream 40-1, a soft white winter wheat selected for its high level of PHS resistance. Multiple intervals mapping analysis revealed seven QTL for PHS based on the combined data across eight environments over three years (2005-2007). The QTL on chromosomes 2D, 5A and 7A had LOD score $\geq$ 2.5 and were not associated with QTL for plant height and heading date. These three QTL jointly explained 39.4% of the phenotypic variation for PHS. Other QTL were found on chromosomes 1B, 4B, 6A and

6D that explained 2.1% to 14.2% of the phenotypic variation. A significant QTL x QTL interaction was found between the chromosomal regions in 1B and 2D that explained 5.5% of the phenotypic variation. Some of the QTL found in this study may aid in marker-assisted breeding for improvement of PHS resistance in wheat. **(Author's abstract)**

Keywords: *Agriculture, Preharvest sprouting, MAS, Marker-aided selection, Wheat, SSR*

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(Filipiniana Analytics)
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0026

Mechanical properties of tomato (*Lycopersicon esculentum* M.) under different loading rates

Andres, Mary Anne A.

Tomatoes of the variety BRCI were subjected to compression testing at different loading rates and different storage duration. Rupture point, bio-yield point and deformation was measured using the INSTRON Universal Testing Machine Series 4411 equipped with 8mm diameter plunger with 12.5 mm radius of curvature. The storage duration showed significant effects on the bio-yield, rupture point and deformation. The highest mean rupture point at the first day after harvest is 39.6 N with a loading rate of 30 mm/min. and the lowest mean rupture point, which was 0.2 N occurred on the sixth day after harvest with 10 mm/min and 30 mm/min loading rates. The highest mean rupture point occurred at the first day at 44.0 N with loading rate of 30 mm/min while the lowest mean rupture point took place at the sixth day after harvest at 19.9 N with loading rate of 10 mm/min. **(Author's abstract)**

Keywords: *Agriculture, Lycopersicon esculentum M., Instron Universal Testing Machine Series 4411, Bio-yield, Rupture point, Deformation*

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(Filipiniana Analytics)
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0027

Mechanizing upland rainfed corn areas: the Cebu experience

Castro, Susana G., del Rosario, Alexis C., de Ramos, Jose D., Capareda, Sergio C.

Corn remains as the most important staple food crop in Cebu. In spite of this, Region 7 has one of the lowest average production per hectare of corn (0.50 ton/ha) in the country. Most production sites in the province consist of marginal, upland and rolling areas where the predominant source of farm power is manual labor and draft animals. A rapid appraisal survey showed that these methods have proven to be tedious, time consuming, inefficient and costly. The survey further showed that operations where mechanized technology could be utilized would be in land preparation, shelling and drying. Initial field tests with an upland power tiller and hand held shellers have shown that farmers in Barili and Argao are receptive to adoption of mechanized technology for specific operations. Subsequent cropping seasons will show how such technology adoption could alter the cost and return scenario. The results of this pilot activity could also serve as a model for mechanizing similar corn areas in the country. **(Author's abstract)**

Keywords: *Agriculture, Corn, Time consuming, Tedious, Inefficient, Costly*

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Meloidogyne spp. and other plant-parasitic nematode survey of Taiwan and Penghu Islands

Ruelo, Julita S.

Successful utilization of cultural practices such as crop rotation, multiple cropping and resistant cultivars to control plant-parasitic nematodes requires the identification of pathogen "biotypes" and information on their distribution. The present survey study intends to do just that.

Meloidogyne spp. survey of the AVRDC (Asian Vegetable Research and Development Center) experimental farm and differential host study of the collected soils found *Meloidogyne incognita* existing in 84.1% of the farm; *M. javanica* in 17.1%; 14% of the fields supported both root-knot species. *M. incognita* race 1 comprised 48.6% of the area, race 2, 32.7%, race 4, 1.9%. Race 3 was not identified from the samples.

A *Meloidogyne* spp. survey was extended to the vegetable crops of Taiwan and economic crops of Penghu islands, collecting root-knot infected plant roots or soil from plant rhizospheres whenever infested roots could not be gathered. Of the 597 samples collected M. incognita comprised 72%, *M. javanica* 19.6%, *M. hapla* 2.9% and *M. arenaria* 3.4%. Records from differential host studies revealed that *M. incognita* race 1 comprised 26.3% of the root/soil samples; race 2, 25.1%; race 4, 0.3%. Race 3 was not found. *M. Arenaria* race 1 was found in 0.3% of the collection, race 2 in 1.7%. Although differential host studies of 21.3% of the samples did not come out successful still it is evident that *M. incognita* is widely spread in different areas of Taiwan. In this survey the crops investigated belong to 19 families, 41 genera and 60 species. *M. incognita* was found associated with all plant families, 37 genera, and 55 species; *M. javanica* with 15 families, 30 genera and 40 species; *M. hapla* with 6 families, 11 genera and 11 species; *M. Arenaria* with 4 families, 5 genera and 6 species. Geographically *M. incognita* was found in all 19 towns surveyed, *M. javanica* in 15, *M. hapla* in 9 and *M. arenaria* in 10 towns.

A plant-parasitic nematode survey of Penghu islands recorded 11 plant parasitic nematode genera (including *Meloidogyne*) associated with the economic crops of the area. From 132 samples collected *Rotylenchulus* was found in 106 samples, *Aphelenchus* in 40, *Pratylenchus* in 28, *Meloidogyne* in 17, *Helicotylenchus, Tylenchorhynchus, Ditylenchus,* and *Aphelenchoides* in 7 to 10 samples. All the rest in 1 to 2 samples. Of the 8 plant families investigated, 20 genera and 22 species *Rotylenchulus* was found associated with all families, 19 genera and 21 species. This gave evidence of its widespread distribution in Penghu islands. Except for muskmelon, millet and carrot where each was associated with one parasitic nematode, all the rest of the plant species were seen associated with 2 to 9 different nematodes.

In Penghu 106 % of the total soil samples harbored from 103 to 1104 *Rotylenchulus* per 150 gm soil. For comparison three AVRDC fields (No. 6, 7 and 113 were investigated for the presence of *Rotylenchulus*. Records reveal 22 (61%) of the 36 soil samples collected from fields no. 6 and 7 nematode counts ranging from 119 to 6554; from fields No. 113, 11 (68.8%) out of the 16 samples nematode counts ranged from 119 to 1032. Root study of the mungbean plants growing in this field showed heavy and double infestation by *Rotylenchulus* and *Meloidogyne*. Perhaps the mungbean problem experienced at AVRDC for several years may be attributed to the interaction of these two nematodes, but this needs further study.

The present investigation points out the need to give the *Meloidogyne* problem at AVRDC and Taiwan at large due consideration. **(Author's abstract)**

Keywords: *Agriculture, Meloidogyne spp., Meloidogyne incognita, M. javanica, M. hapla, M. arenaria, Helicotylenchus, Aphelenchus*

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Fil(S) Q1 J95 v31 1994

Molecular and phenotypic studies of resistance genes introgressed from wild tomato (*Lycopericon chilense*) to cultivated tomato (*Lycopersicon esculentum*) against tomato leaf curl virus isolate from the Philippines

Tongson, Eden Jane U., Galvez, Hayde F., Hautea, Desiree M.

The *Tomato leaf curl* virus disease caused by the whitefly-transmitted geminivirus (WTG) seriously affects production and cultivation of tomato worldwide. Since no cultivar of tomato ever displayed resistance to leaf curl diseases, breeding efforts towards resistance were focused on utilizing wild tomato genetic resources. However, progress in breeding for resistance is slow because of the complex genetics of resistance and its variable expression to different isolates of the virus from different geographical areas.

Mapping for resistance genes against WTG and marker development have been done for marker-assisted breeding for ToLCV resistance. Three introgression regions in tomato line FLA456-4 derived from wild relative *Lycopersicon chilense* were associated for resistance against WTG in Indonesia. The regions are putatively located in chromosomes 3, 6, and 11. The effectivity of these genetic factors was evaluated against *Tomato leaf curl virus* Philippines strain (ToLCPV), specifically with Los Banos isolate. By phenotypic characterisation of the F3 introgression families of FLA456-4 x CLN1466J cross, these regions were validated; with emphasis in chromosomes 3 and 11. Introgression lines that carry combinations of the three *L. chilense*-derived genomic segments from FLA456-4 are represented in these F3 families.

A (FLA456-4 x Super Apollo)F2 population was also used for molecular characterization of the resistance genes against ToLCPV. In this mapping population, the introgressed regions in chromosome 3 and 6 were validated based on strong association (Likelihood Ratio 19.0 at $P<0.001$) between the molecular markers that tag the *L. chilense* segments and the disease response of the population expressed as area under the disease progress curve (AUDPC) against ToLCPV-Los Baños isolate. By composite interval mapping, three quantitative trait loci (QTL) for resistance were precisely mapped with the CAPS markers for *L. chilense* and a candidate sequence for plant resistance gene, RGA marker TO-32. The QTL with the largest effect (71.9%) was mapped in chromosome 6. Results of this study validate the whitefly transmitted geminivirus (WTG) resistance in tomato derived from *L. chilense*, in particular, the introgressed segments in chromosome 3 and 6 against ToLCPV-Los Baños isolates. **(Author's abstract)**

Keywords: *Agriculture, Tomato, Tomato leaf curl virus, Resistance, Mapping, Molecular marker*

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0030

National corn mechanization needs survey and analysis

Franco, D. T., Suministrado, D. C., de Asis, A. M., Capareda, S. C., Tallada, J. G., Gratuito, M.K B., Manalastas, F. F.

The study was conducted in order to determine the important mechanization components in the production/post production of corn as an input for the implementation of the Agricultural and Fisheries Modernization Act (AFMA) of 1997. Generally, the project objectives were achieved through the development, pre-testing and application of survey questionnaires; validating and inputting the 1,310 valid questionnaires from 13 surveyed provinces (Albay, Batangas, Bohol, Bukidnon, Camarines Sur, Isabela, Leyte, Nueva Vizcaya, Pangasinan, Quezon, Quirino, South Cotabato and Tarlac) to a Microsoft Office Access data base management system (DBMS), analyzing data and publishing/disseminating the corn mechanization information to concerned users as provincial mechanization profiles and posters.

Overall, for the 13 provinces, corn mechanization is relatively concentrated in the land preparation and shelling operations only. The widespread availability of custom-hired equipment (2-wheel tractors and motorized shellers) and services appear to compensate for the low ownership of corn production (only 1% of all FRs own 4-wheel tractors) and post production machinery (3.6% own motorized corn shellers). However, there still exists a large potential in mechanizing the plowing, furrowing, harvesting, shelling and drying operations.

The generally Low level of mechanization in small-scale corn farming is partly related to low incomes due to low farm gate

prices and a marketing system dominated by middlemen, the increasing costs of farm inputs, floods and droughts and the lack of farm-to-market roads and irrigation systems. **(Author's abstract)**

Keywords: *Agriculture, Agricultural and fisheries modernization act of 1997, Corn mechanization*

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0031

National livestock and poultry mechanization needs survey and analysis

Franco, D. T., Capareda, S. C., Suministrado, D. C., De Asis, A. M., Yabes, R. P., Tallada, J. G.

This paper evaluates the status of livestock and poultry mechanization in the Philippines using 13 provinces as sampling areas. A survey questionnaire was developed including a database management system (DBMS). The study generated baseline information on mechanization levels by production operation. Such data may have potential applications relative to the crafting of strategies and programs to improve mechanization levels in the local livestock and poultry production industries.

The results of the study for Laguna, Batangas, Quezon, Albay, Pangasinan, Camarines Sur, Bohol, Leyte, Sorsogon, Bataan, Pampanga, Bukidnon and South Cotabato show that swine is the most preferred type of livestock. Most of the livestock farms are small-scale, raising less than 50 heads per year while most of the chicken farms are large-scale raising more than 5,000 heads annually. About 47 percent of the farms have gross annual incomes of less than P50,000. Manual labor with or without the aid of tools or specialized equipment is still used extensively throughout the whole range of production operations. Machines are rarely used in animal production except for pumping water and feed milling. Farmers prefer the most economical way of performing farm tasks and not necessarily the most efficient. About 60 percent of the respondents acknowledged the benefits of using modern machines / facilities but only 45 percent expressed willingness to use them either by buying or hiring. **(Author's abstract)**

Keywords: *Agriculture, Data management system (DBMS), Livestock mechanization, Poultry mechanization*

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(Filipiniana Analytics)
Fil(S) S671 P539b 10/4 2003

0032

Performance test and evaluation of an aquaculture filtration system

Quimson, F.S., Marquez, E.B., Cuaresma, F.D.

The study primarily aimed to test and evaluate the efficiency and economic viability of a locally designed filtration system that can provide quality of water for aquaculture production. The system components parts were divided in the following chambers: the axial rotary chamber, gravity sand filter, biological filter and prime mover.

The study revealed that the increase in particle size of the sand of the gravity sand filter was inversely proportional to the weight of suspended solid filtered, temperature of the used water, hydrogen-ion concentration difference of pond water and dissolved oxygen difference of pond water. Further, the highest observed efficiency of 35.4% was at 1 mm pss and a discharge of 222 mL/sec. Also, increasing the particle size of the sand up to 1 mm caused an increase in efficiency of the system.

The system was constructed at a total cost of P9,079.00 distributed as follows: cost of materials (P3,984.00); labor cost (P2,095.00) and miscellaneous expenses (P1,000.00). A 0.5-hp submersible pump was required to operate the filtration system.

Assessment of the economic viability of the device revealed a breakeven point of 3,662.8 m^3 of water to filter per year at a

custom rate of P 0.70/ m3. This means that fabricating and operating a locally-designed aquaculture filtration system is economically feasible with a saving of P 6,150.60 for a year and P 30,753.00 for five years compared to standard practice. **(Author's abstract)**

Keywords: *Agriculture, Gravity sand filter, Biological filter, Prime mover, Axial rotary chamber*

CLSU Scientific Journal, Volume No. 23 Issue No. 1, 1-18
(Filipiniana Analytics)
Fil(S) S539 P5C33 23/1 2003

0033

Physico-chemical properties of a rich-based ecosystem supplemented with organic fertilizer

Agustin, M.B., Garcia, F.C., Mactal, A.G.

Long term effects of organic fertilizer on some physical and chemical properties of soil in a rice-based area were evaluated. The project started in 1999 using 2 t ha^{-1} of organic fertilizer with rice as the wet season (WS) crop and vegetables as the dry season (DS) crop. Recommended rates of inorganic fertilizer were applied for each crop.

Application of organic fertilizer improved bulk density and porosity as well as organic matter (OM) and nitrogen contents of the soil. However, OM application did not increase bacterial and fungal population.

Soil OM fluctuated with time. Generally, OM decreased at the end of DS cropping or the start of the WS cropping but increased at the end of WS cropping. The initial soil OM of 2.65% decreased in the six successive cropping seasons. However, this eventually increased to 3.27% in the eight or last cropping season.

Bulk density gradually decreased from 1.31 to 1.17 cm^{-3}. However, the consequent increase in porosity was from 40.0 to 49.57%. **(Author's abstract)**

Keywords: *Agriculture, Organic fertilizer, Wet season, Dry season, Organic matter*

CLSU Scientific Journal, Volume No. 23 Issue No. 2, 1-10
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Fil(S) S539 P5C33 23/2 2003

0034

Potential of mongo beans (*Vigna radiata*) as an alternative substrate for production of soy sauce

Cabrillas, C. C., Pineda,

This study aimed to determine the potential of mongo beans as an alternative substrate for the production of soy sauce. Five treatment set – ups were prepared containing varying amount of the substrate beans with soybean as the primary substrate, and mongo beans as the alternative one. Each treatment was replicated thrice and was subjected to two fermentation process.

The study showed that mongo beans produced greater amount of soy sauce than soybeans. Also, treatments containing a combination of soybeans and mongo beans in various amount produced greater amount of soy sauce than soybeans alone.

Product evaluation was facilitated mainly to compare the production among the five treatments. Results showed that soy sauce produced from mongo beans was comparable to the soy sauce produced from soybeans. Sensory evaluation results showed that treatments with combined substrate are less accepted by the evaluators than those produced from pure mongo beans and soybeans. **(Author's abstract)**

Keywords: *Agriculture, Mongo beans, Vigna radiata, Soy sauce*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0036

Quantitative resistance loci (QRL) against bacterial blight (*Xanthomonas oryza pv. oryzae*) and leaf blast (*Pyricularia orazae* Sacc.) and quantitative trait loci (QTL) for grain qualities in rice (*Oryza sativa* L.)

Rey, Jessica D., Mendioro, Merlyn S., Vera Cruz, Casiana M., Xu, Jianlong, Gao, Yongming, Li, Zhikang

A total of 174 BC2 introgression lines (ILs) originally selected for drought tolerance and grain quality traits, derived from crosses IR64/Binam and Teqing/Binam were used to map quantitative resistance loci (QRL) against bacterial blight, *Xanthomonas oryzae pv. oryzae (Xoo)* and leaf blast, *Pyricularia oryzae*. Artificial inoculation was done under screenhouse conditions using *Xoo* races 6 and 9 and *P. Oryzae* isolates M64-1-3-9-1 and P06-6. Polymorphic SSR (simple sequence repeats) markers (182) were used for genotypic analysis. Three ILs from IR64/Binam populations exhibited complete resistance (CR) to race 6, which was associated with six markers. Genotypic data indicated that the presence of donor alleles at all 6b loci is required for resistance, suggesting a strong epistasis between or among alleles at 6 loci. Twenty-eight ILs from IR64/Binam population exhibited CR to race 9. In the Teqing/Binam population, partial resistance (PR) to race 6 was associated with four markers and 73 showed CR to race 9. One QRL for CR and two QRL for susceptibility to race 9 were identified. Two QRL from IR64 x Binam and one QRL from Teqing x Binam population were identified as new QRL against M64-1-3-9-1. Three QRL from IR64 x Binam and one QRL from Teqing x Binam population against P06-6 were identified. Quantitative trait loci (QTL) for grain quality traits (GQ) were mapped as well. Sixteen new QTL were associated with grain elongation. Aroma and gelatinization temperature were contributed by Binam with 60 and 21 putative QTL identified, respectively. Six marker loci were associated with GQ traits and BB QRL for both race 6 and 9. More in depth exploration on the effect of all diseases to GQ traits can be done to identify which specific QRL and QTL are interacting. This can be achieved by backcrossing the selected ILs to the recurrent parent or ultimately by cloning the QRL. **(Author's abstract)**

Keywords: *Agriculture, Quantitative trait loci, Quantitative resistance loci, Bacterial blight, Leaf blast, Grain quality*

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0037

Quantitative trait loci (QTL) analysis for iron toxicity tolerance in rice (*Oryza sativa* L.)

Elec, Venus H., Quimio, Celsa A., Mendoza, Rhulyx, Sajise, Andy G., Beebout, Sarah J., Gregorio, Glenn B., Singh, Rakesh Kumar

Iron toxicity is a major problem of the coastal areas in the tropics and also some specific regions like lowland areas of western Africa. As much as 60% of the lowland rice area in West and Central Africa are at risk with iron toxicity and could result to an average yield loss of 50%. In severe cases, it could contribute up to 90-100% yield reduction depending on the intensity of the toxicity and tolerance level of the rice cultivar. Understanding the genetic basis of iron toxicity tolerance in rice is a fundamental task for breeders and molecular biologists to develop new rice varieties with more iron toxicity tolerance characters. The study aims to investigate genetic factors controlling tolerance to Fe2+ toxicity through investigation of the iron toxicity tolerance in rice. A set of 350 F2 individuals derived from a cross between Suakoko 8 (tolerant) and Bao Thai (sensitive) comprised the mapping population. The population was screened and evaluated for iron toxicity tolerance in the Phytotron at IRRI using six descriptive traits. A total of 720 simple sequence repeat markers covering the whole genome were used for the parental survey. Ninety-three markers (15%) were found to be polymorphic between the 2 parents and were used to screen the F2 progenies.

Twelve putative QTLs for iron toxicity tolerance were detected through single marker analysis and interval mapping. The identified markers located in chromosomes 3, 4, 5, 8 and 10 explain a small percentage of the total phenotypic variation as exhibited by the low individual LOD scores (2.512-4.48). The identification of 12 QTLs could help provide greater understanding of the genetic basis contributing to iron toxicity. **(Author's abstract)**

Keywords: *Agriculture, Rice, Iron toxicity, Mapping population, QTL, Markers*

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0038

Reaction of wild and cultivated *Musa* species to major banana virus diseases

Dela Cueva, Fe M., Dinglasan, Eric G., Damasco, Olivia P., Herradura, Lorna E.

Philippine *Musa* germplasm collection at IPB-UPLB and BPI Davao City holds a wide array of wild and cultivated banana cultivars. The germplasm provides wide gene pool as sources of desirable traits for breeding programmes like resistance to pests and diseases. Major banana viruses which include Banana bract mosaic virus (BBrMV), Banana bunchy top virus (BBTV), and Cucumber mosaic virus (CMV), as well as detection of Banana streak virus (BSV) has been observed in the *Musa* germplasm collection. Information on the reaction of these cultivars against these viruses is very little, hence this study. *In vitro* derived plantlets were evaluated for resistance against BBrMV, BBTV, and CMV under greenhouse condition. A total of 57 banana cultivars were evaluated. At 3-7 weeks after insect transmission, symptoms of BBTV appeared as marginal chlorosis and leaf narrowing. Low BBTV incidence (<50%) was recorded on some cultivars ranging from 0-44%. ELISA reading from asymptomatic plants ranged from 0.140 - 0.657, in which some cultivars were detected to be BBTV-positive. This indicates that BBTV is still present even in a symptomatic condition. For CMV, symptoms appeared 3 - 4 weeks after inoculation only in 1 cultivar. ELISA also detected CMV infection on some cultivars, which ranged from 0.143 - 0.940, even in asymptomatic condition. For BBrMV, all plants showed no diagnostic symptoms but ELISA also detected virus infection on some cultivars. ELISA values ranged from 0.140 – 0.913. **(Author's abstract)**

Keywords: *Agriculture, Musa germplasm, ELISA, Banana bunchy top virus (BBTV), Banana bract mosaic virus (BBrMV), Cucumber mosaic virus (CMV)*

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(Filipiniana Analytics)
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0039

Status of vegetable farm mechanization in the Philippines

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This paper presents the salient results of a research study on the current mechanization status of the country's vegetable subsector. These results are aimed to provide baseline data that can be used by government and other concerned agencies in decision and policy-making for a more productive, profitable and sustainable local vegetable industry.

Thirteen vegetable-producing provinces served as survey areas for the study (Albay, Batangas, Bohol, Bukidnon, Camarines Sur, Laguna, Leyte, Misamis Oriental, Nueva Vizcaya, Occidental Mindoro, Pampanga, Pangasinan and Quezon). Analysis of the survey data indicate that the overall mechanization level in vegetable production in the Philippines is low due to small cultivated farms that result to low average incomes. Many vegetable farmers also favor the use of hand tools which many respondents find adequate for their needs. **(Author's abstract)**

Keywords: *Agriculture, Vegetable farm mechanization, Local vegetable industry, Vegetable farmer*

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(Filipiniana Analytics)
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0040

A study on the temperature and relative humidity of the three experimental greenhouses in UPLB

Santiago, Wilda D.

Greenhouse technology has been one of the most promising solutions to the ever-increasing problem of food security in the country. Although this technology has been tested to work in other countries, its suitability and adaptability to our local conditions is yet to be tested.

Because of lack of studies to establish the greenhouse micro-climates under Philippine conditions, the research was carried out to determine the indoor temperature and relative humidity distribution inside three experimental greenhouse in UPLB.

Vertical and horizontal temperature and relative humidity distributions as well as the effect of the outside thermal conditions in the morning and in the afternoon were studied.

Results showed that indoor temperatures deviate from the outdoor temperatures by 0.846-6.638C while the indoor relative humidity deviates from the outside by 6-32%. Temperature and relative humidity gradients in different parts of the greenhouses are affected by the amount of solar radiation received, outside thermal conditions and wind speed.

The deviation of the indoor temperature and relative humidity profile for the three experimental greenhouses can only be attributed to thermic buoyancy or the "chimney effect". As cold as air enters through the side openings, the warm air at the lower portion rises resulting to heat transfer between the air masses. **(Author's abstract)**

Keywords: *Agriculture, Food security, Vertical temperature, Horizontal temperature, Relative humidity distributions, Thermic buoyancy, Chimney effect*

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0041

Testing of aerobic rice in the Philippines: results of field experimentation at IRRI

CastaÃ±eda, Ambrocio R., Bouman, Bas A.M., Peng, Shaobing, Visperas, Romeo M.

Traditional irrigated lowland rice production systems use excessive water for land preparation and maintenance of standing water during crop growth. The 'aerobic rice' technology eliminates puddling and flooding, and presents an alternative system in reducing water use and increase water productivity. In 2001-02, field experiments were conducted at the International Rice Research Institute to evaluate the potential of aerobic rice in the tropics. Six varieties were tested in typic Trofaqualf clay (59% clay, 32% silt, 9% sand). Under aerobic conditions, the soil was dry-plowed and harrowed (no puddling), and flash irrigation was applied when the soil moisture tension reached -30 to -50 kPa. Under flooded conditions, the soil was puddled and paddy water depths of 2-10 cm were maintained throughout the growing season. Aerobic rice saved 73% of irrigation water for land preparation and 56% during the crop growth period, moreover, it effectively used rainfall during the wet season (WS), Aerobic rice yields declined by an average of 28% in the dry season (DS) and 20% in WS – a clear trade-off in shifting from flooded rice to aerobic rice conditions. Magat (a tropical lowland hybrid) and APO (traditional upland in-bred) showed the highest yield potential between 5-6 t ha-1 under aerobic environment. Further experiments in medium textured soil and breeding of varieties better suited to aerobic conditions are needed. **(Author's abstract)**

Keywords: *Agriculture, Water productivity, Yield stability, Flooded rice, Aerobic rice, Transition, Tropics, Variety, Water savings, Impact*

Philippine Agricultural Mechanization Bulletin, Volume No. 11 Issue No. 1, 24-35
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0042

Towards establishment of mutant tomato germplasm

Galvez, Hayde F., Canama, Alma O., Tongson, Eden Jane U., Quilloy, Reynaldo B., Colle, Marivi G., Hautea, Desiree M.

Tomato (*Lycopersicon esculentum* L.) is one of the popular and important vegetable crops grown worldwide. It is the most important crop in the fresh and processed vegetable market. Current Breeding efforts are geared towards the incorporation of disease resistance genes, enhanced quality traits and other important traits required by the tomato crop to sustain productivity under biotic and abiotic limiting conditions. As sources for genetic stocks, breeding materials are resourced from within the *Lycopersicon* and wild relatives.

Large M1 populations of tomato H7996 were established using physical (Cobalt 60 gamma ray) and chemical (ethylmethane sulfonate, EMS) mutagens. The mutant germplasm will be used as a rich source of genetic materials to intensify crop improvement and genetic studies in tomato.

From 5000 mutagenized seeds each using gamma ray (600 Gy) and EMS (1%), a total of 465 - Gy and 1012 - EMS M1 seedlings had been transplanted. Only 380-Gy and 633-EMS M1 plants produced fruits. Three (3) fruits from different normal branches and three (3) fruits from visible mutant branch were separately sampled to derive the M2 generation of tomato mutants. Visible mutants were identified in 67-Gy and 146-EMS M1 plants. However, only 16-Gy and 60-EMS M1 plants produced fruits. The most common dominant and visible mutations observed in the M_1 screening were monopodial, compact, short internodes, multi-branch plant type, light yellow and ghost leaf coloration, tiny and long pedicel leaf morphology and small or short plant size. Morphological characterization of the M2 mutant families is on-going. **(Author's abstract)**

Keywords: *Agriculture, Tomato mutant , Gamma ray irradiation, EMS*

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0043

Transgenic rice plants over expressing host transcription factors Rf2 and Rf2B are tolerant to tungro disease

Alfonso, Antonio A., Duque, Ulysses G., Babb, Gina M., Miranda, Ronalyn T., Duque, Johna C., dela Cruz, Arlen A., Tiongco, Emmanuel R., Rivera, Tolentino, Dai, Shunhong, Beachy, Roger N.

Rice tungro disease (RTD) causes tremendous losses in the Philippines and other rice growing countries. Recent molecular studies have revealed interactions between specific regions of the rice tungro bacilliform virus (RTBV) promoter and host proteins resulting in the development of disease symptoms. One plausible explanation for this observation is that the endogenous transcription factors, called RF2a and RF2b, become sequestered by the viruses during infection and their limiting status disrupts plant development. To test this hypothesis, four Taipei 309-derived transgenic rice lines over-expressing RF2a or RF2b together with wild type Taipei 309, resistant check Matatag 6 and susceptible check TN1 were infected with viruliferous green leafhopper 25 days after sowing. Symptom development and ELISA indices for the two viruses were monitored daily until the eight day and subsequently at 5-day intervals up to 55 days after inoculation (DAI). Matatag 6 maintained a steady almost undetectable RTBV titer up to 55 DAI. For all the other entries, a generally increasing trend in the RTBV titer that peaked at 30-45 DAI was

observed. At 55 DAI, RTBV titers were comparable to the 10 DAI levels. For RTSV, titers were also barely detectable in Matatag 6 but there was a slow upward trend for all the other entries. In terms of disease incidence, both TN1 and wild type Taipei 309 exhibited severe symptoms. The transgenic lines exhibited less severe symptoms and at certain points some lines were comparable to Matatag 6. Most of the transgenic plants recovered from tungro damage at 30 DAI. Among the four transgenic lines, RbMT6 had the highest number of healthy plants at 34.6% as opposed to 26.1% in Matatag 6, the resistant check. The improved resistance of transgenic lines suggests that over expressing RF2a and RF2b transcription factors in the plant may reduce the symptoms associated with RTD. **(Author's abstract)**

Keywords: *Agriculture, Rice tungro disease, ELISA, Transcription factors, Transgenic rice, Gene overexpression*

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0044

Use of high density polyethylene material in lining irrigation canals

Reuyan, G.H.V., Aguinaldo, T.G.

This study was conducted to determine the adaptability of high density polyethylene (HDPE) material in lining irrigation canals. The parameters considered were its durability in terms of compressive strength and dimensional design, efficiency in terms of conveyance loss, acceptability in terms of farmer's preference, and cost effectiveness by comparative cost analysis versus the concrete hollow blocks (CHB) material in canal lining.

Geometric design revealed that the canal must have 0.4 m effective width and 0.4 m effective depth to irrigate one turnout service area (TSA) or 50 ha. Dimensional design showed that the HDPE pre-cast canal linear meter must have at least 0.08 m thickness to avoid material failure.

The manufactured HDPE pre-cast canal used in this study was based on the design computation results made through manufacturer's suggestions. The final design was 0.4 m effective width, 0.4 m effective depth, 0.1 m thickness, 1 m long, and four lines of equally spaced 2.5 cm x 2.5 cm outside perimeter stiffeners.

Compressive strength of the HDPE and CHB materials were found out to be 21.4 Mpa, and 17.1 Mpa, respectively. The durability of HDPE material for irrigation canals in terms of compressive strength was comparable to the concrete material.

The efficiency of the manufactured HDPE canal in terms of conveyance loss was highly efficient as determined by inflow-outflow method. The length of the measured canal was 138 m. The inflow discharge was 63.03 Lps, while outflow discharge was 62.40 Lps, showing 99% conveyance efficiency.

Comparative cost analysis between the HDPE material and CHB material revealed that the HDPE pre-cast canal is cheaper to use in irrigation canal lining. Also interview of 20 beneficiary farmers in the pilot areas of showed pre-cast HDPE canal was socially accepted. The respondents' preference to HDPE was in the canal's durability, dimension, shape, length, installation method, and price. **(Author's abstract)**

Keywords: *Agriculture, High density polyethylene, Concrete hollow blocks, Turnout service area, Pre-cast canal*

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BIOLOGY

0045

A 10% cream preparation from the crude ethanolic extract of the dried seeds of tonkin (*Ipomoea muricata*): formulation and its quality control

Angeles, Mary Rose S., Camina, Jessica Rei N., Castillo, Agatha Christie T., Diaz, Romielhyne Z., Murillo, Nico S., Quibael, Liana Aira V., Sy, Sandra C.

Ipomoea muricata (L.) Jacq. (Convolvulaceae) has been proven to possess antimicrobial activity against *Staphylococcus aureus*. The study aimed to formulate a topical cream from the dried seeds of the plant. The crude ethanolic extract was subjected to drug-excipient compatibility testing using a ratio of 1:1 and stored at 40°C for four weeks. The excipients that are compatible with the crude ethanolic extract were used in the formulation of cream. *S. aureus* was tested for its susceptibility against the formulated cream preparation using Disk Diffusion Method. The formulated cream that produced the biggest zone of inhibition was chosen to be the best formulation and was also subjected to quality control tests. The quality control tests include the organoleptic characteristics, pH, and viscosity and antimicrobial activity. The extract was found to be compatible with acacia, glycerin, sodium lauryl sulfate, methyl paraben, propylene glycol, stearyl alcohol, white petrolatum and not compatible with benzalkonium chloride and yellow soft paraffin. The excipients were used in the formulation of three cream preparations. Using t-test at $p<0.05$, formulation 3, which is a creamy white, tamarind-like odor cream with a pH of 6.45, viscosity of 57,000 cp and zone of inhibition of 23.5 mm, exhibited the best antimicrobial activity Based on ANOVA, there is no significant difference in the quality control parameters of two batches of Formulation 3. The cream should be stored at a temperature not exceeding 40°C because changes in pH, viscosity and antimicrobial activity are temperature dependent. The antimicrobial activity of the formulated cream is comparable to the commercially available Fucidin cream. The cream of *I. muricata* can be manufactured in large scale so as to provide the nation with another source of antibacterial drug. (**Author's abstract**)

Keywords: *Biology, Ipomoea muricata, Tonkin, Cream, Quality control, Formulation*

0046

Abiotic stresses to enhance bioactive potential of peanut kernels

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Polyphenolic compounds, including resveratrol, were recognized for their antioxidant properties, great abundance in our diet, and prevention of various diseases associated with oxidative stress such as cancer, cardiovascular and neurodegenerative diseases. Peanuts contain resveratrol in amounts next to red wines and grapes, among food sources. Abiotic stresses increased the levels of polyphenols in certain plants. This study aims to apply abiotic stresses such as wounding, exposure to ultraviolet light (UV), ultrasound (US), and combined US-UV to enhance the bioactive potential of peanuts. Raw peanuts were washed, sanitized, imbibed, sliced to about 7 mm, exposed to UV, US, and combined US-UV, and incubated at 25°C for 24-48 hours. Results showed that slicing increased resveratrol by 19-fold from 0.02 microgram (mcg)/g in controls to 0.37 mcg/g in sliced peanuts. UV increased resveratrol of sliced peanuts by 9-fold or 3.3 mcg/g whereas US resulted in 17-fold increase or 6.35 mcg/g indicating that US is more effective than UV in enhancing resveratrol synthesis. Chopped peanuts after exposing to US achieved lower resveratrol of 2.88 mcg/g whereas whole US-treated peanuts had the lowest at 0.99 mcg/g indicating that moderate wounding of peanuts by slicing is necessary for enhanced resveratrol synthesis. Exposure of US-treated sliced peanuts to UV further increased resveratrol to 7.1 mcg/g. Wounding, UV, US and combined US-UV also increased total phenolics, antioxidant capacities expressed as trolox equivalent antioxidant capacity (TEAC) and oxygen radical absorbance capacity (ORAC), and other beneficial phenolic compounds including piceid, and coumaric, caffeic, and ferulic acids. Application of abiotic stresses in peanuts increased its bioactive potential which can provide health benefits to consumers and value-added products to food manufacturers. **(Author's abstract)**

Keywords: *Biology, Peanuts, Abiotic stress, Wounding, UV light, Ultrasound, Resveratrol, Polyphenolic compounds, Antioxidant*

0047

Accumulation and elimination of radioactive phosphorus (^{32}P) in some organs of the *Tilapia Nilotica*

Banico, Ma Pia Tan

The rate of accumulation and elimination of ^{32}P was measured in five organs, i.e., brain, bone heart, muscle and small intestines of the *Tilapia nilotica* at 19°C or 28°C. There was a faster rate of uptake at 28°C, with the small intestines having the highest concentration of radioactive material. Elimination rates, however, indicate that bone retains ^{32}P longest. **(Author's abstract)**

Keywords: *Biology, Tilapia nilotica, Radioactive phosphorus, Geiger-Muller*

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Fil(S) QC173 N88 v27 1989

0048

Activation of endogenous banana streak badnavirus (eBSV) in *Musa* genotypes under drought condition

Dinglasan, Eric G., Dela Cueva, Fe M., Delfin, Evelyn F., Laurena, Antonio C., Natural, Marina P.

Banana streak badnavirus (BSV) is the most serious virus threat in *Musa* breeding program and germplasm movement. Viral sequences naturally integrated into the banana genome, called endogenous BSV (eBSV), can be activated into episomal BSV which are infectious and causes the destructive banana leaf streak disease. Factors that triggered activation include tissue-culture. In a changing climate scenario, abiotic stress specifically drought condition continuously affects crop productivity and susceptibility to diseases, hence it is deemed necessary to determine if drought condition in terms of water stress can trigger the activation of eBSV into infectious episomal form. Two treatments were put-up under glasshouse condition: drought imposed (water-stressed) and well-watered (control). Using BSV F1/R2 primers, IC-PCR detected 8 out of 18 banana cultivars with episomal BSV at 3 weeks after drought imposition (WADI). At 3 WADI, BSV incidence per genotype ranged from 5.56 – 33.33%. In addition, episomal BSV was expressed on 'Pelipia' at 8 WADI but not on 3 WADI. Statistical analysis indicated that activation of BSV, as influenced by water stress condition, occurs only in specific *Musa* cultivars, whether they have the A, AB, or B genome. However, under glasshouse condition, drought did not contribute to symptom expression of BSV infection even on episomal BSV-infected plants at 3 and 8 WADI. **(Author's abstract)**

Keywords: *Biology, Banana streak badnavirus, Immunocapture-PCR, Musa germplasm, Endogenous, Episomal*

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0049

Addition of crude methanolic *Allium sativum* (garlic) extracts to commercial fish feed can potentially prevent or delay ichthyophthiriasis in the black molly *Poecilia sphenops*

Bartolome, Ruthlyn T., Ella, Ronald Louise A., Garcia, Abigail A., Magboo, Maria Lizza E., Papa, Rey Donne S.

Ichthyophthirius multifiliis is one of the most pathogenic parasites affecting freshwater fish. The use of malachite green is considered as the most effective treatment of this disease but its use for treatment of disease has been discouraged sue to its mutagenic and teratogenic properties. The use of medicinal plant extracts for treatment of parasitic diseases in fish has rarely been reported. In this study, the effect of crude extracts of *Allium sativum* was investigated as a potential preventive treatment of *I. multifiliis*. Black mollies (*Poecilia sphenops*) were fed with fish food soaked in different concentrations of garlic extract (10-100%; in increments of 10) for 28 days while subjecting them in a stressful condition (i.e. lowering the water temperature) to induce *I. multifiliis* growth. There were substantial reductions in the number of infested black mollies at all garlic concentrations as compared to the negative control. Consequently, parasite-induced fish mortality was reduced significantly. This study has demonstrated that garlic extract concentrations (10-100%) have potential for effective control or delay of *I multifiliis* infection in fish. **(Author's abstract)**

Keywords: *Biology, Ichthyophthirius multifiliis, Allium sativum, Poecilia sphenops*

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Fil(S) Q181 A81 v55 2007

0050

Allergenicity of parvalbumin and muscle protein extracts from *Decapterus macarellus, Chanos chanos* and *Oreochromis niloticus*

Urbina, Jerome, Alambra, Jennifer R., DeVelez, Noel, Mariano, Crystal Gale, Ramos, John Donnie A.

Fish species such as galunggong (Decapterus macarellus, Dm), bangus (*Chanos chano, Cc*) and tilapia (*Oreochromis niloticus, On*) are highly consumed by most Filipinos. Unfortunately, fish consumption is often coupled with allergic reactions, a common immune disorder not properly documented in the Philippines. The specific IgE profiles of 120 Filipino subjects to allergens from the muscle extracts of three fish species and recombinant parvalbumin, a common fish allergen, were investigated in this study through Enzyme-linked Immunosorbent Assay (ELISA) and Western Blot Analysis. An average of ~54 mg total protein was isolated separately using 5 g (wet weight) of muscles from the three fish species. Multiple bands ranging from 10-250 kDa were observed in the muscle extract preparation under a 15% polyacrylamide gel. IgE reactivity of the 60 allergic sera showed that 46.67%, 58.33%, and 20 are sensitized with allergens from Dm, Cc and On, respectively. Of the 28, 35, and 12 positive reactions in Dm, Cc, and On, 16, 14, and 6 respectively, registered high IgE levels equal to or above 100 IU/mL. Recombinant parvalbumin registered positive IgE reactivity in 63.33% of the allergic subjects. A highly significant difference in the mean IgE reactivity was observed between the allergic and non-allergic sera against the allergen from Dm ($p<0.0001$), Cc ($P<0.0001$), On ($p<0.0001$), and Parvalbumin ($p<0.0001$). Common IgE binding proteins with molecular weights of ~100 kDa were observed in the 3 muscle protein extracts. Results presented in this study have shown that Parvalbumin, a muscle protein present in fish species, is a highly reactive allergen causing sensitization in the majority of allergic Filipino patients tested. These findings provide a basis for novel forms of diagnosis of parvalbumin- and fish-induced allergic reactions. **(Author's abstract)**

Keywords: *Biology, Bangus, Decapterus macarellus, Parvalbumin*

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Fil(S) Q149.P5 N25 32/1 2010

0051

Antibacterial property of yacon [*Smallanthus sonchifolius* (Poepp. & Endl.) H. Robinson] against five human bacterial pathogens

Romasanta, K. A. T., Pineda,

This study evaluated the antibacterial property of Yacon [*Smallanthus sonchifolius* (Poepp. & Endl.) H. Robinson] against five human bacterial pathogens, namely, *Eschericia coli, Straphylococus aureus, Basillus cereus, Pseudomanas aerigunosa* and *Salmonella typhi*. Using disc plate method, extracts of the leaves, stem and tuber of Yacon was used for this evaluation. Its effectivity was measured by the diameter of its zone of inhibition exhibited by the different yacon extract. For the negative control treatment, 80 percent ethyl alcohol was used while Amoxicillin antibiotic discs was used as the positive control treatment.

All treatments showed positive result in the screening test which were further tested in *in-vitro* bioassay test as eredican and as protectant against the pathogens. Results showed that the leaves was the most effective treatment among the three extracts used against *Escherica coli, Staphylococcus aureus, Bacillus cereus* and *Salmonella typhi*. All the treatments except for the positive control showed negative results against, *Pseudomanas aerigunosa*.

Inhibitory effects of the leaves was best observed against *Straphylococus aureus* at 12 hours of incubation.

As eredicant against the organism, the extract inhibited the growth of the bacteria but it did not totally eradicate the bacteria. As protectant against the pathogens, the leaves were observed to be the best extract used against the pathogen. No growth of the pathogens was observed in the nutrient agar plates with the plant extract used. On the other hand, the stem was given a scale of 1, meaning the pathogen occupied $\leq$ 25 percent of the media with the plant extract after 24 hours of incubation.

The leaves of Yacon (*Smallanthus sonchifolius* Poepp. & Endl. H. Robinson) was the best treatment used against four types of bacteria, and its effectively can be best observed at 12 hours of incubation. (**Authors abstract**)

Keywords: *Biology, Smallanthus sonchifolius, Yacon , Straphylococus aureus, Escherichia coli, Bacillus cereus, Pseudomonas aeruginosa, Salmonella typhi*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0052

Antifungal properties of malunggay (*Moringa oleifera* Lam) against three selected onion (*Allium cepa* L.) fungal pathogens

Cajucom, N.O., Alberto, A.M.P.

The study was conducted to extract antifungal components of leaves, stem bark and seeds of *Moringa oleifera* Lam. It also determined the action of these extracts as control and as protectant against onion diseases such as anthracnose, onion bulb rot and black mold disease.

Results revealed that the stem bark and seed extracts of *Moringa oleifera* Lam. showed inhibitory effect against onion fungal pathogens, *Colletotrichum gloeosporioides* (Penzig) Penzig & Sacc. and *Fusarium oxysporum* f. sp. *cepae*. The stem bark extract showed the widest zone inhibition against *Colletotrichum gloeosporioides* (Penzig) Penzig & Sacc. at 12.38 mm in 24 hrs and 11.44 mm in 48 hrs of incubation at 28-30°C. Also, the seed extract produced clear zone of inhibition against *Fusarium oxysporum* f. sp. *cepae* at 9.91 mm after 24 hrs and 7.73 mm after 48 hrs of incubation. No inhibitory effects were observed against *Aspergillus niger* Teigh.

Both seed and stem bark extracts inhibited 100% growth of the fungal pathogens tested. Both got a scale of 5 for the degree of colonization of the pathogen in the medium with the plant part extract. Consequently, both seed and stem bark extracts can be potential control and protectant against *Colletotrichum gloeosporioides* (Penzig) Penzig & Sacc. and *Fusarium oxysporum* f. sp. *cepae*. **(Author's abstract)**

Keywords: *Biology, Moringa oleifera Lam, Allium cepa L., Colletotrichum gloeosporioides, Fusarium oxysporum f. sp. cepae*

CLSU Scientific Journal, Volume No. 23 Issue No. 1, 27-42
(Filipiniana Analytics)
Fil(S) S539 P5C33 23/1 2003

0053

Anti-immunosuppressive effects of *Chromolaena odorata* (Lf.) king & robinson (*Asteraceae*) leaf extract in cyclophosphamide-injected Balb/C mice

Nudo, Leonora P., Catap, Elena S.

Chromolaena odorata (Lf.) King & Robinson leaf extract was evaluated for its immunomodulating activity in Balb/C mice by employing a number of immune response assays namely macrophage phagocytic activity, splenocyte proliferation, production of reactive oxygen species (ROS), and plasma lysozyme levels. The optimum concentration of *C. odorata* was determined to be 100µg/mL through *in vitro* assays. Subsequently, three (3) groups of 12 mice each were used in *in vivo* experiments, namely: (1) cyclophosphamide-induced (30mg/kg body weight) immunosuppressed mice (Cy- injected or positive control); (2) *C. odorata* extract + Cy-treated mice (C group); and (3) phosphate-buffered saline (PBS)-injected mice as the negative control group. When compared with PBS-treated mice, the Cy-treated mice showed significantly lower phagocytic activity, cellular proliferation, production of reactive oxygen species (ROS), and plasma lysozyme levels. Significant improvement in macrophage phagocytic activity and cellular proliferation was exhibited by the plant extract-treated mice when compared with Cy-injected mice only. The extract from *C. odorata* also improved superoxide production and plasma lysozyme activity compared with the Cy-injected mice. These results demonstrated the immunopotentiating activities of the *C. odorata* leaf extract on the innate immunity of Balb/C mice. Also, the extract could potentially reverse a drug-induced immunosuppression as confirmed through *in vivo* experiments. Indeed, there is a great potential of the plants to be utilized as source of biologically active products and metabolites for drug development. **(Author's abstract)**

Keywords: *Biology, Balb/C mice, Chromolaena odorata, Cyclophosphamide, Immunomodulation, In vivo, Immunosuppresion*

Philippine Journal of Science, Volume No. 141 Issue No. 1, 35-43
(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0054

Ascaris lumbricoides antigen-specific IgE profiles of parasite-infected Filipino patients

Valmonte, Gardette R., Cauyan, Gil A., Alava, Icynth K., Barsaga, Neil C., Claveria, Dorothy N., Timbol, Aeden E., Umerez, Angelo R., Ramos, John Donnie A.

An evaluation of the IgE reactivity of 86 serum samples from intestinal parasite-infected patients to A. lumbricoides soma and uterus antigens was performed Enzyme-linked Immunosorbent Assay (ELISA) showed that the concentration of *A. lumbricoides* antigen-specific IgE were elevated in subjects infected with *T. trichiura, B. hominis,* and *E. vermicularis A. lumbricoides* soma antigens exhibited significantly higher IgE reactivity than uterus antigens, indicating that soma antigens can induce IgE mediated host reactions greater than *A. lumbricoides* egg antigens. This study provides the *A. lumbricoides*-specific IGE profiles of Filipino parasite-infested patients which could be utilized the determination of cross-reactivity among antigens from *A. lumbricoides* and may serve as an important basis for vaccine preparation and immunodiagnosis. **(Author's abstract)**

Keywords: *Biology, Ascaris lumbricoides, Cross-reactivity, Immunoglobulin E, T. trichiura, B. hominis, E. vermicularis*

Acta Manilana, Volume No. Issue No. , 44-48
(Filipiniana Analytics)
Fil(S) Q181 A81 v54 2006

0055

Assessment and identification of yeast associated with guyabano (*Anona maricata* L.) fruit for wine production

Rearío, N.M., Pineda, F.G.

This study was conducted to assess and identify yeast associated with guyabano fruit for wine production. The yeasts were characterized based on their cultural, morphological and biochemical characteristics.

Two species of yeast were isolated and identified as *Saccharomyces diastaticus* and *Trichosporon penicillarum*. These were found to be fermentative and non-fermentative yeasts, respectively.

Alcoholic fermentation for 1 week was done to assess the most efficient yeast in transforming sugar to alcohol. *S. diastaticus* when grown on guyabano – based substrate produced 5.11% alcohol while *T. penicillarum* had 0.28%. *S. diastaticus* was chosen for wine production and was further evaluated in three fermentation periods: 1, 2 and 3 weeks. Percent alcohol was determined by the use of refractometer and computed based on the standard table.

Results revealed that among the three fermentation periods, three weeks yielded the highest alcohol content (10.59%). One week and 2 weeks, on the other hand, yielded 5.80% and 7.14%, respectively. Significant differences among the fermentation periods were obtained.

Sensory evaluation of the wine showed that different fermentation periods revealed no significant difference among the sensory attributes such as clarity, aroma, color, off odor, after taste and general acceptability. On the other hand, off flavor, acidity, alcoholic taste and sweetness in 1 week fermentation were significantly different from the other fermentation periods. results of the sensory evaluation revealed that sweeter wine was preferred by the panelists. **(Author's abstract)**

Keywords: *Biology, Anona maricata L., Saccharomyces diastaticus, Trichosporon penicillarum, Yeasts*

CLSU Scientific Journal, Volume No. 23 Issue No. 2, 37-46
(Filipiniana Analytics)
Fil(S) S539 P5C33 23/2 2003

0056

Assessment of carbon monoxide (CO) and hydrocarbon (HC) emissions of motor vehicles in Laoag City

Domingo, Doreen D., Calantoc, Florence R.

Republic Act 8749 (The Clean Air Act) provides a comprehensive air pollution control policy requiring compliance of all motor vehicle owners to undergo emission testing for carbon monoxide (CO) and hydrocarbon (HC) before registration. Laoag City has become a center of development leading to the establishment of new commercial and industrial institutions. This has brought about the influx of people and the expansion of transport facilities from all other neighboring municipalities, leading to CO and HC emissions – air pollutants that are detrimental to the health of the people. Levels of CO and HC emissions of motor vehicles derived from the documents (200 emission records) of the Land Transportation office (LTO) and Emission Testing Centers (ETC) in Laoag City were compared with the acceptable standard values set by the Clean Air Act. Determination of the level of awareness and extent of implementation of the Act by motor vehicle owners and policy enforcers were also considered and evaluated using a structured questionnaire. Results revealed that wagon type vehicles had the highest CO (4.46%; std. 4.5%) and HC (711 ppm; std 800ppm) emissions while motorcycles had the least CO (1.09%; std. 4.5%) and HC (412ppm; std.800ppm) among the various types of vehicles considered in the assessment. All types of vehicles showed an overall emission value of CO (2.37%) and HC (463ppm) which is still low compared to the standard emission values of CO (4.5%) and HC (800ppm). A significant negative correlation (r= -0.2999) was obtained between the level of awareness (mean value = 3.54) and extent of implementation (mean value = 2.19) by motor vehicle owners. On the other hand, a positive correlation (r = 0.2386) was noted between the level of awareness (mean value =3.27) and extent of implementation (mean value = 4.16) by policy enforcers of the Act. Based on the above findings, emission testing should not only be conducted before registration or renewal of franchise of vehicles, but awareness and strict implementation of such a provision of the Clean Air Act should be seriously considered and attended to. **(Author's abstract)**

Keywords: *Biology, Carbon monoxide, Clean air act, Emission test, Hydrocarbon, Vehicular emissions*

Transactions of the National Academy of Science and Technology, Volume No. 32 Issue No. 1, 56-57
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 32/1 2010

0057

Assessment of diversity of plants in the forest ecosystem of Pantabangan, Nueva Ecija

Sator, L. M. P., Alberto, A.

This study collected, described, identified and classified the different species of plants present in the forest ecosystem of Pantabangan, Nueva Ecija and to determine the ecological parameters of plants present as well as the environmental problems and threats that could affect the diversity of plants in the area.

Results of the study indicated that 50 species of plants were identified and classified under two divisions, two classes, nineteen orders, thirty families and 50 genera. *Saccharum spontaneum* L. was observed to be the most dominant and important species of plant with 79.22% Species Importance Value. The diversity of plant in the forest ecosystem of Pantabangan was 0.72 which was low or not diverse anymore.

Generally, plants collected are economically important serving as source of medicine, food and shelter and industrial materials. They are usually found in areas where water is abundant.

Results also revealed that the factors that had major impact on Pantabangan were the construction of dams and reservoirs, construction of hydropower projects, soil erosion, illegal logging and wildlife hunting. Based on the completed survey, the No. 1 reason for the decreasing population of plant species in the area is the construction of Pantabangan Dam. **(Author's abstract)**

Keywords: *Biology, Pantabangan, Nueva Ecija , Saccharum spontaneum L., Species importance value*

CLSU Scientific Journal, Volume No. 25 Issue No. 1,
(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0058

Association of blood coagulation and humoralbiodefense genes: evidence from crustaceans

Maningas, Mary Beth B., Kondo, Hidehiro, Aoki, Takashi, Hirono, Ikuo

Blood coagulation is a conserved defense mechanism among invertebrates and it has been well studied in the horseshoe crab (chelicerate) and the freshwater crayfish (crustacean) but is not well defined in shrimp. Here, we demonstrate *in vivo* the functional involvement of transglutaminase (TGase) and clotting protein (CP) in the shrimp blood coagulation system using RNA interference, and their influence in the mRNA expression of antimicrobial peptides and genes involved in the prophenoloxidase system. Expression of TGase mRNA was inhibited in gills, heart, hemocyte, hepatopancreas, intestine and lymphoid organ, while the CP gene was suppressed only in gills and heart tissues on day-1 post injection, with 1 μg and 10 μg of TGase- and CP-dsRNA, respectively. However, at day-7 post injection, systemic gene silencing was observed for both genes and dosages as shown by mRNA expression, blood coagulation and protein data. A challenge test with white spot virus and Vibrio penaecida revealed the critical function of TGase and CP in the immune system of shrimp. Suppression of antimicrobial peptides and genes involved in the prophenoloxidase system following TGase and CP silencing demonstrates as association between blood coagulation and humoral biodefenses in shrimp. This finding suggests a possible alternative mechanism in the activation of antimicrobial peptides and genes involved in the prophenoloxidase system in chelicerates and crustaceans. **(Author's abstract)**

Keywords: *Biology, Blood coagulation, Clotting protein, Crustacea, Prophenoloxidase RNA interference, Transglutaminase*

Transactions of the National Academy of Science and Technology, Volume No. 32 Issue No. 1, 62
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 32/1 2010

0059

Biogenic amines in some natural and processed cheeses sold in Laguna Province, Philippines

Vallejos, Ma. Jannine M., Pham, Laura J., Barraquio, Virginia L.

Natural and processed cheese samples from the different supermarkets around Laguna Province in the Philippines were analyzed for the presence and quantity of biogenic amines using thin layer chromatography with Biosoft™ Quantiscan program. The histamine concentrations were 113.4 ± 1.8 ppm, 217.9 ± 1.0 ppm, and 49.9 ± 3.6 ppm in Blue, Cheddar, and Edam cheese, respectively. The histamine limit in cheese is 100 mg/kg, hence the level found in Cheddar cheese needs to be looked into. The tyramine contents were 2269.3 ± 3.6 ppm, 571.3 ± 2.0 ppm and 199.7 ± 1.9 ppm in Blue, Cheddar, and Edam cheese, respectively. Because the limit for tyramine in cheese is 200 mg/kg, the levels found in Blue and Cheddar cheese are of serious concern. Brie, processed cheese and white soft cheese (kesong puti) were negative for both histamine and tyramine. All cheeses were negative for cadaverine. High levels of histamine and tyramine found in the cheese samples analyzed indicate the need to expand sampling to other natural cheese varieties sold in the province. Then, actual or anticipated human exposure risk to BAs in cheese can be determined to ascertain the necessity for the Food and Drug Administration and other government agencies concerned with food safety to take action. **(Author's abstract)**

Keywords: *Biology, Biogenic amines, Cheese, Histamine, Tyramine*

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(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0060

Bioinformatics tools for identifying hepatitis C virus subtypes

Baclig, Michael O., Gopez-Cervantes, Juliet, Natividad, Filipinas F.

With the development of freeware bioinformatics software as well as the availability of web-based software, it is now possible to use various bioinformatics tools to identify viral subtypes such as hepatitis C virus (HCV). This study aimed to demonstrate the role of bioinformatics tools in identifying HCV subtypes and to compare the accuracy of HCV-1 subtyping by 5'UTR PCR-RFLP analysis and DNA sequencing. From a clinical viewpoint, accurate genotype and subtype identification of HCV are important because this may be used as guide for deciding which therapy is appropriate to use for a particular patient. From 2005 up to 2008, we had a total of 30 HCV genotype 1 (HCV-1) positive samples. HCV-1 subtypes were identified by an in-house PCR-RFLP analysis and through direct nucleic acid sequencing using nested primers specific to the 5'UTR and non-structural 5B (NS5B) region. Bioinformatics tools play an important role in identifying HCV-1 subtypes by predicting the size of the amplicon; determining the specific restriction enzyme to cut a given nucleic acid sequence; viewing and editing the electropherogram; aligning nucleotide sequences with prototypes; searching for identical sequences; and understanding the evolution and relationship of various subtypes. The HCV nucleotide sequences reported in this study have been deposited to GenBank. Overall, this information can be utilized to generate molecular diagnostic tests in the future. **(Author's abstract)**

Keywords: *Biology, 5' untranslated region, Bioinformatics tools, Hepatitis C virus subtypes, Non-structural 5B region*

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(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0061

Carbonate production by larger foraminifera in the shallow water area off Mactan (Cebu, Philippines)

Wefer, Gerold, Hong Woo, Khoo, Castillo, Evelyn, Geonzon, Josefina A.

Calculation of carbonate production rates of Foraminiferal were studied in the south of Mactan Island, Cebu. Samples were collected on a transect extending from the shore to the inner margin of fringing coral reef. Study shows Foraminifera per square meter increases away from the shore, and only miliolid species are found in the shallow area, while in the deepr zones, rotaliis species are common. The forminiferal tests produced in the shallow water do not accumulate there, and were transported by currents into the Hilutangan Channel, in accumulates in the sediment sup to 400m depth.

Keywords: *Biology, Marginopora vertebralis, Heterostegina depressa, Amphistegina, Calcarina*

The Philippine Scientist, Volume No. Issue No. , 78-82
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0062

Carotenoid content of canistel or tiesa (*Pouteria campachiana* (HB.K) Baehni)

Capistrano, Elmira P., Francisco, Ma. Leonora dL.

Extraction and isolation of carotenoids from biological sources is of current interest to researchers. Canistel is an underutilized crop that is rich in carotenoids. This study was done to investigate the carotenoid content of canistel at various maturity stages. Different maturity stages of canistel were obtained based on peel color. Samples were immediately analyzed for firmness, flesh color, soluble solids and pH. Total carotenoid concentration was estimated by comparing the sample absorbance to a standard curve of ß-carotene at 476 nm. Firmness decreased from 1.33 to 178mm as the canistel increased in maturity. Firmness of overripe canistel decreased almost three times compared to the ripe canistel. No significant differences ($P>0.05$) were observed between immature and half-mature canistel. Lightness (L*) of the sample were not significantly different ($P>0.05$) for the first three stages of maturity (L* 57 to 60). Significant ($P<0.05$) change was observed when the fruit became overripe (L* 53). The redness (a*) of the sample on the other hand increased as the fruit reached senescence (a* 7 to 14) while the yellowness (b*) had its maximum value (b* 61) during the ripe stage. Soluble solids increased as the fruit develops while no significant difference ($P>0.05$) in pH was observed across all samples. Carotenoid concentration was its maximum during the immature stage and decreased as the fruit reached senescence (180 to 54 ppm). Carotenoids partially identified were a mixture of hydrocarbons and xanthophylls. Ten carotenoids were identified based on spectral maxima that include neoxanthin, violaxanthin, α-carotene, ε-carotene, neurosporene, lutein, α-zeacarotene, cis-luteoxanthin, ß-zeacarotene and ß-carotene-5,6,5',6'-diepoxide. Increased utilization of canistel as natural source of carotenoids should be explored as possible substitute for synthetic food colorants to meet consumer's desire for natural carotenoids. **(Author's abstract)**

Keywords: *Biology, Carotenoids, Canistel, Maturity, Firmness, Color*

Transactions of the National Academy of Science and Technology, Volume No. 34 Issue No. 1, 89
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0063

Changing the ecological niche of coprinus comatus from a weed fungus to a nutriceutical and biocleansing agent

Dulay, Rich Milton, Parungao IV, Alfonso G., Kalaw, Sofronio P., Reyes, Renato G.

Coprinus comatus is an edible fungus that normally inhabits cellulosic substrates like rice straw with appreciable amount of nitrogen. This is considered as a weed fungus by the rural-based Volvariella growers in the country due to its rapid growth on mushroom beds. This mushroom is producing small fruiting bodies that easily open and become inky within 12 hours. Thus, despite of its edibility, this mushroom is often times ignored in the mushroom industry. Our research team initiated a study to harness the economic potential of this edible mushroom. The growth performance of *Coprinus comatus* on different pulp and paper waste formulation was evaluated. Observations were based on the best substrate having shortest incubation period, initiation of primordia and development of fruiting bodies. The ability of *C. comatus* as biocleanser of Pb –contaminated pulp and paper waste was also highlighted. The chemical components of the different pulp and paper waste were determined before and after cultivation under aseptic condition. Among the six pulp and paper waste-based formulations, only brown pulp contains Pb with 48 ppm. This Pb - contaminated substrate was used in evaluating the ability of this mushroom to uptake this heavy metal. Our investigation revealed that 16.15 ppm was only detected on the dried fruiting bodies of *C. comatus* after it was grown on Pb – contaminated substrate. The remaining 3 formulations were used as substrates for the production of the fruiting bodies of *C. comatus* in a miniaturized glass container under aseptic condition. Results of the evaluation disclosed that *C. comatus* cultured on fine gray pulp with 50% rice straw and 10% rice bran and coarse pulp with 50% rice straw and 10% rice bran registered the shortest incubation period with the same mean of 11 days. The longest incubation period was recorded in light blue pulp with 50% rice straw and 10% rice bran with a mean of 17 days. Moreover, light blue pulp with 50% rice straw and 10% rice bran produced the heaviest fruiting bodies with a mean of 8.85 g. **(Author's abstract)**

Keywords: *Biology, C. comatus, Pulp, Lead contaminated*

Transactions of the National Academy of Science and Technology, Volume No. 32 Issue No. 1, 53-54
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 32/1 2010

0064

Chemical and biological investigations of the pelagic system of the Hilutangan Channel (Cebu, Philippines)

von Bodungen, Bodo, Balzer, Wolfgang, Bolter, Manfred, Graf, Gerhard, Liebezeit, Gerd, Pollehne, Falk

Measurements of inorganic nutrients, carbohydrates, phytoplankton, bacterial production and biomass, and total respiration by the ETS-method have been carried out in the Hilutangan Channel on three occasions during March/April 1981. Moreover, the flow of particulate and dissolved matter between the reef flats and the Channel was studied over a 24 hour period. Further, the effect of nutrient enrichment on phototrophic and heterotrophic organisms of samples placed in small bags was examined.

The chemical and biological properties of the water column in the Channel were within the typical range reported for oligotrophic tropical oceans. There was a considerable flux of particulate and dissolved matter from the reef flats into the Channel. However, transfer of the essential elements, phosphorus and nitrogen, from one system to the other was not detectable.

In the euphotic zone of the water column primary carbon production was closely matched by carbon consumption, wherein bacteria seemed to play a negligible role. Variations in carbon production and biomass were considerable over time. Occasional nutrient inputs as a possible reason for these variations and seasonal changes in the pelagic system are discussed. **(Author's abstract)**

Keywords: *Biology, Inorganic nutrients, Carbohydrates, Phytoplankton, Bacterial production, Biomass*

The Philippine Scientist, Volume No. Issue No. , 4-24
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0065

Compositional analysis of banana stalks degraded by *Pleurotus ostreatus* under solid state fermentation

Birginias, Ma. Concepcion, Agrupis, Shirley C.

Fungal bioprocessing of lignocellulosic biomass is an important agent responsible for the environmental carbon circulation. Higher fungi like basidiomycetes *(e.g. Pleurotus ostreatus)* have unique oxidative systems which together with ligninolytic enzymes are responsible to decompose cellulose, hemicellulose, and lignin to lower molecule components. Hence, an environment-friendly pre-treatment process for lignocellulose residues. Biodegraded products from the biomass can be refined to bioethanol and other biobased materials like fiber and biochemicals. Banana stalk was inoculated with *P. ostreatus* under solid state fermentation (SSF) at ambient conditions for 45 days. Dried banana stalks ground to 40 mesh was wetted at 6:1 water to biomass ratio. The biodegradation activity of the fungi was compared in substrates with or without sugar additive. Sugar composition was determined by HPLC, Acid soluble (ASL) by UV Spectrophotometer, and acid insoluble lignin (AIL) by gravimetric method, following standard protocols. *P. ostreatus* grew progressively in the substrates with time until the whitish hyphae covered the whole biomass in 45 days. Addition of sugar in the biomass did not show a distinct advantage over the substrate with no sugar in terms of growth and activity of the fungi. Dry solid yields were increased by 9% from the original weight due to fungal hyphae biomass. ASL and AIL were significantly decreased by about 50% compared to the original lignin of the material (11.55%). The ash content of the fungal-treated biomass was higher (0.9039-1.75%) than the untreated sample (0.6217%). Glucose (33.75-34.17%) and Xylose (20.67-22.30%) contents of the fungal-treated samples were lower compared to the control at 44.37% and 30.67% glucose and xylose contents, respectively. Mannose sugar (4.89-5.45%) was comparable with the untreated biomass. Sugar composition of the washings of the fungal-treated banana stalks should be analyzed to account the sugar released from the biomass during the biodegradation process. **(Author's abstract)**

Keywords: *Biology, Bioprocessing, Bioethanol, Ligninolytic enzyme, SSF, Biodegrdation*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0066

Conspecificity of *Nepenthes alata* Blco. population found in Mt. Guisguis, Zambales inferred from internal transcribed spacer (nrDNA) sequence data

Alejandro, Grecebio Jonathan D., Baysa, Justinne Patricia C., Lemana, Bismark Oliver C., Madulara, Glaiza M., Madulid, Rosie S., Madulid, Domingo A.

With the distinct morphological variation existing in *Nepenthes alata* Blco. population found in Mt. Guisguis, Zambales, the Internal Transcribed Spacer (ITS) region (ITSI, 5.8S gene, ITS2) was sequenced in four variants of *N. alata* population (labeled as N01, N02, N03, N04) to evaluate its potential value as a source of character variations. The four ITS sequences of *N. alata* population are newly published here. The whole ITS region of the four variants consisted 655 positions or base pairs (bp). The ITS1 and ITS2 regions were uniform in size with 2.58 bp and 233 bp, respectively. The 5.8 S gene was identical and uniform in size with 164 bp. Pairwise comparisons among the four populations samples yielded 0% variations in the whole ITS region. The results based on ITS sequence data strongly suggest that the four variants of *N. alata* population are conspecific. **(Author's abstract)**

Keywords: *Biology, ITS 1, ITS 2, 5.8S gene, Nepenthes alata, nrDNA*

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(Filipiniana Analytics)
Fil(S) Q181 A81 v55 2007

0067

Contributing to the Philippines' biodiversity: establishment of two Philippine rubiaceae genera based on plastid and nuclear DNA including their conservation status

Arriola, Axel H., Alejandro, Grecebio Jonathan D.

The Philippine Vanguerieae is represented only by two genera: *Canthium* (20 spp.) and *Psydrax (*monotypic). Recent molecular and morphological treatments of the tribe showed that most of its representatives do not form a monophyletic assemblage. For instance, *Canthium* was restricted to plants having supraaxillary spines. This raises questions on the position of the Philippine *Canthium* as members are without spines. In this first molecular study of two Philippine *Canthium* (*C. monstrosum* and *C. ramosii*), trnL-F and ITS regions were sequenced, assembled and aligned manually using Se-A1 v2.0 and subsequently analyzed using MrBayes 3.1.2. Interestingly, the majority-rule consensus tree revealed that the two Philippine species were nested in two different clades with high support; *C. monstrosum* within the *Keetia* clade (PP= 0.98) while *C. ramosii* grouped with the *Pyrostria* clade (PP= 1.00). Therefore, we proposed two new combinations, the *Keetia monstrosa* (A.Rich) Arriola & Alejandro and *Pyrostria ramosii* (Merr.) Arriola & Alejandro. This study establishes for the first time the two genera (*Keetia* and *Pyrostria*) in the Philippines. The IUCN Red List declared that conservation status of *Keetia* and *Pyrostria* were from vulnerable to critically endangered. Hence, sustainable conservation is urged which requires further studies on its reproductive biology, biogeography, and economic importance. **(Author's abstract)**

Keywords: *Biology, Canthium, ITS (nrDNA), Keetia, Philippine Endemic, Pyrostria, trnL-F (cpDNA)*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0068

Control of golden apple snail (*Pomocea canaliculata* Lamarck) in the paddy ecosystem using carbonized rice hull

Quimson, J. S., Kalaw,

The effect of carbonized rice hull (CRH) on the control and damage of golden apple snail (*Pomocea canaliculata* Lamarck) in the paddy ecosystem was evaluated. Carbonized Rice Hull (CRH) was broadcasted on the paddy to determine on the controlling effort on golden apple snail (*Pomocea canaliculata* Lamarck). Damages inflicted by the golden apple snails (GAS) on the seedling were also determined.

The highest number of missing hills was observed in plots applied with 10 bags of CRH starting from 5 DAT. Damaged hills analysis showed that the plots treated with commercial molluscicide had the lowest damage with mean damaged hills of 6.67% on 15 DAT (days after treatment application). The microplots treated with 15 bags of CRH had the highest damaged hills with mean values of 34.67%. On 15 DAT, rice microplots treated with 15 bags of CRH had the highest mean mortality of GAS on all CRH treated plots (24.99%).

Six species of weeds that thrived on the rice microplots were identified. These were *Sphenoclea zeylanica* Gaertn, *Cyperus iria* L, *Fimbristylis miliacea* (L) Vahl, *Rotala indica* (Willd) Koehne, *Ludwigia hyssopifolia* and *Corchorus capsularis* L. **(Author's abstract)**

Keywords: *Biology, Golden apple snail, Pomocea canaliculata Lamarck, Sphenoclea zeylanica Gaertn, Cyperus iria L., Fimbristylis miliacea (L) Vahl, Rotala indica (Willd) Koehne, Ludwigia hyssopifolia , Corchorus capsularis L.*

CLSU Scientific Journal, Volume No. 25 Issue No. 1, 57
(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0069

Coral growth history revealed by X-radiographic studies

Patzold, Jurgen

The methods for determination of coral growth rate are briefly reviewed. The growth history of three coral heads of *Porites lobata* found off Mactan Island (Cebu, Philippines) was reconstructed by means of X-radiographic techniques. The corals contained a continuous lifespan record of up to 150 years. Growth rates were between 0.9 and 1.3 cm/year. **(Author's abstract)**

Keywords: *Biology, Porites lobata, X-radiographic, Montastrea annularis*

The Philippine Scientist, Volume No. Issue No. , 67-77
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0070

Correlation of fruit variables to the physico-chemical and biochemical attributes of the coconut (*Cocos nucifera* L.) liquid endosperm

Deocaris, Chester C., Masa, Dina B.

A correlation study was conducted to show the relationships of the variables concerning the coconut fruit and its liquid endosperm. Variables in this study were: fruit maturity; longitudinal and transverse circumferences; gross weight and; weight of the liquid endosperm. Fruit maturities were estimated by counting the number of inflorescence starting from sampled bunch up to the bunch with fertilized pistilate flowers. This count is multiplied by 21 or 31 days, the established flowering rates of dwarf and tall coconuts respectively. Electrolytes (K^{+1}, Na^{+1}, Ca^{+2}, Mg^{+2} and Cl^{-1}), glucose, protein, pH, specific gravity, and soluble solids were the physico-chemical and biochemical attributes measured. Aromatic Dwarf (AROD), Catigan Dwarf (CATD) and Laguna Tall (LAGT) varieties were included in the study. Fruit maturity showed positive correlations (Pearson's coefficient) with sodium content (0.49-0.84) and pH (0.37-0.80). The weight of the fruit (0.44-0.88) also had positive correlations to fruit transverse circumference. Potassium levels of coconut water increase with maturity for AROD (0.407) and LAGT (0.430). The reverse is observed with CATD (-0.639). The differences in the correlations of the three varieties suggest the biochemical "uniqueness" and significance of each variety in new beverage formulation. This could also suggest physiological and nutritional differences of the trees in general. **(Author's abstract)**

Keywords: *Biology, Heatmap, Correlation, Coconut water, Electrolyte, Biochemical profiles*

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0071

DNA barcoding of birds in the University of the Philippines Diliman Campus, with emphasis on striated grassbirds, *Megalurus palustris*

Luczon, Adrian U., Torres, Andrew F., Quilang, Jonas P., Ong, Perry S., Fontanilla, Ian Kendrich C.

DNA barcoding is increasingly being used by researchers across the globe to aid in the identification of species. Using this taxonomic tool on bird species in an urban green space within manila, i.e. the University of the Philippines Diliman campus, Luzon, Philippines, DNA barcodes of eleven species were generated. Different haplotypes for some of the species were observed. Using BLAST, the cytochrome oxidase subunit 1 (COI) sequence of every species from this study was correctly matched with the corresponding species having a COI record in Genbank, with the exception of the Striated Grassbird *Megalurus palustris*,

which is a new COI record. The three distinct haplotypes for *M. palustris* were then compared with COI sequences from other members of the sylviid "Old World Warblers" to determine the effectiveness of the DNA barcode in discriminating it with other species. Results show that COI was successful in placing *M. palustris* as a distinct taxon. **(Author's abstract)**

Keywords: *Biology, Cytochrome oxidase 1 gene, DNA barcoding, Locustellidae, Megalurus, Philippines*

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(Filipiniana Analytics)
Fil(S) Q1 P55 142/1 2013

0072

Ectoparasites of cave-dwelling bats in Marinduque Island, Philippines

Amarga, Ace Kevin S., Alviola, Phillip A., Yap, Sheryl A., Lit, Jr., Ireneo L., Verdida, Jr., Rodolfo

This paper constitutes the first ectoparasite faunal survey of bats for Marinduque Island, Philippines. From June 1 to 12, 2010, 150 individual bats comprising of eleven species were captured in eleven caves in Marinduque Island. Each bat was sampled for ectoparasitic arthropods, and a total of 587 individuals representing twenty two species and belonging to five families (Argasidae, Spinturnicidae, Nycteribiidae, Streblidae, and Ischnopsyllidae) were collected. A total of twenty five new country host records for ten ectoparasitic arthropods were documented. The degree of the host specificity of the ectoparasitic arthropods on bats in this island ranges from monoxeny (as seen in *Brachytarsina megadermae* which infests *Megaderma spasma*) up to varying extent of oligoxeny (as exhibited by genus *Nycteribia* infesting the genera *Hipposideros, Megaderma, Rhinolophus* and *Miniopterus*). **(Author's abstract)**

Keywords: *Biology, Cave, Bats, Ectoparasites, Ectoparasites of cave dwelling bats*

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0073

Effect of arbuscular mycorrhizal fungi inoculation on growth and Cu uptake and toxicity of Desmodium cinereum (Kunth) D.C.

Adiova, Joden M., Pampolina, Nelson M., Aggangan, Nelly S.

The effect of arbuscular mycorrhizal fungi (AMF) inoculation on copper (Cu) uptake and toxicity of *Desmodium cinereum* (Kunth) D.C. was studied. This legume produces large amount of biomass that can serve as buffer in areas with high concentration of Cu. Pre-germinated seeds of *D. cinereum* inoculated and non-inoculated with AMF were grown in sand-soil mixture treated with increasing Cu concentration (0, 400, 800, 1200, 1600ppm Cu). Increasing Cu concentration gave a corresponding reduction on height, diameter, leaf area, and biomass of the plants. Root growth and nodule formation at 1200 and 1600ppm Cu level were inhibited ($p<0.05$ and $p<0.01$, respectively). Mycorrhizal inoculation increased plant height, biomass, and stem diameter at lower Cu level. Inoculation enhanced nodulation and also improved phosphorus concentration in the leaves, stem and roots at 0 and 400ppm Cu level. Increasing Cu concentration resulted to a greater Cu accumulation in the roots while Cu concentration on stem and leaves remained at a normal level. Inoculation with AMF increased Cu uptake of roots and stem at 800, 1200, and 1600ppm Cu levels. The ability of mycorrhizal fungi improve Cu uptake, increase plant growth, increase phosphorus uptake, and promote growth of other beneficial microorganisms such as nitrogen fixing bacteria (as exemplified by the nodulation in the roots) for *D. cinereum*, make it an ideal tool for phytoremediation of Cu contaminated sites. **(Author's abstract)**

Keywords: *Biology, Alleviate, Arbuscular mycorrhizal fungi, Copper, Desmodium cinereum, Phytoremediation, Toxicity*

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0074

Effect of thermal stress on the antioxidant properties of guava (*Psidium guajava* Linn.) leaf extracts

Hashim, Elizabeth P., Espeso, Erlinda I., Dumelod, Benelyn D.

The effectiveness of guava leaf extracts and known antioxidants after thermal treatment at 200°C was evaluated. The stability was in the order, methanol extract>hexane extract>TBHQ>dichloromethane extract>tocopherol as measured by the ferric thiocyanate method. Heating beyond 60 minutes resulted in reduction of antioxidant activity. Heat stability of guava leaf extracts was comparable to TBHQ. **(Author's abstract)**

Keywords: *Biology, Antioxidant, Psidium guajava Linn., Guava, Tocopherol, Tertiary butyl hydroquinone*

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(Filipiniana Analytics)
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0075

Effects of tritiated water on the digestive tract of Pila luzonica embryos

Cruz-Ramos, Bess, CariÃ±o, Virgina S.

The effects of tritiated water on the development of *P. Luzonica* were determined in terms of the histology of 5 veliger stages using 3 different tritium concentrations, namely, 3.7 Bq/ml, 3.7 x 10^2 Bq/ml and 3.7 x 10^4 Bq/ml.

An HTO concentration of at least 3.7 x 10^2 Bq/ml brought about histological abnormalities in the digestive tract in the 5 veliger stages. The structure in the veliger most affected by HTO is the larval stomach. To a lesser degree, differences were found in the larval intestine and stomodaeum. **(Author's abstract)**

Keywords: *Biology, Pila luzonica, Tilapia nilotica, Aquatic organisms*

The Nucleus: Official Journal of the Radioisotope Society of the Philippines, Inc, Volume No. Issue No. , 63-70
(Filipiniana Analytics)
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0076

Evaluation of carrot (*Daucus carota* Linn.), squash (*Curcurbita maxima* Dutch) and tomato (*Lycopersicon esculentum* Miller) as substrate in wine making as affected by two conditions of lighting

CaÃ±averal, M. V., Pineda,

This study aimed to evaluate carrot (*Daucus carota* Linn.), squash (*Curcurbita maxima* Dutch) and tomato (*Lycopersicon esculentum* Miller) as substrate in wine making as affected by two conditions of lighting. Each substrate was fermented in two

types of bottle, a clear bottle and an amber bottle to prevent the passage of light. Six treatment set – ups were prepared containing two liters of substrates with three replicates in three trials.

The study revealed that light has no significant effect on fermentation. The type of bottle used did not affect the fermentation but there is variation on results based on the type of substrate used.

The results showed that tomato has the lowest sugar after fermentation, giving it high alcohol content and low pH, followed by carrot, and lastly, squash. Among the treatments, also, tomato was the most accepted by the evaluators, followed by carrot and squash, respectively. **(Author's abstract)**

Keywords: *Biology, Daucus carota Linn., Curcurbita maxima Dutch, Lycopersicon esculentum Miller, Carrot, Squash, Tomato*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0077

Evaluation of different wild strains of "*Kudit*" (*Schizophylum commune* Fr.) for their antibacterial properties

Suarez, M. D. G., Abella

Germplasm collection and isolation of different wild strains of "*kudit*" (*Schizophylum commune* Fr.) was conducted to evaluate the mycelial growth performance and their antibacterial property. Ten different wild strain of "*kudit*" were collected and isolated from different localities. Their growth performance was evaluated on coconut water as liquid substrate and rice-bran decoction gulaman as solid medium. The antibacterial activity of immobilized mycelia of different strains of "*Kudit*" was evaluated against *E. coli* and *S. aureus*.

Results showed that San Miguel Bulacan 1 strain obtained the shortest incubation period comparable to that of Abucay Batan strain having a mean 15.33 days. San Miguel Bulacan 3 strain had the shortest incubation period. Muñoz N.E. strain was superior for being the fastest growing strain that occupied the entire plate within 5 days of incubation period.

As for antibacterial activity, immobilized mycelia of different strains of "*kudit*" had shown different antibacterial activity against the gram- negative bacterium (*E. coli*) and gram positive bacterium (*S. aureus*). Strains of Gapan N.E. 3, 4, and San Isidro N.E. did not show any zone of inhibition against both bacteria. However, Gapan N.E. 1 strain showed zone of inhibition only on gram – negative bacterium. Statistical analysis revealed that the different strains of "*kudit*" were significantly different in suppressing the growth of gram –negative bacteria and gram positive bacteria. (**Author's abstract**)

Keywords: *Biology, Kudit, Schizophylum commune Fr., E. coli, S. aureus*

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0078

Evaluation of polyethylenimine/carrageenan multi-layer for antibacterial activity of pathogenic bacteria

Briones, Annabelle V., Sato, Toshinori, Bigol, Urcila G.

The purpose of this study is to investigate the antibacterial activity of multi-layer of polyethylenimine (PEI) and carrageenan (κ, ι, λ) for potential use as coating on biomaterial surface. The multi-layer of PEI/carrageenan was formed using the layer-by-

layer assembly absorption technique and was monitored by atomic force microscopy (AFM) and biomolecular interaction analysis. All samples were prepared in phosphate buffer solution and applied to mica disk alternately. The micrographs showed the formation of bi-layer of polyethylenimine and carrageenan (κ, ι, λ) as observed in the change of height of the layer and surface morphology. The bimolecular binding of carrageenan with polyethylenimine was also investigated using a biosensor. The sensorgram showed that PEI interacted molecularly with carrageenan. Results were: 1,916.08 pg/nm^2 for κ*appa* type; 1,844.1 pg/nm^2 for ι*ota* type and 6,074.24 pg/nm^2 for *lambda* type. The multi-layer showed antibacterial activity against *Enterobacter cloaceae, Staphylococcus aureus* and enterococcal strains (*Enterococcus faecalis* (EF) 29212 and 29505). **(Author's abstract)**

Keywords: *Biology, Carrageenan, Polyethylenimine, Atomic force microscopy, Anti-bacterial, Multi-layer*

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0079

The fermentation and TLC profiles of the broth culture of *Streptomyces* isolates USTCMS - 7 exhibiting broad antibacterial, antifungal and herbicidal activities

Quinto, Edward A., Krohn, Karsten

In the course of screening various soil samples collected within the vicinity of Metro Manila for indigenous *Streptomyces* species elaborating bioactive properties, an isolates designated as *Streptomyces* USTCMS-7 exhibited a unique ability of having significantly inhibted all the test organisms assayed thus far. The broad antimicrobial activity of the fermentation broth of *Streptomyces* Isolate USTCMS-7 was monitored using *Escherichia coli, Bacillus megaterium* and the fungi *Penicillium sp*., *Ustilago violaceum, Saccharomyces cerevisae, Cladosporium cucumerinum and Fusarium oxysporum*. The profile of the antimicrobial activity of the fermentation broth over a 16-day incubation period with agitation at 280 rpm and at an averaged room temperature of 25°C seems to indicate the presence of 4 antimicrobial agents. Two are active against the bacteria, one for the yeasts and one for the filamentous fungi.

TLC profile of the hexane and ethyl acetate extracts of the broth culture of *Streptomyces* Isolates USTCMS-7 using various spray reagents yielded multiple spots indicative of the presence of several secondary metabolites in the fermentation medium. The ethanolic extract of *Streptomyces* Isolate USTCMS-7 grown in Malt Extract Yeast Extract Agar for two weeks showed significant inhibitory effect on the germination of *Phaseolus aurues* (Mung Beans) seedlings yielding a 46% growth inhibition. The ethanolic extract shows promising herbicidal activity. **(Author's abstract)**

Keywords: *Biology, Streptomyces, Escherichia coli, Bacillus megaterium, Fungi Penicillium sp., Ustilago violaceum, Saccharomyces cerevisae, Cladosporium cucumerinum, Fusarium oxysporum*

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0080

Formulation of rice hull – based spawn substrates for different strains of *Volvariella volvacea* (Bull ex.Fr.) singer

Suarez, M. C. G., Abella,

This study was conducted to develop rice hull – based spawn formulation for the production of *V. volvacea* (Bull ex. Fr.) Singer. Growth performance of twenty strains of *V. volvacea* in rice bran decoction gulaman (RBDG) and pH 8.0 were determined and compared.

Mycelial growth of three best strains of *V. volvacea* in rice – hull based spawn formulation and appropriate percentage of rice-hull based medium with nutritional supplements, optimum supplement and organic fertilizer that could support efficient mycelial growth were determined.

Results showed that among the twenty strains evaluated. Quirino province, CLSU 1 and Muñoz 1 strains were the three best strains based on the mycelial growth on RBDG (pH 8.0). Formation of chlamydospore was found in all strains except in wild, Quirino province and San Jose 1 strains. CLSU 1, Tarlac, Payatas, Muñoz 1 and Muñoz 3 strains exhibited dense mycelial growth.

Moreover, Quirino province, CLSU 1 and Muñoz 1 strains in ricehull based substrate supplemented with either 5% rice bran and 5% corn bran revealed the shortest incubation period. Three best strains of *V. volvacea* grown in rice hull based supplement with 5% of rice bran were better than 5% corn bran. Quirino province, CLSU 1 and Muñoz 1 strains grown in rice hull based medium supplemented with 5% organic fertilizer recorded the shortest incubation period. **(Author's abstract)**

Keywords: *Biology, Volvariella volvacea, Rice hull, Rice bran decoction gulaman (RBDG)*

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(Filipiniana Analytics)
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0081

Four new species of *Nepenthes* in two mountain ecosystems in Southern Philippines

Amoroso, Victor B., Coritico, Fulgent P.

Plants of *Nepenthes* are carnivorous which form specialized pitcher leaves that attract, capture, kill and digest insects and other small animals. Thus far, 23 species were reported in the Philippines, of which 23 are endemic to the country. A survey conducted in Mt. Kiamo, Kibalabag, Bukidnon and Mt. Hamiguitan, Davao Oriental revealed four species of *Nepenthes* new to science. With these 4 new species, the Philippines will now have 27 species of *Nepenthes* making the Philippines third with the greatest number of species worldwide. The new species of *Nepenthes* include: *N. ceciliae, N. pulchra, N. micramphora* and *N. hamiguitanensis*. *N. ceciliae* and *N. pulchra* are presently known only from Mount Kiamo where these grow terrestrially on ultramafic soils at altitudes from 1300-1800m. On the other hand *N. hamiguitanensis* and *N. micramphora* were found in Mount Hamiguitan in southern Mindanao, where these occur from approximately 1000-1635 m altitude. Of the four new species, *N. micramphora* and *N. hamiguitanensis* are critically endangered while *N. pulchra* and *N. ceciliae* are endangered and vulnerable status, respectively. **(Author's abstract)**

Keywords: *Biology, Pitcher plants, Threatened, Mt. Kiamo, Mt. Hamiguitan, Mindanao*

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0082

Frogs in abaca-dominated farms of San Miguel, Catanduanes, Luzon

Masagca, Jimmy T., Tribiana, Estrella T., Vargas, Brandy R.

The significance of frogs as bio-indicator of pollution, their economic importance, as well as their threatening status in the Philippines archipelago motivated the researchers to carry out this study on the diversity of frogs in San Miguel, Catanduanes Island, Luzon. Distribution, relative abundance and assessment of the over-all habitat of the frog species were determined in this investigation. Ten quadrats were made on the 10 square kilometer-study site in San Marcos, San Miguel each representing a particular type of habitat about 400 square meters and with an interval of 500m from each quadrat. Based on the 8-month survey in 2002 and another 2 months survey last 2005, there were 6 species that were identified and another 2 unidentified collections

were noted. These frogs species were: *Rana erythreae* (Ranidae), *R. limnocaris*(Ranidae), *Racophorus pardalis* (Racophoridae), *Polypedates leocomystax*, *Occidozyga laevis* and *Kaloula kokacci* (Microhylidae). The other unidentified collections belong to the genera; *Racophorus* and *Kaloula. K.kokacci* is an endemic species of the island while *R. pardalis* was found to be rare. Data show that *R. limnocharis, K. kokacci* and *P. leucomystax* were found to be abundant in the study site. *O.laevis* was seen on a specific habitat only in the abaca areas, while *R. pardalis* was hard to find. However, the dominance index value of 1.001 shows that no particular species gained advantage over the others. Moreover, the computed Shannon index value of 0.7026 show that frog species diversity is high in San Marcos, San Miguel. ANOVA of the frequency distribution of frog species present in the study site during the months of April and December obtained a computed value of 1.61 that is relatively lower than the tabular value of F at α=5.05 level significance. This indicates that there is no significant difference in the distribution and diversity of frogs during the wet and dry months of the year. Follow-up studies are now underway so that the identity of the 2 frogs species will be confirmed as well as the further investigation of the endemic microhylid *K.kokacii* as to its habitat and other ecological characteristics. Of recent, Masagca (2009) noted decline of this endemic frog and other vanishing species of the Gray's Monitor lizard, *V.olivaceous* in the environs of Solong Falls in the town of San Miguel due to various developmental activities. **(Author's abstract)**

Keywords: *Biology, Frogs, Diversity, Catanduanes, Kaloula kokacci, Solong Falls*

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0083

Fungi associated with two species of butterflies *Eurema hecabe* L and *Leptosia nina* Fruhstorfer

Castro, B. N., Cruz,

This study was conducted to isolate, identify and classify fungi from two species of butterflies; namely. *Eurema hecabe* L. and *Leptosianina* F. Moreover, this study described the cultural and morphological characteristics of the isolated fungi and describe their ecological importance.

Five specific locations were used as collection sites samples. Six butterflies per species were collected in every station for a total of 60 samples. Potato Dextrose Agar (PDA), Rice Bran Agarand the Oatmeal Agar were used as media Butterflies were cut into 20 pieces according to parts (wings, abdomen, head and legs) and directly plated on solidified agar in plates. Two replicates per media were observed. Cultural examination was done by using triple point inoculation. The morphological characteristics were also studied using agar-block technique.

Six species of fungi belonging to 2 phyla, 3 classes, 4 orders, 4 families and 5 genera were isolated. These were: *Mucor hiemalis, Rhizopus stolonifer, Aspergillus flavus. Aspergillus fumigatus, Curvularia verruculosa, Geotrichum candidum*. All isolated fungi were known pathogens of plants. These six species were isolated from both species of butterflies. **(Author's abstract)**

Keywords: *Biology, Eurema hecabe L, Leptosia nina Fruhstorfer, Fungi, Mucor hiemalis, Rhizopus stolonifer, Aspergillus flavus, Aspergillus fumigatus, Curvularia verruculosa, Geotrichum candidum*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0084

Genetic identification of selected lactic acid bacteria and structural gene elucidation of their bacteriocins

Elegado, Francisco B., Perez, Maria Teresa M., Zendo, Takeshi, Sonomoto, Kenji

In our continuing search for probiotic microorganisms that produce bioactive compounds, we have isolated nine (9) bacteriocinogenic lactic acid bacteria from various sources in the Philippines. Their identities and bacteriocin genes were elucidated through 16S rRNA gene and bacteriocin gene sequencing, respectively, followed by NCBI-BLAST homology search. Four (4) isolates were identified as *Pediococcus acidilactici*, three (3) *Lactobacillus plantarum*, one (1) *Enterococcus durans* and one (1) *Enterococcus faecium*. PCR-based screening using primers for the structural genes of Pediocin AcH or PA-1; Plantaricins A, 423 and NC8 and Enterocins A and B were done. All four *P. acidilactici* isolates were positive for the Pediocin gene while only one *L. plantarum* was positive for the Plantaricin A gene. The bacteriocins generated were at least 98% homologous to the nearest nucleotide sequence of similar bacteriocin in the NCBI-BLAST database. The culture supernatants of *P. acidilactici* 3G8 and 3G3, assayed against standard indicator strains, showed strong antilisterial activities. **(Author's abstract)**

Keywords: *Biology, Lactic acid bacteria, 16S rDNA sequencing, Bacteriocin, Pediococcus acidilactici, Lactobacillus plantarum, Enterococcus durans, Enterococcus faecium*

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0085

Genomic sequence identity of *Haematonectria haematococca* causing twig blight disease of citrus in the Philippines

Yago, Jonar I., Chung, Kuang-Ren

The nucleotide sequence of phytopathogenic fungus *Haematonectria haematoccoca* was identified using the internal transcribed spacer region of the ribosomal RNA gene (rDNA-ITS). The cultured fungus produced 1-celled microconidia and multiple, canoe-shaped macroconidia highly resembling *Fusarium spp.* The inoculated plants kept in a screenhouse started showing the initial twig dieback symptoms in all inoculated branches at 37 days post inoculation (dpi). The appearance of pink perithecia of *H. Haematoccoca* was observed at 45 dpi, similar to those observed in the field. No symptoms were observed on branches treated with water only. *H. haematoccoca* was re-isolated from the symptomatic twigs and displayed similar characteristics as the original strain. There were about 710 bases were identified and sequence analysis of the 5.8S and partial 18S internal transcribed spacers of rDNA amplified with ITS1 and ITS4 primers was deposited at National Center for Biotechnology Information (NCBI) and coded as GenBank Accession No. HQ696788.1 displayed a strong similarity to Fusarium solani (Mart.) Sacc. (Teleomorph: *Haematonectria haematoccoca*). This is the first identification and confirmation of *H. Haematoccoca* causing citrus twig blight in the Philippines. **(Author's abstract)**

Keywords: *Biology, Genomic sequence, Teleomorph, Haematonevtria haematococca, Fusarium solani, Twig blight disease*

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0086

Geographic variation in vegetative and flower morphometry among populations of Lilium philippinense Baker (Liliaceae), an endemic species in the Philippines

Balangcod, Kryssa D., Cuevas, Virginia C., Balangcod, Teodora D.

Lilium philippinense is an endemic species with a narrow geographic distribution along the southwestern part of the Cordillera Central Range, Luzon, Philippines. Recently, its population is decreasing due to over collection and habitat loss. This study aims to establish if the population of this species represents a single population. Morphometric analyses of vegetative and floral characteristics were studied in 23 populations of *L. philippinense*. Morphometric features of the vegetative and floral organs were measured from five plants that were randomly collected from each of the 23 populations. Correlation analysis reveals that most morphometric traits are correlated among the 23 populations. This is supported by principal component analysis suggesting that there is morphometric association among the populations. Elevation significantly correlates with corolla diameter. Using analysis of variance with post hoc tests on the four clusters showed that the populations significantly differ only in corolla diameter and leaf length. Generally, statistical analyses suggest that the 23 *L. philippinense* populations are closely associated with each other and probably represent a single population. The variation in leaf width and corolla diameter can be considered as a start of differentiation among the populations possibly implying selection on these two traits. **(Author's abstract)**

Keywords: *Biology, Cordillera Central Range, Geographic variation, Morphometry, Luzon, Philippines, Lilium philippinense*

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0087

Geometric morphometric analysis of *Arius manillensis* and *Arius dispar* (Siluriformes:Ariidae) populations in Laguna de Bay, Philippines

Santos, Brian S., Quilang, Jonas P.

Geometric morphometrics has become a widely used tool in studying shape variation in fish population. In this study, geometric morphometrics was used to examine shape variation in the sea catfishes *Arius manillensis* and *A. dispar*. The endemic species *A. manillensis* and the native species *A. dispar* constitute major fishery resources in Laguna de Bay. Thus, they are economically important species. The two species look very similar externally, but they can be distinguished by examining the tooth patch morphology on the palate. However, within each species, there are variants of tooth patch morphology. Shape differences between *A. manillensis* and *A. dispar*, between populations, and between variants within each species, were determined. samples were obtained from Binangonan, Tanay, and Calamba areas of Laguna de Bay. Shape differences between species, between morphs within species, and among specimens of different sites were significant, but the groups were difficult to differentiate due to high overlaps in Canonical Variate Analysis (CVA) plots and low Mahalanobis distance-based correct classification percentages. This was attributed to possible introgression between *A. manillensis* and *A. dispar*. **(Author's abstract)**

Keywords: *Biology, Arius dispar, Arius manillensis, Geometric morphometrics, Kanduli, Laguna de Bay, Siluriformes*

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0088

Geometric morphometric analysis of the head capsule of the rice bug, *Leptocorisa oratorius* Fabricius (hemiptera: Alydidae)

Torres, Mark Anthony J., Lomansoc, Jade Kenneth, Demayo, Cesar G.

The rice bug *Leptocorisa oratorius* Fabricius is an insect pest of rice that feeds on developing rice grains reducing the yield and quality of rice. Identification of this pest has been vague owing to variability in its external morphological characteristics. It has been referred to as *L. acuta* (Thunb.) and *L. varicornis in some literature*. In this study, the shapes of the head capsule were compared in populations of the rice bug using a landmark-based geometric morphometric method, and analysis of relative warp

scores. Samples were collected from three different localities of which 83 were from Alubijid, Misamis Oriental; 19 from Maigo, Lanao del Norte; and 82 from Buug, Zamboanga Sibugay. Of the 184 individuals, 116 were classified as males and 68 were classified as females. Images of the dissected head capsule were acquired with the use of MacronCam and Leica ES2 microscope. Landmark analyses was done on the x- and y- coordinates of the head outline which totalled to 35 landmark points. The results showed variability within and among populations of the rice bugs in the regions at the labrum, vertex, and the outline of the compound eye insertion. This variability may represent unique genotypes and this geographic variation may have an important effect on expanding population sizes in following years which should be considered in control methods. **(Author's abstract)**

Keywords: *Biology, Canonical variate analysis, Discriminant function analysis, Geometric morphometrics, Leptocorisa oratorius (Fabricius), Relative warps analysis*

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0089

Germplasm collection and screening of *Volvariella volvacea* for their antibacterial properties

Tordil, I. B., Abella

This study collected and evaluated the growth performance of the wild strains of *Volvariella volvacea*. Antibacterial properties of the different strains were also evaluated. Collected strain were photo-documented *in-situ*. Pure cultures were prepared using Rice Bran Decoction with pH 8.0. Comparatibe mycelial growth observed in 7 days. *In-vitro* bio-assay using immobilized mycelial disc of the different strains was used for testing and anti-bacterial property against E. coli and S. aureus

Results showed that among the 20 wild strains of *Volvariella volvacea*, Quirino strain was found to be superior for being the fastest growing strain.

Volvariella volvacea manifested antibacterial properties through the formation of zone of inhibitation. Tarlac Strain was found to be the most effective against *E. coli* with the widest mean zone of inhibition of 10.17 mm (6 hrs),, 10.17 mm (12 hrs), 10.67 mm (18 hrs), 11.00 mm (24 hrs), 12.00 mm (30 hrs), 12.17 mm (36 hrs) 12.33 mm (42 hrs) and 12.83 mm (48 hrs). On the other hand the different strains of *V. volvacea* exhibited different manifestations against S. aureus. From 6-18 hours of incubation, the Tarlac strain had the highest mean of 10.00 mm (6 hrs), 10.17 mm (12 hrs) and 10.17 mm (18 hrs). However, for 24 hrs of incubation, Pangasinan strain 1 recorded the highest mean of 10.67 mm (30 hrs) and from 30 to 48 hours of incubation, Talavera strain got the highest mean of 11.00 mm (30 hrs), 12.17 mm (36 hrs), 13.00 mm (42 hrs), and 13.00 mm (48 hrs). Some strains of *Volvariella volvacea* including the CLSU strain, DOST strain, Muñoz strain1, San Jose strain 2 and Bagong Sikat Strain did not produce zone of inhibition against *E. coli* and *S. aureus*. **(Author's abstract)**

Keywords: *Biology, Volvariella volvacea, E. coli, S. aureus, In-situ*

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0090

Germplasm collection, isolation and evaluation of the mycelial growth performance of CLSU's *Auriculari polytricha* (Mont) Sacc. for their antibacterial property

Santos, J. M., Abella

Eight identified wild strain of *Auriculari polytricha* were collected from Central Luzon State University campus and were isolated. The mycelial growth performance of the different strains was assessed. These wild strains were evaluated for its inhibitory effect on the growth of gram-negative *Escherechia coli* and gram-positive *Staphylococcus aureus* using immobilized mycelial disc technique.

Results showed that growth performance of each strain varied from one another. Among the eight strains evaluated, Strain 01 registered the highest growth rate within 5 days of incubation period while Strain 05 showed the lowest growth rate.

As for its antibacterial activity, seven out of the eight strain showed antibacterial property against *E. coli* and *S. aureus*. Strain 01 registered the widest zone of inhibition against *E. coli* and Strain 08 against *S. aureus* within 6 hours to 48 hours of incubation. Strain 02 did not exhibit inhibitory effect against the two test bacteria. **(Author's abstract)**

Keywords: *Biology, Auriculari polytricha (Mont) Sacc., E. coli, S. aureus, Central Luzon State University*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0091

Grass pollen-specific IgE levels of selected allergic patients in Bayombong, Nueva Vizcaya

Cabauatan, Clarissa R., Ramos, John Donnie A.

Allergy is a major health problem and its proportion in all populations is steadily increasing. Of the potential allergen sources, pollen grains affect 40% of allergic individuals and significantly, 86.5% of them are specific to grass pollen grains. To investigate the inadequate pollen allergy data in the Philippines, the effects of grass pollen grains on allergic patients were studied. Allergic patients (n=141) having the allergic symptoms associated with asthma, dermatitis, rhinitis, and conjunctivitis and non-allergic subjects (n=141) were recruited in Bayombong, Nueva Vizcaya. The study area has 60% grassland and 17% agricultural land where pollen grains from common grasses such *Cynodon dactylon, Axonopus compressus, Saccharum spontaneum, Sporobolus indicus, Chloris barbata, Oryza sativa, Zea mays,* and *Eleusine indica* were collected. This collection was simultaneously done during blood sampling of the subjects. The total IgE and pollen-specific IgE levels between allergic and non-allergic subjects using the enzyme-linked immunosorbent assay (ELISA) revealed a significant difference ($P<0.0001$) between the two groups. IgE reactivity (%) of the studied grass pollen allergens were 23.40, 13.48, 57.45, 89.36, 90.78, 100, 98.58, 100, 49.65, and 9.29 respectively. Among the pollen allergens, specific IgE levels of the patients showed a significant correlation ($P<0.001$). Western blot analysis presented reactive proteins from all the aqueous pollen extracts. Apparently, *S. indicus* and *C. barbata* can now be added to the list of potential grass pollen grains allergen. The profiling of allergic patients and characterization of grass pollen allergens can contribute to the baseline information for allergy researches and can contribute to more accurate and specific diagnostic and therapeutic protocols. **(Author's abstract)**

Keywords: *Biology, Allergy, Grass pollen allergens, Total IgE level, Pollen-specific IgE level*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 32/1 2010

0092

Growth performance of *Mutinus sp* and antibacterial property against *Pseudomonas aeruginosa* and *Corynebacterium genitalium*

Gabuyo, X. B., Abella

The growth performance of *Mutinus sp.* and its antibacterial property was evaluated. Special reference was on the influence of physical (temperature, light and aeration) and nutritional (types of culture media) factors. *Pseudomonas aeruginosa* and *Corynebacterium genitalium* was used to test the anti-bacterial property. Rice bran decoction gulaman favored rapid growth of its mycelia when incubated when incubated at 32 °C either under dark or lighted conditions. Plate cultures of *Mutinus sp* whether parafilm sealed or unsealed did not significantly influence growth.

In order to evaluate the antibacterial activity, immobilized mycelia of *Mutinus sp.* were tested against two bacterial; namely, *Pseudomonas aeruginosa* and *Corynebacterium genitalium*. Results showed that immobilized mycelia of *Mutinus sp* exhibited an antibacterial activity on *P. aeruginosa* with the formation of zone inhibition. However, *Mutinus sp* did not show any zone of inhibition against *C. Genitalium*. **(Author's abstract)**

Keywords: *Biology, Mutinus sp, Pseudomonas aeruginosa, Corynebacterium genitalium*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0093

Heavy metals in bivalves of the harbor area of Cebu City (Philippines)

Theede, Hans, AliÃ±o, Porfirio M., Rosito, Ruby M.

This preliminary report shows that the heavy metal content (Cu, Cd, Pb) of marine bivalves from shallow parts around Cebu City Harbor area varies strongly among species and independently of each other. Highest concentrations of copper (up to 20 and 50 µg g^{-1} dry weight), and lead (8 µg g^{-1}) in the harbor area , and of cadmium (up to 20 µg g^{-1}) near Cordova, point to moderate heavy metal pollution in these areas. More detailed observations are necessary in order to monitor the heavy metal content in species utilized as human food. **(Author's abstract)**

Keywords: *Biology, Copper, Cadmium, Lead*

The Philippine Scientist, Volume No. Issue No. , 63-66
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0094

Identification of *Chryseobacterium indologenes* from salt using the analytical profile index API 20E

Franco, Prima Fe R., Gaoat, Cecile A., Acosta, Rowena

Salt is one of the most important seasonings of Filipino cuisines whether eaten as cooked or as raw food. Some of the available salt in the market are produced locally while others are manufactured and packaged carefully. This study is focused on the determination of microbial load of salt sampled from various sources and on the identification of the isolate using API 20E Identification System. The samples were inoculated into sterile Sea Water Complex Medium and incubated overnight at ambient temperature. Results show that only one type of bacterium was able to grow and survive in the medium used. The isolate is a halophile that could tolerate up to 39% salt concentration. It is a Gram negative rod with its colony form as circular, elevation as pulvinate and margin as entire. Its slant growth type is echinulate. The isolate is identified as *Chryseobacterium indologenes* using API 20E. Surprisingly, this is a pathogen associated with Urinary Tract Infection (UTI) as well as non-catheter related bacteremia. It is a very rare pathogen. Results indicate the possibility of salt samples as sources on infection of humans from the food that they eat either cooked or raw with salt as seasoning. **(Author's abstract)**

Keywords: *Biology, API, Salt, Halophile, Chryseobacterium*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0095

Immunoglobulin E binding activity of recombinant and native Blo † 11 allergens

Ramos, John Donnie A.

The full-length Blo t 11 alergen was expressed as a GST-fusion protein in E. coli by IPTG induction and purified by affinity chromatography using an Agarose-Glutathione column. Fractions containing recombinant Blo t 11, resolved as 128 kD protein, were pooled and quantified using the BioRad Protein Assay. Native Blo t 11 was purified from a *Blomia tropicalis* (Bt) aqueous extract using a Blo t 11 monoclonal antibody affinity column. Two milliliters of the Bt extract yielded 467 ng of native Blo t 11 which was resolved as ~60 kD in an SDS-PAGE. The immunoglobulin E binding activity of the purified allergens was determined by enzyme-linked immunosorbent assay using a panel of 110 atopic Filipino patients' sera and 85 non-atopic sera. The native Blo t 11 allergen registered an IgE reactivity of 63% (69/110) while the recombinant Blo t 11 registered 57% (63/110). The Blo t 11 allergen can inhibit up to 63% IgE binding activity of Bt aqueous extract. Results presented herein demonstrate the clinical importance of Blo t 11 allergen as a triggering factor for allergies among Filipino atopic patients thus a potential reagent for diagnosis and immunotherapy of house dust mite allergy in the local setting. **(Author's abstract)**

Keywords: *Biology, Blo â€ 11, House dust mite, Blomia tropicalis, Allergen*

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(Filipiniana Analytics)
Fil(S) Q181 A81 v55 2007

0096

Immunostimulation of Nile tilapia against *Aeromonas hydrophila* using selected mushrooms

The study evaluated the effect of four varieties of mushrooms as immunostimulant to Nile Tilapia (*Oreochromis niloticus*) against *Aeromonas hydrophila*. These mushrooms were *Pleurotus sajor* caju, *Volvarila volvacea, Auricularia auricula* and *Ganoderma lucidum*,

Male Nile tilapia numbering 270 were equally distributed in six treatments. The mushrooms were incorporated in the diet. Fish were fed with commercial feeds (negative control), *Pleurotus, Volvariela, Auricularia, Ganoderma* and supracell (positive immunostimulant).

Fish were fed for two weeks and subjected to immunity test against *Aeromonas hydrophila* intraperitoneal post inoculation for 96 hours.

Efficacies of mushrooms as immunostimulant were expressed in percentage mortality, relative percent survival after 96 hours of monitoring and clinical signs of infections.

The study showed that fish fed and supplemented with mushrooms (*Pleurotus sajor* caju, *Vovarila volvacea, Auricularia auricular* and *Ganoderma lucidum*) had significantly lower percentage of mortality and lesser clinical signs of infection than the negative control. Relative percent survival of fish fed with *Volvariela* and *Pleurotus* were significantly comparable to supracell (the positive control), a commercial fish immunostimulant.

The study confirmed that mushroom supplementation increases fish resistance against *Aeromonas hydrophila* and therefore may serve as an immunostimulant to Nile Tilapia. Furthermore, *Pleurotus* and *Volvariela* are more efficient immunostimulant against *Aeromonas hydrophila* than *Ganoderma* and *Auricularia*. (**Author's abstract**)

Keywords: *Biology, Aeromonas hydrophila, Nile tilapia, Mushrooms , Oreochromis niloticus, Pleurotus sajor caju, Volvarila volvacea, Auricularia auricula, Ganoderma lucidum*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0097

Inflorescence and leaf morphology of some wild gingers (*Zingiberaceae*) recorded from Eastern Mindanao, Philippines

Acma, Florfe M., Gruezo, William Sm., Buot, Jr., Inocencio E., Dalisay, Teresita U., Florece, Leonardo M.

The family Zingiberaceae is the largest family of the Order Zingiberales and is composed of important ornamental as well as medicinal species which are utilized by the local people. However, the family is poorly taxonomically known. The inflorescences and leaves of some gingers were studied morphologically. Further, leaf epidermal features were described using clearing technique to expose the anatomical details. These were supplemented with botanical field studies to Mt. Hamiguitan, Davao Oriental, Bislig Experimental Forest, Surigao del Sur and Hinatuan logged-over forest, Surigao del Sur. Herbarium studies to UPLB Herbarium, Philippine National Herbarium and Singapore Botanical Gardens Herbarium were done to identify the species using herbarium materials and the protologues. Results of the study showed the presence of *Amomum microchiela* (Ridl.) Merr., *A. muricarpum* Elm., *Etlingera dalican* (Elm.) Poulsen, *E. philippinensis* (Ridl.) R.M. Smith, *Geocharis fusiformis* (Ridl.) R.M. Smith and *Hornstedtia conoidea* Ridl. The important characters which were diagnostic in the identification of the species were the texture and size of floral bracts, characteristic of the labellum and calyx and shape of the inflorescence. The shape, texture and length of ligule, length of petiole of leaves were also useful in the delineation of species. Results of this study support the taxonomic transfer of these Philippine species from genus *Amomum* to the present generic placements. **(Author's abstract)**

Keywords: *Biology, Zingiberaceae, Inflorescence, Amomum, Etlingera, Hornstedtia, Bracts, Labellum*

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(Filipiniana Analytics)
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0098

The influence of cadmium bioaccumulation on the chlorophyll content of aquatic weed, *Pistia stratiotes* Linn

Baysa, Marieta C.

The free-floating weed, *Pistia stratiotes* Linn., was examined for its phytoremediation potential for Cadmium (Cd) absorption and accumulation in freshwater habitats. *Pistia* plants were grown in half-strength Hoagland nutrient solution amended with different Cd concentrations (0, 0.1, 0.5, 1.0 and 3.0 mg CdL^{-1}) for 14 days inside the greenhouse. The Cd concentration in plant tissues significantly increased with increasing Cd levels in the culture solution. The biological concentration factor (BCF) significantly decreased in plants exposed to 3.0 mg Cd L. Increasing Cd amendments significantly reduced the total leaf chlorophyll content. **(Author's abstract)**

Keywords: *Biology, Pistia stratiotes Linn, Aquatic weed, Cadmium, Bioaccumulation, Water pollution, Total chlorophyll content*

Acta Manilana, Volume No. Issue No. , 33-36
(Filipiniana Analytics)
Fil(S) Q181 A81 v50 2002

0099

Initial evaluation of hybrid varieties in rice wine production using indigenous ubod

Pineda, F. G., Capan, N.

Experiment was conducted to maximize the use f hybrid varieties for wine production. Four hybrid varieties; namely SL – 8, Bigante, Mestizo 1 and Mestizo 2 and a glutinous rice variety, Buenkitan were used.

Wine harvested from SL – 8 had the lowest amount of total soluble solids, most acidic and highest amount of alcohol content per 50 ml distillate. However, Meztizo 1 had the highest amount of total soluble solids and the least acidic. It possessed the lowest amount of alcohol content per 50ml distillate.

Sensory evaluation revealed that the Meztizo varieties were the most favored wine because of its sweet taste. **(Author's abstract)**

Keywords: *Biology, SL-8, Bigante, Mestizo 1, Mestizo 2, Glutinous rice variety*

CLSU Scientific Journal, Volume No. 25 Issue No. 1, 50
(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0100

Interaction of molds associated with crown rot of guava (Psidium guafava L.) fruit

Valentino, M. G., Fandialan,

This study determined the interaction of pathogenic and non-pathogenic fungi associated with crown rot. Pathogenicity test was conducted on eight species of molds. These were *Aspergillus flavus* Link, *Aspergillus fumigatus* Fresenius, *Aspergillus japonicus* Saito var *japonicus*, *Aspergillus tamarli* Kita, *Aspergillus niger* van Tiegh, *Fusarium verticilliodes* (Saccardo) Niremberge, *Fusarium sambucinum* Fuckel and *Lasiodiplodia theobromae* (Patouillard) Griffon and Maublanc.

All species belonging to genus *Aspergillus* were found to be pathogenic. In- vitro interaction of *Lasiodiplodia theobromae* (Patouillard) Griffon and Maublanc and *Fusarium sambucinum* Fuckel with the pathogenic fungi resulted in antagonistic association.

Lasiodiplodia theobromae (Patouillard) Griffon and Maublane and *Fusarium sambucinum* Fuckel were observed to inhibit the growth of five species of *Aspergillus*, because of rapid growth of non-pathogenic fungi. Zone of inhibition was observed when *Fusarium sambucinum* was crossed with the pathogenic fungi due to the diffusion of fungitoxin or fungistatic metabolite, furasic acid However, the rapid growth of *Fusarium sambucinum*, resulted in antagonistic association.

Fusarium verticilliodes (Saccardo) Niremberge, a non-pathogenic fungus was antagonized by *Aspergillus niger* and *Aspergillus tamari*.

Mutual antagonism was observed when *Fusarium verticilliodes* was crossed with *Aspergillus japonicus Aspergillus flavus* and *Aspergillus fumigatus*.

These results showed that *Lasiodiplodia theobromae* and *Fusarium sambucinumi* are potential biological control agents against pathogenic fungi. **(Author's abstract)**

Keywords: *Biology, Psidium guafava L., Guava, Aspergillus flavus Link, Aspergillus fumigatus Fresenius, Aspergillus japonicus Saito var japonicus, Aspergillus tomarli Kita, Aspergillus niger van Tiegh, Fusarium verticilliodes (Saccardo) Niremberge, Fusarium sambucinum Fuckel, Lasiodiplodia theobromae (Patouillard)*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0101

Interaction of molds associated with stem-end rot in avocado (Persea americana Mill.) fruit

Suratos, S. C. M., Fandialan,

This study was conducted to determine the different interaction effect of molds associated with stem-end rot of avocado fruit. Seven identified molds were utilized in this research. These were *Botrytis cinerea, Fusarium equisett, Fusarium monliforme, Fusarium oxysporum, Fusarium solani, Phoma sp.* and *Rhizopus stolonifer*.

Pathogenicity test was conducted using *in –vivo* technique to determine which of the given molds positively caused stem-end rot in avocado fruit.

Three species were positive to the test. These were *Fusarium equisett, Fusarium monliforme* and *Fusarium solani*. The other four organisms (*Botrytis cinerea, Fusarium oxysporum, Phoma* sp. and *Rhizopus stolonifer*) were negative in causing stem-end rot on the avocado fruit. Thus, these are non- pathogenic.

The morphological and cultural characteristics of the pathogenic mold were determined to ensure that the re-isolated molds from the infected host were the ones that were originally inoculated into the fruit. The interactions between the identified molds were established using in-vitro technique.

Neutralism was not present among the treatments and neither was mutualistic interaction. Antagonism was present in all treatments that contained a pathogenic mold a non – pathogenic mold growing together on the same Petri plate. All non-pathogenic molds were designated as potential biocontrol agents. **(Author's abstract)**

Keywords: *Biology, Avocado, Persea americana Mill., Botrytis cineria, Fusarium equisett, Fusarium monliforme, Fusarium oxysporum, Fusarium solani, Phoma sp., Rhizopus stolonifer*

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0102

The iron-sulfur cluster in the homoaconitase protein is a nanosensor involved in lysine biosynthetic pathway regulation

Teves, Franco G.

The cubane structure of the iron-sulfur cluster present in the homoaconitase protein of *Penicillium chrysogenum* is important in the catalytic conversion of homocitrate to homoisocitrate. The effect of disruption of the cubane structure on the regulation of the lysine biosynthetic pathway was investigated in this study. A mutant strain of *P. chrysogenum* auxotrophic for lysine was used as a source of the non-functional homoaconitase gene with a point mutation within the iron-sulfur cluster. Iron loading and chelation experiments were conducted to determine the effect of iron availability on homoaconitase function in the wild type *P. chrysogenum*. Expression levels of other genes in the pathway, namely, homocitrate synthase and alpha-aminoadipate reductase were monitored in the mutant and wild type strains by standard northern hybridization. Results show that the point mutation (A^{1465}/C^{1465}) within the iron sulfur cluster of the homoaconitase gene led to loss of its catalytic activity and to constitutive positive regulation of homocitrate synthase and alpha-aminoadipate reductase. Increase in gene expression is four- to five-fold for homocitrate synthase and seven- to eight-fold for alpha aminoadipate reductase. Iron chelation in the wild type strain also led to loss of catalytic activity of homoaconitase and acquisition of regulatory functions leading to upregulation of the two other

genes. The cubane structure in the homoaconitase protein therefore serves as a nanosensor for the availability of iron in the cell, and is most probably subject to global iron metabolism. The observation that iron availability also affects beta-lactam production in *P. chrysogenum* can now be better understood since both lysine and beta-lactam production branch out from the same alpha-aminoadipate pathway. Because the redox level in the cell observably affects the formation of the cubane cluster, an additional nanosensor function of the cluster is possibly that for sensing the intracellular oxygen levels leading to up- or down-regulation of the entire pathway. **(Author's abstract)**

Keywords: *Biology, Alpha-aminoadipate reductase, Homoaconitase, Homocitrate*

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0103

Lawn culture of *Schizophyllum commune* fr. on selected tropical fruit substrates

de La Cruz, Liezel F., Reyes, Renato G., Kalaw, Sofronio P.

Schizophyllum commune Fr. is a wild edible mushroom that usually grows in decomposing logs during rainy season. This mushroom is known to produce an extracellular polysaccharide called schizophyllan which has been proven to have several pharmaceutical properties. Mycelial production of this mushroom is coupled with the production of schizophyllan. In our desire to produce the mycelia and schizophyllan we evaluated the mycelial performance of three strains of *S. commune* on coconut water and selected tropical fruit extract such as pineapple, watermelon, tomato, papaya and mango juice in lawn culture. Lawn culture is a technique in which the growth of mycelia is on the surface of the medium which leads to the formation of mycelial mat in lawn form. Regardless of fruit extract used, wild strain 1 recorded the shortest number of days to total mycelial ramification with a mean of 7 days, while ATCC 38548 strain had the longest number of days with a mean of 13 days. No significant differences in mycelial weight, volume loss of the fruit extract, final pH and total soluble solids (TSS) were noted. Among the different fruit extracts evaluated, watermelon extract produced the heaviest mycelial weight (67.58 mg), highest final pH (7.85) and the highest TSS loss (3.83 % Brix). Moreover, statistical analysis revealed that the volume loss of the fruit extract was comparable with each other. **(Author's abstract)**

Keywords: *Tropical fruits, Schizophyllum commune, Schizophyllan, Broth culture, Mycelia, Biology*

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0104

Medically important mosquitoes (Diptera: Culicidae) identified in rural barangay Binubusan, Lian, Batangas Province, Philippines

Santiago, Anna Theresa A., Claveria, Florencia G.

Larval mosquito collection was performed in Barangay Binubusan, Lian Municipality, Batangas Province during the last quarter of 2008 from October to December to determine the mosquito populations present in the area. Mosquito larvae were collected from various habitats, namely: rice paddy, sunny pond, open residential canal, shaded pond, and abandoned tire. A dichotomous key was devised for the identification of local mosquito fauna. A total of 1,128 mosquito larvae were collected during the study period, comprising 958 (84.93%) *Culex*, 125 (11.08%) *Aedes*, and 45 (3.99%) *Anopheles*. The highest larval collection was recorded in November consisting of 100% *Culex* spp. Five *Culex* species were identified: *Culex quinquefasciatus* (51.86%), *Culex vishnui* (14.0%), *Culex tritaeniorhynchus* (9.84%), *Culex whitmorei* (8.78%) and the first reported presence of *Culex mimeticus* (0.53%) in the country. *Aedes* species were represented by *Aedes vexans* (5.94%), *Aedes aegypti* (4.34%), and *Aedes niveus* (0.80%). Anopheline mosquitoes were represented only by *Anopheles flavoristris* (3.99%). Of the species

identified, only *Ae. aegypti* and *An. flavirostris* have been documented of public health importance in the country. **(Author's abstract)**

Keywords: *Biology, Aedes aegypti, Anopheles flavirostris, Culex quimquefasciatus, Dichotomous key*

Philippine Journal of Science, Volume No. 141 Issue No. 1, 103-109
(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0105

Mineralogy and component distribution of recent carbonate sediments of the Olango reef flat, Camotes Sea, Philippines

Lidicky, Rolf, Futterer, Dieter

The recent shallow water carbonate sediments were studied on the Olango reef flat. Twenty-six surface samples were taken for mineralogical studies by X-ray diffraction techniques, grain size analysis, and component analysis supplemented by a microscope. Three types of carbonate associations were distinguished showing the depositional structure of the reef flat. **(Author's abstract)**

Keywords: *Biology, Shallow water, X-ray diffraction, Grain size analysis*

The Philippine Scientist, Volume No. Issue No. , 119-132
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0106

Molecular detection and classification of a new *Theileria* species in the Philippines

Belotindos, Lawrence P., Lazaro, Jonathan V., Villanueva, Marvin A., Mingala, Claro N.

Theileriosis is a tick-borne disease of domestic and wild animals that cause devastating economic loss in livestock all over the world. Theileriosis is not yet documented in the Philippines as compared to babesiosis and anaplasmosis which are considered major tick-borne diseases that infect livestock in the country and contribute major losses to the livestock industry. The study was aimed to detect *Theileria sp*. at genus level in blood samples of cattle using polymerase chain reaction (PCR) assay. Specifically, it determined the phylogenetic relationship of *Theileria* species affecting cattle in the Philippines to other *Theileria* species registered in the GenBank. A total of 292 blood samples of cattle that were previously collected from Laguna (147 samples), Pangasinan (40 samples), Cebu (77 samples), and Bohol (28 samples) were used. *Theileria sp.* was detected in 43/292 from the cattle blood samples using PCR assay targeting the major piroplasm surface protein (MPSP) gene. DNA sequence showed high similarity (90-99%) among the reported *Theileria sp.* isolates in the GenBank and the Philippine *Theileria* isolates. Phylogenetic tree construction using nucleotide sequence classified the Philippine *Theileria* isolate as benign. However, nucleotide polymorphism was observed in the new isolate based on nucleotide sequence alignment. It revealed that the new isolate can be a new species of *Theileria* that also possessed nucleotides similar to virulent strain of *Theileria* species. The findings suggest that there is high possibility of mutation events turning this new species into a virulent strain. **(Author's abstract)**

Keywords: *Biology, Theileria sp., , Cattle, PCR, MPSP, Philippines*

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0107

Monsoonal winds influence the baywide spatial extent of net phytoplankton assemblages in Panguil Bay, Northern Mindanao, Philippine

Canini, Nelfa D., Metillo, Ephrime B.

Changes in community structure of net phytoplankton in Panguil Bay in Northern Mindanao were investigated in November 2008 and February 2009 (northeast monsoon months), August 2009 (southwest monsoon months), May 2009 (transitional monsoon month). Samples were collected from 21 stations across the bay by vertically towing a 20 m conical plankton net. Phytoplankton abundance was estimated following the Utermohl method. Community structure was analyzed using the PRIMER multivariate analysis software. Distinct outer and inner bay phytoplankton assemblages were defined, and the spatial extent occupied by these assemblages were defined, and the spatial extent occupied by these assemblages oscillated with monsoonal wind patterns. Northeasterly winds increased by 100% the spatial extent of the outer phytoplankton species rich assemblages inwards up to the middle portion of the bay while the southeasterly winds contracted this assemblage back to its original spatial coverage at the same time expanded by 100% the spatial coverage of phytoplankton abundant inner waters of the bay towards the mouth. These findings have very important implications to the spatial structural patterns of primary productivity, and ultimately the trophic ecology during different monsoonal periods in one of the most important fishery priority bays in the Philippines. **(Author's abstract)**

Keywords: *Biology, Ecology, Monsoons, Northern Mindanao, Panguil Bay, Phytoplankton*

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0108

Morphometric analysis and DNA barcoding of fruit flies *Bactroceraoccipitalis* (Bezzi) and *B. philippinensis* drew and hancock (Diptera : Tephritidae) from Cavite and Davao del Norte

Delomen, Michael Leonardo C., Mendioro, Merlyn S., Diaz, Ma. Genaleen Q.

Morphometric analysis and DNA barcoding using the 5' region of the mitochondrial cytochrome c oxidase subunit 1 (*mtCO1*) gene were carried out to distinguish the fruit flies *Bactrocera occipitalis* (Bezzi) and *B. philippinensis* Drew and Hancock. Adult flies and larvae were collected from Cavite and Davao del Norte, Philippines. The larvae were reared to adulthood at the Insect Ecology laboratory, University of the Philippines Los Baños; adults were then identified along with field collected adult specimens. Each specimen was assigned with a numerical rating from zero to six through morphological examination, using the diagnostic key originally described by White and Hancock in 1997. For morphometric analysis, rating zero and six were used for *B. occipitalis* and *B. philippinensis*, respectively. The following structures were analyzed: lengths of abdominal tergites/sternites, femora, tibiae, and metatarsals; as well as wing length and width. Morphometric results showed significant differences (via t-test at $\alpha = 0.05\%$) in tergite III, mid-femur, and the metatarsals of the 2^{nd} and 3^{rd} leg pairs. For DNA barcoding, genomic DNA was extracted from specimens assigned with every rating (0-2 = *B. occipitalis*, 3 = intermediate/hybrid, 4-6 = *B. philippinensis*). Using customized primers , *mtCO1* was amplified, sequenced, and analyzed. A phylogenetic tree was constructed using the Neighbor Joining method. *mtCOI* clustering did not support morphological ratings, with *B. occipitalis*, hybrid, and *B. philippinensis* samples grouped together. Low bootstrap values at certain branches suggested the lack of phylogenetic differentiation among morphological species delineations. Pairwise distances of consensus sequences ranged from zero to 0.033, which were lower than the standard threshold of 0.5% utilized for species delineation in fruit flies. Therefore DNA barcoding failed to delineate *B. occipitalis* and *B. philippinensis*. **(Author's abstract)**

Keywords: *Biology, Dacinae, Mitochondrial cytochrome c oxidase I gene, Neighbor joining, Tephritidae*

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0109

Morpho-metric analysis of *Nepenthes alata* Blco. in Mt. Guisguis, Sta Cruz in Zambales

Fontanilla, Jon Roy F., Madulid, Rosie S.

Morphological variations in a population of pitcher plants in Mt. Guisguis, Zambales were studied. Plant samples showed that the pitcher plant is *Nepenthes alata* Blco. which is endemic to the Philippines. Of the 120 voucher specimens collected at different times of the year, 80 were scored for a set of 30 morphological characters. The SSPS Program (Statistical Package for Social Sciences) was used to obtain clustering patterns of showing relationships. Using the nearest and farthest neighbor method, the resulting clusters revealed that there were four variants among the pitcher plants considering characters such as size, color and lid features of the pitcher; stem diameter; leaf length, margin, base and tip and the inflorescence.

Through the clustering techniques, there were four variants in the *Nepenthes alata* population in Mt. Guisguis that were apparent and may merit taxonomic considerations. **(Author's abstract)**

Keywords: *Biology, Nepenthes alata Blco., Mt. Guisguis, SSPS program (Statistical package for social sciences)*

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(Filipiniana Analytics)
Fil(S) Q181 A81 v50 2002

0110

A novel endemic Philippine species of *Bikkia* Reinw. (*Rubiaceae*) inferred from multiple DNA sequencing data, with implication on its conservation status and biological activities

Alejandro, Grecebio Jonathan D., Santos, Lorenzo Angelo R., Hsu, Hao Wei C., Mejillano, Michelle Samantha S., Santor, Propa Joy R., Paragas, Ericson M.

Based on molecular data, the genus *Bikkia* Reinw. (coffee family) was formerly subdivided into two groups with contrasting habitat and corolla shape. Subsequently, one group was transferred to a genus of its own the *Thiollierea* (inland forest) leaving the *Bikkia* (coastal species) with 10 species worldwide. In the Philippines, only one *Bikkia* species (*B. philippinensis*) is known found in the coastal areas of Siargao Island. Recent observation of herbarium specimens at Central Mindanao University revealed a diverging *Bikkia* species collected in the inland forest of Mt. Redondo, Dinagat Island. This raises questions on the identity of this *Bikkia* as well as its contradicting habitat. Comparative evaluation was conducted using morphology and molecular data from nuclear rDNA (ITS region) and cpDNA (rps 16 & trnL-F regions). Genomic DNA from two isolates of *B. philippinensis* and four isolates of *Bikkia sp.* (Mt. Redondo) was sequenced and analyzed. Eighteen sequences of Philippine *Bikkia* from the three molecular markers are newly generated in this study. Suprisingly, the separate and combined parsimonious trees showed that the inland forest *Bikkia sp.* is nested within the purely coastal species of *Bikkia* (BS=90%) but did not group with the *B. philippinensis*. This molecular results is supported by morphology as they differ mainly in the size and shape of calyces and fruits. Therefore, we proposed a new species of Philippine *Bikkia* (*B. redondoensis*). *B. redondoensis* is critically endangered due to its restricted distribution and < 250 mature individual population size. The first phytochemical screening of this new species including the Microplate Alamar Blue Assay is here reported. **(Author's abstract)**

Keywords: *Biology, Bikkia, Conservation, cpDNA, nrDNA, Philippine endemic*

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(Filipiniana Analytics)

0111

Pediculicidal activity of a shampoo formulated from the crude ethanolic extract of *Tinospora rumphii* Boerl (menispermaceae) stems

Mamaril, Tracy V., Manlusoc, Joanne Katherine T., Marcelo, Amabelle Lou C., Mendoza, Mark Christian C., Naga, Maria Vicroria D., Ng Sinco, Justin W., Perez, Tanya Angela P., Castillo, Agnes L.

This study involves the formulation of a pediculicidal shampoo from the *Tinospora rumphii* Boerl ethanolic extract using compatible excipients and the determination of its activity using Permethrin (Kwell) as positive control. Stems of the plant *T. rumphii* Boerl was percolated with 80% ethanol and was formulated together with a base to determine its pediculocidal effect. No apparent irritation was noted after 72 hours of application on rabbits. *In vitro* study was also conducted to determine its lice-killing activity. Preliminary clinical studies were also employed to five (5) respondents to test for the possibility of hypersensitivity and to further test its effectivity on human subjects. Single-Factor ANOVA showed a significant difference between the mean killing time of the adult lice using the *Tinospora* shampoo, Permethrin and the shampoo base ($p<0.001$). Human patch test result in thirty (30) subjects showed no significant irritation with the *Tinospora* shampoo. ANOVA for Repeated Measures showed no significant interaction effect between the treatment used and the duration it was applied – amount of adult lice ($p = 0.077$), nits ($p=0.580$) and pruritus (0.519). Also, there was no significant difference on the number of adult lice ($p=0.233$) and nits (0.580) killed but a significant difference in pruritus ($p<0.001$) in regards to the treatment. However, in regards to the duration of treatment, there was no significant difference on the decrease of the number of adult lice ($p<0.001$) and pruritus ($p=0.071$) but a significant difference on the nits killed ($0=0.02$). Therefore, the shampoo formulated with the crude ethanolic extract from *T. rumphii* has equal efficacy as that of the commercially available positive control (Permethrin). **(Author's abstract)**

Keywords: *Biology, Tinospora, Pediculocide, Excipients, Formulation, Permethrin*

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(Filipiniana Analytics)
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0112

Philippine stinkhorns as possible biological control agents against *Sclerotium rolfsii* Sacc

VereÃ±a, Jr., V. B., Abella,

Stinkhorns (*Mutimus* sp. *Clathrus* sp. and *Dictyophora* sp.) as biological control agent against *Sclerotium rolfsii* were evaluated. Its influence on the survival of the test crop against the plant pathogen was also tested.

In – vitro bioassay (Dual Culture Test, Immobilized Mycelial Disc Test and Culture Filtrate Test) showed that stinkhorns (*Mutimus, Clathrus* and *Dictyophora*) did not inhibit the mycelial growth of *Sclerotium rolfsii*. Zone of inhibition was not observed showing that stinkhorns (*Mutimus, Clathrus* and *Dictyophora*) have no antifungal property to control the growth of *S. rolfsii*.

In –vivo bioassay evaluation showed that the test crop (corn) is resistant to the *S. rolfsii*. Mortality rate of corn due to drought was observed by performing the eradicative action test. Regardless of the genus of stinkhorns, result showed numerically that control (no stinkhorns and *S. rolfsii*.) had the highest mortality rate. Statistical analysis revealed that 10% and 15% spawning rate of *Dictyophora* were the same with the control.

Mortality rate of seedlings due to damping –off of petchay as a test crop was also observed. Regardless on the genus of the stinkhorn, control (no stinkhorns) had the highest mortality rates and 20% spawning rate of stinkhorns recorded the lowest mortality rate.

In the protective action test, height, length of roofs, and number of leaves of corn were observed. Regardless on the genus of stinkhorns, Control 2 (no *S. rolfsii*) numerically got the highest mean and Control 1 (no stinkhornes and *S. rolfsii*) numerically got the lowest mean. Results implied that stinkhorns (*Mutimus, Clathrus* and *Dictyophora*) enhanced the survival rate of the corn at uncontrolled environment. **(Author's abstract)**

Keywords: *Biology, Sclerotium rolfsii Sacc , Mutimus sp., Clathrus sp., Dictyophora sp.*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0113

Photocatalytic degradation of aqueous C.I. reactive violet 5 using bulk zinc oxide (ZnO) slurry

Dumelod, Jesus C., Cabansag, Jeannie Lynn J., Alfaro, John Cyrus O., Arsenal, John D., Sambot, Jolivette C., Enerva, Lorna T., LeaÃ±o, Jr., Julius L.

The degradation of aqueous C.I. Reactive violet 5 dye under UV light with bulk zinc oxide (ZnO) slurry as the photocatalyst was studied. The effects of varying amounts of zinc oxide, dye concentration, exposure time, pH, temperature and lamp intensity on degradation were evaluated. UV irradiation was found to enhance dye degradation by about 90% immediately after 30 minutes of exposure time, for low dye concentration of 2 x 10^{-5} M. The rate of dye degradation increased as the amount of zinc oxide increased until optimum loading was achieved . At 3840 ppm ZnO concentration, 5 x 10^{-5} M (40 ppm) dye is degraded by 74% after 30 min of irradiation and was nearly 100% degraded after 90 min at pH 7 and temperature of 30°C. The degradation rate follows a first order kinetics with respect to dye concentration, with the rate of RV5 degradation is determined at 9.3 x 10^{-5} M/h using 3840 ppm ZnO under neutral pH, temperature of 30°C and 20W lamp intensity. Increased pH, temperature and lamp intensity further accelerate dye degradation by about 38.0%, 53.3%, and 43.2% respectively. The use of zinc oxide provides a simple and efficient method for photocatalytic degradation of azo dyes in wastewater. **(Author's abstract)**

Keywords: *Biology, Degradation, Photocatalysis, Reactive violet 5, Zinc oxide*

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(Filipiniana Analytics)
Fil(S) Q1 P55 142/1 2013

0114

Phytochemical studies on two Philippine endemic rubiaceae species - *Gardenia merrelli* and *Villaria odorata*

Tan, Mario A., Concepcion, Christian Nicolo Ll., Villacorta, Raychel Ann P., Alejandro, Grecebio Jonathan D.

The family Rubiaceae is the fourth largest flora which is distributed worldwide. Phytochemical studies on Rubiaceae species have elaborated the presence of various classes of natural products with interesting biological activities. In our interest of identifyingbiologically-active secondary metabolites from the endemic Philippine Rubiaceae plants, this research aims to isolate, purify and elucidate the exudates from the leaves of *Gardenia merrelli* and *Villaria odorata*. The crude extracts of the two plant species obtained from the air-dried leaves were subjected respectively to polarity partitioning. The obtained semi-polar $CHC1_3$ sub-extracts were further purified by several chromatographic techniques (TLC, gravity column chromatography, vacuum liquid chromatography). From the leaves of *G. merrelli*, three ^{1}H-NMR pure compounds (GmD-1, GmD-2, GmD-3) were isolated. GmD-1 was identified as *p*-hydroxybenzaldehyde based on ^{1}H- and ^{13}C-NMR and in comparison with the literature. Structure analyses of GmD-2 and GmD-3 is currently in progress. The leaves of *V. odorata* yielded six ^{1}H-NMR pure compounds, namely, Vo-1 to Vo-6. Vo-1 was identified as vomifoliol by extensive 1D and 2D NMR and MS analyses and comparison with the literature. The biological evaluation of the pure compounds is underway. The structure elucidation of compounds Vo-2 to Vo-6 is

currently in progress. This study represents the first phytochemical work on the endemic species *G. merrelli* and *V. odorata*. Moreover, this is the first isolation of vomifoliol from the genus Villaria and the first isolation of *p*-hydroxybenzaldehyde from the genus *Gardenia*. **(Author's abstract)**

Keywords: *Biology, Rubiaceae, Gardenia, Villaria, Vomifoliol, p-hydroxybenzaldehyde*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0115

Potential of black beans (*Phaseolus vulgaris*) as an alternative substrate for soy sauce production

Coquia, B. T., Pineda,

The study was conducted to determine the potential of black beans (Phaseolus vulgaris) as an alternative substrate for soy sauce production in terms of volume and pH. Through sensory evaluation by twenty untrained evaluators using six – category of hedonic scale, the soy sauce produced was assessed considering color, aroma, saltiness, off-flavor, off flavor and general acceptability.

Results showed that Treatment 5 had pure black beans produced the highest volume (187 ml.). The lowest volume was produced by Treatment 3 with only 76 ml. Thus, black beans proved it can greater amount of soy sauce than soy beans.

Based on sensory evaluation, the combination of soybeans and black beans from Treatment 2 was more acceptable than pure soybeans or black beans.

Treatments in terms of color and off-flavor were significantly different from each other but were not significantly different in terms of aroma, saltiness, off-odor and general acceptability. Thus, black beans is a potential substrate for soy sauce production. **(Author's abstract)**

Keywords: *Biology, Phaseolus vulgaris, Black beans, Soy sauce*

CLSU Scientific Journal, Volume No. 25 Issue No. 1, 53
(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0116

Potential of white beans (*Phaseolus vulgaris* L.) as an alternative substrate for soy sauce production

Domingo, J. M., Pineda,

This study was conducted to determine the potential of white beans (*Phaseolus vulgaris* L.) as an alternative substrate for sauce production. Five treatments with three replications were evaluate. Sensory evaluation test was conducted using the Hedonic scale for soy sauce while final pH of the product using pH meter was used.

Organisms used in the fermentation was pure culture of *Aspergillus oryzae* (3266) obtained from UP Los Baños, Laguna. Its presence was detrimental but may contribute to the improvement of the aroma and taste of soy sauce.

Findings revealed that the treatments produced sauce products are not widely accepted by the evaluators. These were rated as "dislike slightly" because the products were not yet processed.

The final pH of the products obtained acidic and basic conditions. The large amount of soy sauce produced was obtained from treatment 1 (100% soybeans).

Also white beans (*Phaseolus vulgaris* L.) was found to be a potential substitute for the soy sauce production. However, production in terms of volume was less than that of soybeans. **(Author's abstract)**

Keywords: *Biology, Phaseolus vulgaris L., White beans, Soy sauce, Aspergillus oryzae*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0117

Preference of the Philippines green mussel, (*Perna viridis* L.) for abaca as substrate for larvel settlement

Alarcon, Nora I., Masagca, Jimmy T.

Among the bivalve mollusks, the search for a place to settle involves a set of behaviors loosely referred to as he reproductive behavior. This behavior may also be termed as the reproductive strategy of larvae of bivalves found in the marine environment. In the period of settling, the larva tests the substrate for its physical properties such as texture, color, exposure to light and spatial disposition. Studies indicate that the settling process is related to the nature of the substance and the hydrological conditions. It is still unclear whether settling proceeds better in water bodies with low or flowing rate. Compared to the settling of larvae on hard substrates, settling on soft substrates has been little studied so far, thus this study was carried out in the green mussel ("tahong"), *P. viridis* to determine the effects of hydrodynamics (i.e. turbulence) and nature of substrate on its settlement using improvised substrates. Improvised substrates made of nylon, abaca and bamboo were hung in three different placements/levels (upper,middle,bottom) in two outdoor rectangular cemented tanks (one was equipped with a submersible pump to stimulate a recirculating /flowing system while the other was only aerated to stimulate a non-recirculating or still water system). The split-split plot design replicated three times (experimental runs or trials) was used as an experimental design in the study. A total of 200 *P. viridis* larvae were stocked in the tanks during the experimental runs over a 72-hour observation period. Results show that the type of substrate most preferred was abaca ($p>0.05$). The mean value of the larvae that settled in the nylon material was almost the same as the bamboo substrates (6.56), while the abaca material (9.22) was much greater. This result implies that the abaca is the most preferred material for larval settlement compared to nylon and bamboo. There exists an interaction between the hydrodynamics and re-circulating system. In general, water turbulence process could have influenced the larval settlement process in *P. viridis* and can proceed better in flowing water rather than still water bodies under outdoor conditions. The nature of material of the substrates alone had the main effect during the experiment. The larvae significantly preferred abaca substrates compared to the others. Whether the improvised substrates were place from the upper level or to the bottom level of the tanks, larval settlement was not influenced or affected so far. The study concluded that *P. viridis* larvae preferred the abaca substrate during its settlement under outdoor tank experiments both in recirculating and non-recirculating system. **(Author's abstract)**

Keywords: *Biology, Reproductive strategy, Larval settlement, Green mussel, Perna viridis, Abaca fiber substrate*

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(Filipiniana Analytics)
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0118

Prevalence of CTX-M extended spectrum ß-lactamase-producing enterobacteriaceae at a private tertiary hospital in Southern Philippines

Lucena, Mary Ann H., Metillo, Ephrime B., Oclarit, Jose M.

The emergence of extended spectrum ß-lactamase (ESBL)-producing Enterobacteriaceae is one of the growing healthcare concerns worldwide. ESBLs are plasmid encoded enzymes that confer resistance to broad-spectrum cephalosporins and monobactams. Plasmids that carry genes that code for ESBLs often carry other resistance determinants and because of these, infections caused by ESBL-producing Enterobacteriaceae are difficult to treat contributing to the problem of nosocomial infection. To evaluate the prevalence of ESBL-producing Enterobacteriaceae at Mindanao Sanitarium and Hospital in southern Philippines, *Escherichia coli, Klebsiella* species, and *Enterobacter* species isolated from clinical samples, were screened and confirmed for the presence of ESBLs. Specific primers for CTX-M, TEM and SHV ESBL enzymes were used. From a total of 583 isolates collected from September 2005 to September 2008, thirty (5.1%) were confirmed as ESBL-procedures; the majority (60%) of which produce CTX-M type ESBLs. Most (89%) ESBL procedures co-express resistance to quinolones, 61% are susceptible to aminoglycosides and all remained susceptible to carbapenems. **(Author's abstract)**

Keywords: *Biology, CTX-M ÃŸ-lactamase, Enterobacteriaceae, ESBL, Prevalence, Resistance*

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(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0119

Prevalence of extended-spectrum-ß-lactamase (ESBL) and metallo-ß-lactamase (MBL)-producing *Pseudomonas aeruginosa* isolates from the Philippine General hospital

Balhon, Zulwin R., Cabrera, Esperanza C., Rodriguez, Roslyn D.M.

Pseudomonas aeruginosa isolates from cases of the Burn Unit and Neonatal Intensive Care Unit of the Philippine General Hospital collected from July to September 2003 were studied for their antimicrobial susceptibility profile. All the 24 isolates were found to be resistant to multiple antibiotics belonging to different classes, with 50% of these showing resistances to all of the 11 antimicrobials tested. Resistance to aztreonam was found in 58% of the isolates, while 72% were resistant to ceftazidime; 80% to cefepime; 80% to amikacin; 84% to cefotaxime; 88% to ciprofloxacin; 88% to ceftriaxone; 88% to netilmicin; 92% to gentacimin; 92% to imipenem; and 100% to trimethoprim. Using the double-disc synergy test with clavulanate, aztreonam, ceftazidime, cefepime, and cefotaxime, the isolates were found to be negative for extended-spectrum ß-lactamase (ESBL) production. However, 14 of the 24 isolates or 58% were positive for metallo-ß-lactamase (MBL) production using the double-disc test within imipenem and 0.5M EDTA-containing filter paper disc. **(Author's abstract)**

Keywords: *Biology, Pseudomonas aeruginosa, Extended-spectrum-ÃŸ-lactamase (ESBL), Metallo-ÃŸ-lactamase (MBL), Antimicrobial resistance, ÃŸ-lactamase*

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(Filipiniana Analytics)
Fil(S) Q181 A81 v54 2006

0120

A proposed regulatory mechanism of ontogenetically expressed DITAA-containing coconut transcripts

Cueno, Marni E., Laude, Rita P.

Accumulation of medium-chain oils into the coconut endosperm has been shown to follow a temporal pattern of fatty acid gene expression. The mechanism by which these genes are regulated, however, has not been explored. Using 3' RACE, we identified two coconut DITAA-containing transcripts (DCTs), appropriately labeled DCT1 and DCT2, and found both transcripts in the 5-6 and 6-7 month old (mo) coconut endosperms following an ontogenetic pattern. Comparison of both amplified transcripts from the 5-6 and 6-7 mo endosperms show 100% homology between DCT2 transcripts. Interestingly, 52 nt downstream of the DCT1 sequences prior to the poly(A) tail are missing in the DCT1-6mo transcript. Visual inspection for

potential motifs shows the presence of CCGCC-like (DCT1-5mo and DCT1-6mo) and TGTG-like (DCT1-6mo only) motifs. Both motifs have been published to be known regulatory motifs in other species suggesting a probable similar function in coconut. **(Author's abstract)**

Keywords: *Biology, 3′ RACE, Coconut endosperm, Cocos nucifera, Ontogenetic expression, Regulation*

Philippine Journal of Science, Volume No. 142 Issue No. 1, 39-44
(Filipiniana Analytics)
Fil(S) Q1 P55 142/1 2013

0121

Proteus species identified using the analytical profile index API 20E: potential biological control from borer infesting sweet sorghum

Gaoat, Cecile A., Franco, Prima Fe R., Franco, Samuel S., Layaoen, Heraldo L.

Previous studies on sweet sorghum production in the Philippines show that it is affected by insect pests like borer. This insect attacks both the leaves and the stalks of the plant thus causing a decrease in juice yield for ethanol production. It is also observed that some larvae of borer attacking sweet sorghum varieties die prior to pupation even without the application of insecticides. This phenomenon is postulated to be due to bacterial harbored by the larvae in their gut. Bacterial isolates then from the gut of the larvae of the borer were obtained and charactrized. They were identified using API 20E. Results show that borer attacking both leave and stalks harbor the same bacteria. They both have *Proteus vulgaris* and *P. mirabilis*. Both isolates are positive in the protease and hemolysin indication of their being pathogens. They employ protease and hemolysin as virulence factors. The characterized and identified flora of the gut of borers must have the potential as biological control of insects attacking sweet sorghum. **(Author's abstract)**

Keywords: *Biology, Proteus, Borer, Sweet sorghum, API*

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(Filipiniana Analytics)
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0122

Purification and characterization of a poly(ß-hydroxybutyrate) depolymerase from *Burkholderia cepacia*

Alava, Benedicta B., Menguito, Corazon A.

Polyhydroxybutyrate (PHB) depolymerases are enzymes that can hydrolyze PHBs, a group of biodegradable thermoplastics. *Burkholderia cepacia*, isolated from a Metro Manila landfill, secreted a PHB depolymerase when grown in a minimum medium containing 0.2% w/v PHB. Depolymerase activity reached its maximum during the stationary phase of cell growth at approximately 21 hours of culture.

The PHB depolymerase from *B. cepacia* was purified by $(NH_4)_2SO_4$ precipitation, DEAE and CM ion exchange column chromatography. A 7 mL enzyme ($PhaZ_{Bc}$) concentrate of 0.702 mg/mL was obtained from a 0.5 L cell free culture. The enzyme was purified to homogeneity with a yield of 57.9% and a 3.3-fold increase in activity. The SDS-PAGE results showed a single protein of high purify and a molecular mass of approximately 39.2 kDa. The enzyme was optimally active at a temperature of 30°C and at pH 7.0. Kinetic profile showed that the depolymerase has an average specific activity of 12 x 10^3 µg PHB per mg enzyme per minute. The V_{max} and K_m were determined as 44.36 µM PHB per mg enzyme per minute and 1.31 µM, respectively. The PHB depolymerase was partially inactivated by phenylmethylsulfonyl fluoride, dithiothreitol, 2-mercaptoethanol, EDTA, and Tween 80. An increase in enzyme activity was observed in the presence of Mg^{2+} and Na^{+}. **(Authors abstract)**

Keywords: *Biology, Burkholderia cepacia, Polyhydroxybutyrate depolymerase, Enzyme activity*

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(Filipiniana Analytics)
Fil(S) Q181 A81 v54 2006

0123

Rafflesia panchoana (Rafflesiaceae): a new species from Luzon island, Philippines

Madulid, Domingo A., Buot, Jr., Inocencio E., Agoo, Esperanza Maribel G.

A new species, *Rafflesia panchoana Madulid*, Buot & Agoo, is described from Mt. Makiling, Luzon Island, Philippines. It is similar in size to ***R***. *manillana* Teschem. but differs in having an upright or slightly inclined diaphragm, smaller warts on the perigone lobes, elongated or stretched windows on the underside of the diaphragm, and bristles on the rim of the annulus. **(Author's abstract)**

Keywords: *Biology, Rafflesia panchoana, Rafflesia manillana, Rafflesia manillana, Treatened plant, Endemic plant*

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0124

New record of potential cyanobacteria from indian region falling indo-burma biodiversity hotspots (North-East Region of India) and partial characterization for value additions

Singh K, Ojit, Oinam, Gunapati, ON, Tiwari

Cyanobacteria are prokaryotic organisms capable of oxygenic photosynthesis. They appeared to be a rich source for many useful products and are known to produce a number of bioactive compounds. The North-east region of India is a genetic treasure house of plant, animal, and microbial resources. In this study, two-hundred sixty (260) unialgal cyanobacterial isolates from Indian region falling Indo-Burma biodiversity hotspots were characterized and primarily screened. Ten (10) isolates from six genera viz-a-viz, *Anabaena* (03), *Nostoc* (01), *Phormidium* (03), *Plectonema* (01), *Lyngbya* (01), and *Microchaete* (01) were found to be useful for industrial application. Study show that in the present investigation, *Phormidium tenue* (Menegh.) Gomont (NEMN138) have showed ammonia content and can be used as biofertilizers. *Anabaena fuellebornii* Schmidle (NEMN125), *Phormidium bohneri* Schmidle (NEMN183), *Nostoc spongiaeforme* Agardh ex Born. et Flah (NEMN131) were found to be useful for production of phycobiliproteins from cyanobacteria which can be beneficial for industrial applications. All ten isolates have been deposited to the fresh water cyanobacterial and microalgal repository of IBSD, Imphal, Manipur, India (National facility created by Department of Biotechnology, Government of India, in 2009 with reference No. BT/PR 11323/PBD/26/171/2008 dated 31-03-2009) after obtaining accession number. **(Author's abstract)**

Keywords: *Biology, Biodiversity hot spots, Cyanobacteria, Indo-Burma, North-East India, Respiratory, Value addition*

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(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0125

Release of dissolved organic matter from marine tropical reef plants: temperature and desiccation effects

Gualberto, Eva, Schramm, Winfrid, Orosco, Christine

Rates of net photosynthesis and exudation of dissolved organic matter of six dominant macrophytes from reef off Mactan Island, Cebu were determined in the laboratory under standard conditions. Effects of desiccation and increased temperature on stress release of dissolved organic carbon from the plans were investigated.
Under standard conditions, DOC exudation rates from 4.0 to 9.3% of net primary production. Desiccation and temperatures above 35°C considerably increased DOC release.In situ measurements showed that desiccation and temperatures experienced by emerging plants may enhance organic release, although they will seldom reach detrimental levels.
Diurnal variations observed in DOC concentrations in the seawater over the reef area may be related to stress release of organic matter from marine benthic macrophytes under natural condition.

Keywords: *Biology, Thalassia hemprichii, Laurencia, Mastophora, Gelidiella, Gracilaria, Amansia, Sargassum, Padina*

The Philippine Scientist, Volume No. Issue No. , 53-59
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0126

Rice, corn and cassava substrates for wine production

Umaga, M. M., Pineda,

This evaluated wine made out of rice, corn, cassava. Two microorganisms used in this study were *Saccharomyces cerevisae* and *Aspergillus oryzae*. Total soluble solid, alcohol content and pH were measured for wine analysis. Sensory evaluation was done for general acceptability of the three products.

The highest value in the total soluble solid and pH was obtained from rice wine during its first and second week with value of 25.30 and 15.18, respectively. However, highest alcohol content was obtained from cassava wine with the value of 13.00.

The sensory evaluation showed that rice wine is still the most preferred drink. It had the clearest wine. Cassava wine was the least acceptable among the three because of its off odor and off flavor. **(Author's abstract)**

Keywords: *Biology, Saccharomyces cerevisae, Aspergillus oryzae, Rice, Corn, Cassava*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0127

Salinity tolerance of introduced South American Sailfin Catfishes (Loricariidae: *Pterygoplichthys* GILL 1858)

Brion, Marco Alberto, Guillermo, Jr., Jose Gil, Uy, Cheston, Chavez, Joel, Carandang, IV, Jose Santos

The ecological distribution of species is limited by its physiological tolerances towards natural physical barriers. The experimental LC_{50} of salinity to an introduced freshwater fish was determined as it implies to its dispersal and distribution. South American sailfin catfishes belong to a freshwater fish family but introduced specimens have been collected in brackish waters of the Pasig River in the Philippines. Tolerance to salinity of this introduced fish could mean increased potential to expand its range

into or via marine waters. Juvenile South American sailfin catfishes were purchased from local petshops and were subjected to a 96-hour toxicity test for salinity in the laboratory. Replicated tests using various salinity concentrations were performed. Mortality and survival of test samples were tabulated to determine LC_{50}. The LC_{50} of salinity was calculated to be 10.6 g/L. Survival analysis of the data gives an estimate that at 10 g/L concentration over 50% of the samples have strong chance of survival beyong 85 hours of exposure to saline water. Post mortem identification of samples confirms they belong to genus *Pterygoplichthys*. We discuss the implications of the LC_{50} results on the migration and dispersal of this introduced freshwater fish, and the application of taxonomic data in the study of invasions. **(Author's abstract)**

Keywords: *Biology, Janitor fish, Pasig River, Pterygoplichthys, Salinity tolerance*

Philippine Journal of Science, Volume No. 142 Issue No. 1, 13-19
(Filipiniana Analytics)
Fil(S) Q1 P55 142/1 2013

0128

A short review on nutrient enhancement and its probable detrimental effects on tropical reefs

Dy, Danilo T.

A short review on the detrimental effects of nutrient enhancement in coral reefs is presented. Two concerns are expressed in the paper: the possible effect on the reef if fertilization is applied in the seaweed cultivation and the long term effect on the physical structure of the fringing reef if beach resort operators decide to dump sewage into the sea. Ideas and recommendations are presented and discussed to stimulate research efforts towards monitoring nutrient levels in coral reefs. **(Author's abstract)**

Keywords: *Biology, Eutrophication, Chronic stresses, Acute stresses*

The Philippine Scientist, Volume No. Issue No. , 67-78
(Filipiniana Analytics)
Fil(S) Q1 J95 v31 1994

0129

Size distribution and mineralogy of carbonate sediments near Mactan, Cebu, Philippines

Wefer, Gerold, Cases, Edgar

Summary

It has been shown from grain size frequency and mineralogical data that preliminary estimates can be made regarding the biogenic producers of the carbonate sediments. With these data, samples can, in general, be identified as belonging to one of the three distinct zones: the reef area, the Hilutangan Channel, and the Cebu harbor area. In the study area, aragonite pruced by corals, mollusks and algae is the most common mineral followed by high magnesium calcite produced by larger foraminiferans and echinoderms. Only small amounts of low magnesium calcites are found near-shore samples, possibly supplied by erosion of fossil carbonate.

Keywords: *Biology, Sediment, Padina, Corals*

The Philippine Scientist, Volume No. Issue No. , 112-118
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0130

Structural and ultrastructural characteristics of the testes of the invasive suckermouth sailfin catfish *Pterygoplichthys spp.* Gill 1858 (Siluriformes: Loricariidae) from the Marikina River system, Philippines

Jumawan, Joycelyn, Herrera, Annabelle

The suckermouth sailfin catfish (*Pterygoplichthys pardalis*) is one of the many loricariid species regarded as highly invasive posing serious threat to many freshwater systems worldwide. Although several loricariid features had been described to contribute to its invasive spread potential, studies on its early development has yet to be described. In this study, mature female *P. pardalis* were subjected to spawning induction using human chorionic gonadotropin (HCG) to study the developmental stages from fertilization until yolk resorption. Females subjected to a single exposure by HCG responded positively to treatment (97%) with higher fertilization success (88.33%) compared to the untreated females (20.89%). Nonetheless, HCG-induced fertilized eggs had a low hatching success (48.56%). From the free-living embryos successfully hatched, a high number (90.44%) had survive to become juveniles. Embryonic development in *P. pardalis* was completed 168 h and 30 min after fertilization with total yolk resorption completed on the 8th day post hatching during which the suckermouth gradually shifts from rostral to ventral position to commence the loricariid algae-scraping feeding mode. *P. pardalis* has the propensity to thrive in hardy water and does not undergo true larval metamorphosis between the free swimming embryo and the juvenile stage, hence, a definitive adult phenotype develop directly. These results provide essential information of the early developmental features of this invasive species whose spawning and early developmental strategies were difficult to observe in the field. **(Author's abstract)**

Keywords: *Biology, Janitor fish, Invasive fish species, Loricariids, Development*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0131

Substrate dependent production and isolation of an extracellular biosurfactant from *Saccharomyces cerevisiae* 2031

Alcantara, Virgie A., Pajares, Irene G., Simbahan, Jessica F., Rubio, Ma. Leah D.

Improvements of both biomass yield and emulsification activity are important criteria for profitable biosurfactant production. In this study, *Saccharomyces cerevisiae* 2031 gave the highest emulsification activity (E_{24} = 58%) by using Cooper and Paddock's basal medium, containing glucose and waste cooking oil as carbon sources. Glucose and waste cooking oil were found to be essential for high biomass and emulsification activity. Emulsification activity of the biosurfactant increased to 76% after optimization of fermentation conditions. The optimum carbon source concentration for both glucose and waste cooking oil was 5% Optimum pH for high biomass production was pH 5.0 – 8.0. Isolation of the biosurfactant by heat treatment of the *S. cerevisiae* 2031 cells effectively solubilised the extracellular biosurfactant. **(Author's abstract)**

Keywords: *Biology, Emulsion, Emulsification activity, Emulsification index, Extracellular , Substrate*

Philippine Journal of Science, Volume No. 141 Issue No. 1, 13-24
(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0132

Survey and identification of mollluscs in selected bodies of water in San Jose and Muñoz, Nueva Ecija

Tabelina, M. C. T., Kalaw,

Seven species were collected from the different bodies of water in Muñoz and San Jose City to be classified and identified. Five species were grouped under Class gastropoda, namely, *Belamaya angularis* Muller*, Pluerocera acuta* Raf.*, Pomacea paludosa* Say*, Melanoides granifera* Lam*.* and *Physa gyrina* Say. Two species were under Class Bivalvia which were *Psidium dubium* Say *and Ligumia latissima* Raf.

In San Jose, *B. angularis,, P. paludosa* and *L. latissima* registered the highest percentage frequency of 50 while in Muñoz, *M. granifera* registered the highest percentage frequency of 57.14.

The environmental parameters obtained were water current, temperature, turbidity and pH. In Muñoz, the water current ranged from 0.091 m/s to 0.165 m/s and while the other four ponds ware stagnant. The water temperature ranged from 27.70 °C to 30.67 °C. Among stations, Pond 3 had the highest water temperature of 30.67 °C. Turbidity ranged from 75.3 cm to 128 cm. Pond 3 had the highest turbidity with a value of 128 cm. The water pH in all of the collection sites was 7 indicating that the water is neutral.

In San Jose City, the water current ranged from 0.101 m/s. The three ponds were recorded as stagnant. On the other hand water temperature ranged from 25.33 °C to 31°C. Pond 1 and Pond 2 got the highest temperature while the lowest was recorded in Campo 4. The tubidity of the stations in San Jose City ranged from 23 cm to 130 cm. The diversion irrigation system showed the highest turbidity of 130 m. The water pH in all study sites was 7 indicating that the water was neutral. **(Author's abstract)**

Keywords: *Biology, Belamaya angularis Muller, Pluerocera acuta Raf., Pomacea paludosa Say, Melanoides granifera Lam., Physa gyrina Say, Psidium dubium Say, Ligumia latissima Raf*

CLSU Scientific Journal, Volume No. 25 Issue No. 1, 61
(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0133

Taxonomic and ecological study of microalgae in Lake Buhi, Camarines Sur

Elazegui, Erwin P.

A plankton study of Lake Buhi, Camarines Sur was conducted for classification and identification purposes. Three stations were established and were based on the presence and distribution of sinarapan (*Mistichthys luzonensis*), the world's smallest fish that can only be found in the lake. Plankton collection was done vertically and collected water samples were placed in a container preserved with 5% formalin. Plankton species were analyzed using the Sedgewick Rafter Counting Chamber and a binocular microscope. Photographs were also taken for verification. The study obtained 4 divisions of microalgae that include Cyanophyta, Chlorophyta, Chrysophyta and Euglenophyta. There are 11 Orders of phytoplanktons observed: Centrales, Chlorococcales, Chroococcales, Charales, Cladophorales, Dinophyceae, Eulenales, Oscillatoriales, Pennales, Tetraporales, Zygnematales. Eighteen families, 20 genera and 24 species of phytoplanktons were also noted. *Synedra acus, Synechocystis aquatilis* and *Synedra tabulata* were the three most abundant species. It belongs to Family Fragilariaceae and Family Chroococcaceae. Physico-chemical parameters such as temperature, pH, and turbidity were recorded and correlated with the number of planktons counted. **(Author's abstract)**

Keywords: *Biology, Lake Buhi, Phytoplanktons, Sinarapan, Taxonomic*

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(Filipiniana Analytics)
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0134

Taxonomy of the genus *Sargassum* (*Sargassaceae, Phaeophyta*) from Camotes Island, Cebu

SantiaÃ±ez, Wilfred John E., Trono, Jr., Gavino C.

The taxonomy of the genus Sargassum in the country is poorly known and studied owing largely to its complex and highly variable morphology. In fact, the most recent treatment on the genus Sargassum in the country was done by Trono (1992) more than a decade ago. We attempt herein to add to the body of knowledge on the taxonomy and distribution of the genus by examining Sargassum specimens collected from Camotes Island, Cebu. Morphological characteristics of fertile specimens, primarily the nature of holdfast, shape and nature of branches, vesicles, leaves, and nature and form of receptacles, were studied . Specimens were identified, whenever possible, to species level using the key by Trono (1992). Three species were recognized, namely, *S. polycystum* C.A. Agardh, *S. siliquosum* J. Agardh and *S. paniculatum* J. Agardh. **(Author's abstract)**

Keywords: *Biology, Sargassum, Seaweeds, Taxonomy, Cebu, Philippines*

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(Filipiniana Analytics)
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0135

Some ultrastructural observations on *Tubiluchus philippinensis* (Priapulida): a new faunal element of Philippine coastal waters

Storch, Volker, Alberti, Gerd, Rosito, Ruby M., Sotto, Filipina B.

A new species of an interstitial priapulid, *Tubiluchus philippinensis* van der Land, 1985, was found in the coarse, silty sand of the reef flat off Sabang Island, Mactan, Cebu. The genus *Tubiluchus* contains four described species, three of which were described in the eighties. Before the opportunity arose to study *Tubiluchus philippinensis,* now the best known species among the tropical meiobenthic Priapulida, there was a complete lack of cytological information about this group. Our aim in this paper is to summarize the knowledge on *Tubiluchus philippinensis*. **(Author's abstract)**

Keywords: *Biology, Tubiluchus philippinensis, Tubiluchus corallicola, Maccabeus tentaculatus, Chaetostephanus praeposterius, Meiopriapulus fijiensis, Tubiluchus australensis*

The Philippine Scientist, Volume No. Issue No. , 144-156
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0136

Web architecture of the garden spider *Argiope aemula*, (Walckenaer, 1841) (Araneae: Araneidae, Argiopinae)

Adamat, Liza A., Torres, Mark Anthony J., Gorospe, Jessie S., Barrion-Dupo, Aimee Lynn A., Barrion, Adelina A., Demayo, Cesar G.

This study was conducted to investigate the effect of the presence and ansence of potential prey on web decoration frequency, web size, web capture area (portion of the web with sticky or capture spirals) and mesh height (distance between sticky spirals) of

the orb webs constructed by *Argiope aemula*. Thirty (30) spiders were given two sequential feeding regimes. For the first three consecutive days, spiders were given one medium size grasshopper (with prey regime) and fasted for five days (no prey regime). For the purpose of comparison, spiders with no prey and with prey feeding regimes are categorized as starved and well-fed respectively. Our laboratory results show that the presence of prey has a significant influence on stabilimentum (web decoration) building in *A. aemula* spiders. Well-fed spiders included stabilimenta on their webs more often than hungrier spiders which agrees with the predictions of the predator defense hypothesis but does not support those of the prey attraction hypothesis. These spiders can increase or decrease the sizes of web, capture area (portion of the web with sticky or capture spirals), and mesh height (distance between sticky spirals) in response to prey density. Starved spiders constructed significantly larger webs than well-fed spiders. In the absence of potential prey, spiders not only increased the web size but also the capture area. Furthermore, in the absence of potential prey, spiders significantly constructed very narrow- meshed webs or tightly spaced capture spirals than in the presence of potential prey. The present study may demonstrate that spiders can manipulate their web architecture in response to different prey densities. **(Author's abstract)**

Keywords: *Biology, Argiope aemula (Walckenaer, 1841), Stabilimentum, Web size, Web capture area, Web mesh height*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 32/1 2010

0137

Why new hats are better: two new endemic species of Philippine Gynochthodes Blume and molecular support on the re-classification of Morinda elliptifolia Quisumb. & Merr. (Morindeae-Rubiaceae)

Chavez, Jayson G., Salvacion, Joshua Johnedel P., Contreras, Gerson C., Hung, Wei Yi D.C., Ramos, Fernan Macrin C., Ysaac, Diana Grace B., Alejandro, Grecebio Jonathan D.

Recent phylogenetic works on the systematic of Morindeae (Rubiaceae) have proposed new generic delimitations of the tribe and the adoption of a narrow circumscription of the nutriceutical genus *Morinda* known as "noni". The proposed transfer of all lianescent *Morinda* species including the Philippine endemic *M. elliptifolia* to its conglomerate *Gynochthodes* have raised the question whether this taxonomic amendment is supported by molecular dataset. To address this, samples of *M. elliptifolia* and two *Gynochthodes* cf. specimens were collected in the island of Palawan. A total of 53 trnT-F (cpDNA) sequences was utilized for cladistic analysis. Bayesian inference (BI) of the plastidial data supports the generic transfer of *M. elliptifolia* to *Gynochthodes* proposed by Razafimandimbison & Bremer with strong posterior probabilities (PP=1.00). *Gynochthodes* is united by marginal hairs along stipules and bracts; axillary, racemose or cymose inflorescences with white and shortly pedunculate flowers; recurved calyx tubes; and corollas with long hairs within the tubes and on the adaxial side of the lobes. Furthermore, the two sampled *Gynochthodes* cf. nestled on the basal polytomy of *Gynochthodes* subclade proving their generic affinity (PP=1.00). Comparisons between the Malesian *Gynochthodes* a*nd* these specimens have shed light to the proposal of two new endemic *Gynochthodes* species. In relation to these taxonomic breakthroughs; implications on Philippine biodiversity, and the industrial and medicinal applications of *Gynochthodes* are presented. **(Author's abstract)**

Keywords: *Biology, Biodiversity, cpDNA, Gynochthodes, Morinda, Philippines*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

BOTANY

0138

The isolation and characterization of *Rhizobium* sp. from Indian *Arachis hypogaea* (Linn.)

Parco, Socorro Z., Daniel, Rachel Regi

Arachis hypogaea, commonly called peanut (ground nut in India) is a cosmopolitan leguminous plant. The nodules are formed on the roots of these plants by infection with various species of nodule-forming nitrogen-fixing bacteria, *Rhizobium*. Whole plants were collected from Nilakkottai, Dindigul district, Tamil Nadu, South India. *Rhizobium* sp. were isolated from the root nodules of these plants and characterized by their colonial and morphological characteristics, growth pattern, and reaction to different biochemical media. A *Rhizoibium* colony was isolated from each of the 5 peanut plants by their colonial characteristics on Yeast Extract Mannitol Agar (YEMA) medium with Congo red. One of the five isolates showed a relatively slow growth on YEMA. However, the spectrophotometric reading of growth in YEMA broth indicated an early increase (13^{th} hr) while the other four isolates had increased readings towards the 22^{nd} hour after inoculation. Structural characteristics, such as the presence of flagella and its motility on motility agar was positive for two isolates. All produced exopolysaccharide on YEMA with Congo red and YEMA with aniline blue. There was acid produced from mannitol utilization. There was growth on replacement of K_2HPO_4 with Ca_3PO_4. Total nitrogen content of isolates in growth medium, ammonia excretion, nitrite excretion, and siderophore estimate in its surrounding medium differed comparatively in the five isolates. Among the five isolates one was found to be highly efficient with reference to all the above mentioned parameters. **(Author's abstract)**

Keywords: *Botany, Ground nut (peanut), Rhizobium, Isolation, Biochemical characterization, Biofertilization*

Silliman Journal, Volume No. 49 Issue No. 1, 57-64
(Filipiniana Analytics)
Fil(S) AS538 S46 49/1 2008

0139

The true mangroves along San Remigio Bay, Cebu, Philippines

Buot, Jr., I.E.

True mangroves in San Remigio, Cebu, Philippines were surveyed and studied. Nineteen species belonging to 12 genera and 10 families were identified. *Ceriops tagal, Rhizophora apiculata, Rhizophora mucronata* and *Avicennia officinalis* were found to be dominant after a quantitative vegetation study. Voucher specimens were prepared and deposited at the Cebu State College of Science and Technology College of Agriculture Herbarium (CSCS) at Lahug, Cebu City, Philippines. **(Author's abstract)**

Keywords: *Botany, Ceriops tagal, Rhizophora apiculata, Rhizophora mucronata, Avicennia officinalis*

The Philippine Scientist, Volume No. Issue No. , 105-120
(Filipiniana Analytics)
Fil(S) Q1 J95 v31 1994

CHEMISTRY

0140

Aflatoxin B_1 contamination on selected corn growing areas in Isabela

Gonzales, Jr., S. G., Rafael,

This study was conducted to determine the aflatoxin contamination in corn, evaluate the relation of moldy grain, moisture content, and grain damage on aflatoxin level in selected areas in Isabela.

Moldy grain and grain damaged were analyzed using physical analysis. Moisture content was evaluated using BPRE Moisture Meter, and aflatoxin level was quantified using NRI Bond-Elut Method. Correlation was used to evaluate the relation of aflatoxin

level to moldy grain and moisture content.

Highest level of aflatoxin was exhibited in Naguillan with 558.160 ppb level of aflatoxin contamination. During wet season, the level of aflatoxin was influenced by moldy grain and moisture. During dry season, the level of aflatoxin was not associated with moldy grain and moisture content. Higher level of aflatoxin observed in wet season was attributed by temperature, humidity and rainfall during post harvest.

These findings suggest that the level of aflatoxin is influenced by climatic conditions, moldy grain, and moisture content. **(Author's abstract)**

Keywords: *Chemistry, Aflatoxin B1, NRI bond-elut method, BPRE moisture meter*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0141

Benthic degradation of organic matter and regeneration of nutrients in shallow water sediments off Mactan, Philippines

Balzer, Wolfgang, von Bodungen, Bodo, Pollehne, Falk

In carbonaceous shallow water sediments of Maribago, Mactan, Philippines benthic metabolic activity and pore water nutrient chemistry were investigated. Bell jar experiments with plain sediment yielded a dark respiration rate of 1000-2000 ml O_2 m^{-2} d^{-1} which was matched by a similar rate of photosynthetic O_2 production during the day. Sediment covered by sea grass or coral communities showed consumption rates several times higher. While silicate was released in large amounts in all systems there was no or only little release of nitrogen and phosphate. Near-surface pore water profiles of silicate, ammonia and phosphate of sediments from Maribago and the double reeds off Bohol were determined with an *in situ* sampler; both localities showed a low intensity of decomposition within the sediment. The benthic system exhibits a very high and efficient metabolism near the sediment surface, leaving little organic matter to be degraded in deeper sediment layers; in the same way the benthic community is very efficient in retaining inorganic products from organic matter degradation. **(Author's abstract)**

Keywords: *Chemistry, Shallow water, Pore water nutrient, Nitrogen, Phosphate*

The Philippine Scientist, Volume No. Issue No. , 30-41
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0142

Biodegradability of plastic produced using nami (*Dioscorea hispida* Dennst.) starch as additive

Quimson, J.S., Paragas, D.S.

This study was conducted to produce biodegradable plastic using nami (*Dioscorea hispida* Dennst.) starch as an additive. The plastic which does not contain starch was marked T1 and served as the reference. Different loadings of starch were tested; 1, 3, 5, and 7 grams were marked as T2, T3, T4 and T5, respectively. The test for tensile property showed that T3 formed a compatibilized resin. The tensile strength increased by 9-folds compared to the sample without nami starch.

Resistance of the plastics to chemicals showed no differences in the solubility with same test solvent used. These plastics produced have resistance to dilute salts, bases and acetone and soluble to dilute glacial acetic acid and hydrochloric acid.

The results of the biodegradability test showed that the deterioration of plastic produced follows a first order kinetics. The rate of biodegradation increases with increasing starch loading. The half-lives of the different plastics prepared ranged from 1.51 to 2.31 months. **(Author's abstract)**

Keywords: *Chemistry, Dioscorea hispida Dennst., Biodegradability test, Kinetics*

CLSU Scientific Journal, Volume No. 23 Issue No. 1, 54-60
(Filipiniana Analytics)
Fil(S) S539 P5C33 23/1 2003

0143

Biodegradability of polyvinyl alcohol plastic produced using nami starch and titanium (IV) oxide as additives

Atabay, M. R. T., Ortinero,

Biodegradable polyvinyl alcohol (PVA) plastics were produced using Nami (*Dioscorea hispida* Dennst.) starch and titanium (IV) oxide (TIO_2) as additives. The technical properties, resistance to chemicals, and biodegradability of the plastics were evaluated.

Findings showed addition 1g nami starch increased the degradation of the plastic. Half-life (t½) of PVA –nami starch plastic was 1.2771 months while the half-life of PVA plastic was 1.8925 months. The inclusion of small amount of TIO2 (0.625 mg) enhanced the biodegradability of PVA-nami starch plastic (t ½ =1.2098 mo). However, increasing the amount of TIO2 in the PVA – nami starch plastic reduced biodegradability.

PVA –nami starch plastic reduced biodegradability. The PVA-nami starch plastic with 1.25 mg TiO_2 had a half-life of 3.2072 months. On the other hand, the biodegradable plastic added with 2.5 mg TiO had a half-life of 1.8393 months almost the same as half -life of the PVA plastic.

In general PVA plastic has better technical properties than PVA –nami starch plastics. Increasing the amount of TiO_2 in the PVA –nami starch plastic tended to decrease the tensile strength of the plastic. The PVA and PVA –nami starch plastics were resistant to low polarity organic solvent and dilute inorganic basic and salt solutions but were soluble in dilute organic and inorganic acids. **(Author's abstract)**

Keywords: *Chemistry, Polyvinyl alcohol plastic, Nami starch, Titanium (IV) oxide, Dioscorea hispida Dennst.*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0144

Cu(II)-amine-cellulose complex coated "lahar" for enantiomeric separation

Ang, Anna Kristina L., Bragado, Kristine Anne L., Co, Venessa, Bayquen, Aristea V.

The activated "lahar" coated with copper(II)-amine-cellulose complex was used as the stationary phase. Silica gel, likewise coated the complex was used as the control stationary phase. It was found to be effective in the separation of *D*- and *L*-tryptophans and *D*- and *L*-ornithines from their recemic mixtures. Using a small short column (14 cm disposable Pasteur pipette) packed with the coated "lahar" (1.2-1.3 g) or silica gel, the enantiomer was separately eluted with n-butanol:acetone:glacial acetic acid: water mixture (40:5:30:25) for tryptophan and (35:30:5:30) for ornithine. Three trials were made each using the silica gel as control and "lahar" as the test stationary phase The collected fractions (0.5 mL each) were evaporated, weighed and analyzed for their optical activity using a polarimeter. For the enantiomers *D*- and *L*-tryptophans, the average specific rotations were +32.91°

and 31.52° respectively using "lahar", +32.44 and 31.75 using silica gel, and for *D*- and *L*-ornithines, -22.51° and 22.58° using "lahar". Theoretically, the specific rotation of *L*-tryptophan is –31.5 (*c*=1, H_2O) and *D*-tryptophan is +32.45, and *D*-ornithine -21.8° (*c*=2, 5 N HC1) and *L*-ornithine is +23.6 (*c*=4, 6N HC1). **(Author's abstract)**

Keywords: *Chemistry, Enantiomer, Ligand exchange chromatography, Lahar, Optical activity*

Acta Manilana, Volume No. Issue No. , 49-54
(Filipiniana Analytics)
Fil(S) Q181 A81 v50 2002

0145

Custom synthesis of isotope-labelled *Apis meliifera* pheromone

Conanan, Aida P., Cortes, Nicole Marie A., Daguno, Cristel Lyn R., Templonuevo, Jose Angelo A., Sucgang, Raymond J.

The object of this study is to determine the optimum conditions for the synthesis of isotope-labelled isopentyl acetate. Isopentyl acetate is widely used as a raw material in industries, in syntheses, and is utilized as a sex attractant (pheromone) by the bee species, *Apis mellifera*.The isotope labelling of isopentyl acetate will allow tracking of the fate and movement of the isopentyl acetate in the environment, in chemical transformations, and in biological systems. Esterification by alcoholysis of acetic acid was optimized for the preparation of Carbon - 14 (^{14}C)-labelled isopentyl acetate from ^{14}C- labelled acetic acid and isoamyl alcohol. The different conditions studied were: (1) The effects of acid catalysis and or reflux on the amount of yield of the product. (2) The effects of acid catalysis and/or reflux on the incorporation and retention of the isotope label on the product. The efficiency of label incorporation and retention was determined through the beta radioactivity of Carbon 14 in each of the synthetic constructs. Determination of the beta radioactivity concentration of ^{14}C in the isopentyl acetate product was done using low level liquid scintillation spectrometry. Each of the synthetic products was mixed with UltimaGold scintillation cocktail in a low potassium glass scintillation vial, and analysed in a low level Wallac 1414 scintillation counter. The application of catalysis without reflux resulted in the highest yield (35%). The same condition also resulted in the highest abundance of carbon isotope label with 2.40 Bequerels per cubic centimetre, Bq/cc (measurement unit for radioactivity). **(Author's abstract)**

Keywords: *Chemistry, Liquid scintillation , Radiolabelling, Carbon 14, Isotope, Isopentyl acetate*

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0146

Development of lyophilized coconut water for isotonic beverages

Torres, Rosalinda C., Manalo, Carmelita O., Bonifacio, Teresita S., Manongsong, Evelyn B., Arrogante, Elvira L., Lanto, Eduardo A., Estrella, Romulo R.

Lyophilized coconut water from both young and mature coconuts was developed by ultra low freezing followed by freeze-drying. Lyophilized product with 25% maltodextrin was found to conform with specifications of the commercial product. Likewise, it remained stable up to six months or more after processing as long as it is stored in freezing temperature. Developed product will be used as isotonic beverage or sports drink. Physico-chemical properties of coconut water from young and mature coconuts were characterized and compared. Likewise, microbial evaluation was conducted. Mineral content was further analyzed and compared with sports drink. Results of the analysis showed that mineral contents such as sodium, potassium, calcium, magnesium, iron, copper and phosphorus were found higher in mature coconut water than in young coconut water. There were slight differences in the physico-chemical properties but microbial evaluation showed higher contamination (total plate count and mold & yeast count) in mature coconut water than young coconut water. However, these results including *Pseudomonas & Salmonella* counts were found within required limits. Results for *E. coli* and *S. aureus* counts fall slightly below the required limits. Mineral content from both sources was found higher than sports drink in terms of potassium and magnesium content. **(Author's abstract)**

Keywords: *Chemistry, Lyophilized coconut water, Isotonic beverages, Mineral content, Microbial evaluation*

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0147

Effect-directed analysis of potential endocrine disruptors from the extracts and fractions of sediments from Laguna Lake, Philippines using the lyes-assay

Hallare, Arnold V., Schonlau, Christine, Streck, Georg, Brack, Werner, Hollert, Henner

Sediments of aquatic systems serve both as sink and secondary sources of contaminants. Previous studies reported that sediments from Laguna Lake, one of the largest aquatic resources in the Philippines, contain a complex mixture of substances. A large range of these chemicals have shown to act as endocrine-disrupting compounds. The present study, was conducted to further investigate the level of contamination of sediment samples from the lake. The LYES-Assay (Yeast estrogenic screen assay assisted by enzymatic digestion with Lyticase) was performed to screen for estrogenic active fractions in sediment samples from Laguna Lake. Sediment samples from two pre-selected sites within the lake were obtained and subjected to fractionation and effect-directed analysis: Central Bay and East Bay. The sediment samples were extracted using an accelerated solvent extraction method whereas the fractionation of extracts was carried out using the recently-developed automated online multistep fractionation method. Each fraction was tested in seven different dilution steps. Only 5 out of 38 sediment samples showed endocrine activities. In the sediment samples from East Bay four fractions showed a significant endocrine effectiveness at the one fold concentration (fraction 11,15,16, 18). The estrogenic activity ranged from 8.43 ± 4.37 ng/L at fraction 18 to 10.79 ± 5.28 ng/L at fraction 15. Only fraction 18 indicated a significant endocrine potential from Central Bay. However, it already showed significant endocrine effectiveness even at the 1/8 fold concentration of 8.80 ± 2.29 ng/L and up to 27.32 ± 18.39 ng/L at the one fold concentration. Overall, the sediment samples did not reveal a very high estrogenic impact when compared with sediments from some European sites. Characterization of fractions exhibiting endocrine activities through further chemical analyses is underway. **(Author's abstract)**

Keywords: *Chemistry, Effect-directed analysis, Sediment, Endocrine activities, Laguna Lake, LYES assay*

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0148

Fumonisin B1 contamination on selected corn-growing areas in Isabela

Paynor, J. F., Rafael,

This study was conducted to determine the fumonisin level in corn and evaluate the relationship of moldy grain, moisture content and grain damage with fumonisin level in selected corn-growing areas of Isabela.

Moldy grain and damaged grain were analyzed using physical analysis. Moisture content was evaluated using BPRE Moisture Meter and fumonisin level was determined using Fumonitest HPLC Test Procedure for Corn.

Highest level of fumonisin was found in Jones with a mean value of 3.41 ppm during the wet season and Tumauini with a mean value of 0.75 ppm during the dry season. All samples were contaminated with fumonisin. Only 2 percent exceeded the tolerable level of 5 ppm.

Based on statistical analysis, the level of fumonisin was not correlated with climatic conditions, moldy grain, moisture content, grain damage, and pre - and post - harvest practices. Only fertilizer application was found to be significantly correlated

with fumonisin level during wet season.

The fumonisin concentration in corn grown in Isabela was below the tolerable level of 5 ppm. This means these are fit for animal and human consumption. **(Author's abstract)**

Keywords: *Chemistry, Fumonisin B1, Isabela, BPRE moisture meter, Fumonitest HPLC Test Procedure*

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0149

Gold nanoparticles in silica sol-gel matrix: preparation, characterization, and application

Estacion, Blessa Bianca C., Salcedo, Alan Rodelle M.

Gold nanoparticles are attracting much attention in the field of analytical chemistry. In recent years, many attempts have been made to successfully immobilize gold nano particles for applications in sensors such as electrochemical and optical sensors. In this study, the feasibility of immobilizing gold nanoparticles in glass substrates using sol-gel method were investigated. The organosilanes: methyltrimethoxysilane (MTMOS) and (3-mercaptopropy1)-trimethoxysilane (MPTMS) were used for the preparation of sol-gel. MTMOS sol-gel was prepared using the solvent system EtOH:MTMOS:0.1MHC1 (7.5:3.75:1.0,v/v) and for MPTMS sol-gel, the solvent systems 1%MPTMS in toluene and MPTMS:MeOH:0.1MHC1 (1:3:3, molar ratio) were utilized. Spin-coating and dipping techniques were also evaluated for the application of the sol-gel onto the glass substrate prior to the immobilization of AuNPs. The immobilized AuNPs were then characterized using UV-Vis spectroscopy. Spectra of the immobilized AuNPs using MTMOS sol-gel showed no absorbance peaks both in dipping and spin-coating methods indicating the unsuccessful immobilization of the AuNPs. Using MPTMS sol-gel, the dipping technique produced an immobilized AuNPs with absorbance peaks at 565nm and 560nm for MPTMS:MeOH:0.1M HC1 and 1%MPTMS in toluene solvent systems, respectively. While the spin-coating technique produced an immobilized AuNPs with an absorbance peak of 580nm only for the MPTMS:MeOH:0.1MHC1 solvent system. The potential application for metal ion sensing was demonstrated by exposing the immobilized AuNPs to aqueous solutions of Cd2+, Cr3+, Pb2+ and Ni2+. Varying shifts in the absorbance peaks of the immobilized AuNPs were observed after exposure to these metal ions. **(Author's abstract)**

Keywords: *Chemistry, Gold nanoparticles, Spin-coating method, Methyltrimethoxysilane sol-gel, (3-mercaptopropyl)-trimethoxysilane sol-gel, UV-Vis spectroscopy*

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0150

Hallucinogenic activity and partial characterization of isolates from angel's trumpet (*Brugmansia suaveolens*) flowers

EspaÃ±ola, I. J., Rafael,

This study was conducted to test the hallucinogenic potential of the isolates of Angel's Trumpet flowers (*Brugmanisia suaveolens*) flowers. Bioactive component were extracted using 5% sodium hydroxide and chloroform.

A positive result was obtained on the preliminary test of alkaloids. Three isolates were obtained: I_1, I_2, and I_3. Only I_1 had the potential hallucinogenic activity since mortality was observed after 10 hours of intramuscular injection to laboratory rats.

Marijuna (Cannabis sativa) (MJ) solution with LD_{50} of 27.5 mg/kg was used as a positive control. Dimethyl sulfoxide was

used as a negative control.

Spectral Analysis of I_1 showed the presence of C-H, CH_3 and C-O functional groups. **(Author's abstract)**

Keywords: *Chemistry, Brugmansia suaveolens, Sodium hydroxide, Chloroform, Alkaloid, Cannabis sativa*

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(Filipiniana Analytics)
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0151

Hallucinogenic property of angel's trumpet (*Brugmansia suaveolens*) stem

Alberto, A. L. R., Rafael,

This study was conducted to determine the potential hallucinogenic components of the stem of Angel's Trumpet (*Brugmansia suaveolens*). The bioactive components were extracted using 5% sodium hydroxide and chloroform. The extract was screened for the presence of alkaloid. The hallucinogenic screening included central nervous system stimulation and depression.

Findings should alkaloids were present in the extract. Three isolates were obtained, (I_1, I_2 and I_3) using thin layer chromatography and vacuum liquid chromatography. Only I_2 had hallucinogenic potential that caused depressing effect on the central nervous system. Spectral analysis of I_2 showed the presence of C = O, C-H functional groups. **(Author's abstract)**

Keywords: *Chemistry, Brugmansia suaveolens, Sodium hydroxide, Chloroform, Central nervous system*

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0152

Inactivation of waterborne bacterial pathogen using titanium (IV) oxide and zeolite

Cruz, R. A., Paragas,

This study aimed to determine the effects of different treatments containing TiO_2 and zeolite on the survival of *E. coli* cells and to provide substantial information on the kinetics of the treatments exhibiting disinfection.

Only four out of 12 treatments (T) resulted in bacterial inactivation. These were T3 (sunlight), T6 (zeolite + sunlight). T9 (TiO_2 + sunlight) and T12 (TiO_2 + zeolite + sunlight) of these, T12 showed the fastest disinfection of the water samples with bacterial count reaching zero in just 45 minutes. Treatments 6 and 9 were consistent with first order kinetics. Exposure of the TiO_2-zeolite suspension to sunlight (T12) yielded the highest *k* value (1.17×10^{-1} min $^{-1}$) with an initial reaction rate linearly responding to increase in bacterial concentration.

Cell death was not attributable to the pH and temperature changes. Their values remained close to the optimum values for bacterial growth throughout the experiment.

Results showed that sunlight is a feasible and practical source of radiation for photocatalytic water disinfection. Study of the potential use of rice hull ash which can substitute for the analytical grade zeolite in water disinfection applications is recommended. **(Author's abstract)**

Keywords: *Chemistry, Titanium (IV) oxide, Zeolite, E. coli*

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0153

Interspecific molecular comparisons between a newly sequenced conotoxin preproregion from *Conus geographus* and a known ω-conotoxin precursor from *Conus magus*: an example of essential radioisotope usage in molecular biology

Deocaris, Custer C., Monje, Virginia D., Santos, Ameurfina D., Cruz, Lourdes J.

The promisingly diverse repertoire of conotoxins from the venom of the cone snails (*Conus spp.*) that researchers are beginning to characterize using techniques in molecular biology represents an arsenal of potential diagnostic tools for neurobiologists in the elucidation of the functioning of neuromuscular junctions and ion channels, particularly in the mammalian central nervous system (CNS). The work reported here is a contribution to the effort of depicting the diverse toxin ligands from *Conus geographus* and its interspecific comparison with a previously sequenced ω-conotoxin precursor molecule from *C. magus*. In this investigation, we obtain the cDNA sequence of the preproregion of a conotoxin from *C. geographus*, translate it into the amino acid sequence, characterize the protein and compare it with a known sequence using computer analysis. A sequence of the conotoxin prepropeptide C71 cDNA was determined to be 93 bp. Translation into its amino acids encodes the sequence:

M K L T C V V I V A V L L L T A C Q L T Q L M T Q R Y Q Q T R

The protein code satisfies the prerequisites and characteristics of a signal and a propeptide where the functional domains are shown and discussed. Comparison of C71 peprtide with MVIIA, an ω-conotoxin from *C. magus*, denotes important homologies and variabilities. Secondary structural motifs are also analyzed. The methods briefly described in this paper illustrate the current application of radioisotopes in molecular biology: (1) in the use of radiolabelled adenosine triphosphates (dATP) in DNA sequencing using Sanger's dideoxy method (Sanger *et al.,* 1977), (2) in probing of cDNA clones, and (3) in gel autoradiography. **(Author's abstract)**

Keywords: *Chemistry, Conus geographus, Conus magus, Amino acid, Protein, Radioisotope*

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Fil(S) QC173 N88 v32 1996

0154

A kinetic study of the removal of some minerals from treated water using zeolite and ZnO under laboratory conditions.

Rimocal, G. G., Salazar,

This study was conducted to determine the concentration of pollutants using the different treatments at different time intervals and to calculate the rate order for reducing of nitrates and phosphates.

Measurement of the concentration of nitrates and phosphate ions was carried out using Bricine amd Vanadomolybdophosphoric Acid Method, respectively.

The concentration of phosphates was found to decrease with time. The nitrate was reduced all through out the irradiation period.

The rate order for the reduction of phosphate was not deduced in most of the treatments except the treatment with zeolite-

ZnO in the dark. This was found to be second order.

The rate order for the reduction of nitrates was also deduced. The rate order for the reduction of nitrate concentration was second order in the different treatments except Treatment 8 which was deduced to follow a first order reaction. **(Author's abstract)**

Keywords: *Chemistry, Zeolite, ZnO, Bricine, Vanadomolybdophosphoric acid method, Nitrate, Phosphate*

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(Filipiniana Analytics)
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0155

Kinetics study and determination of degradation products of pesticide treated water using ZnO and zeolite

Espiritu, D. O., Salazar,

This study was conducted to determine the photodegration kinetics of the Malathion using zeolite and ZnO irradiated in one ultraviolet lamp.

The change of concentration of the Malathion was determined using gas chromatography-nitrogen chromatography spectrometer. The surface morphology of the ZnO-zeolite combination was viewed using the scanning electron microscope. Temperature and pH of the reaction were measured before and after collection period.

The photodegradation kinetics was investigated using the graphical integral method. Results showed that the rate order of T2 (ZnO+Zeolite+1 Uvlamp) was second order while T1 (Zeolite+1 Uvlamp) was not determined. The rate constant was 0.319 L^2 mol-2 min-2 and half-life of 36.87 minutes.

The predicted photodegradation product formed had a mass-to-charge ratio of 322.6 a.m.u/e^- with a relative abundance of 25 percent. A possible reaction mechanism was partially deduced to impurities of the malathion used in the sample. (**Author's abstract**)

Keywords: *Chemistry, Zeolite, ZnO, Ultraviolet lamp, Chromatography-nitrogen, Chromatography spectrometer*

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0156

Liquid-phase measurement with a piezoelectric quartz crystal: application to sugar solutions

Albano, Dharmatov Rahula B., Ebarvia, Benilda S., Sevilla, III, Fortunato B.

A quartz oscillator circuit that can be utilized in a liquid environment was described based on a Pierce oscillator employing a CMOS device (CD74HCT04E). Measurements were carried out on aqueous solutions of several sugars. A highly linear calibration curve was obtained for all the sugars (Pearson correlation coefficient, $r > 0.98$) with good sensitivity ($m = 84.4$ frequency shift, Hz for every % unit). Reproducibility of the sensor response ($n = 11$) was good with rsd = 5.5%. Statistical analysis of the replicate measurements ($n = 6$) revealed that there was no significant difference among the responses of the different sugars at concentrations lower than 20%. However, at high concentrations, a significant difference in the responses was

indicated. This behavior shows the potential of the instrumentation system to be employed as a detection system for sugars in liquid chromatography. **(Author's abstract)**

Keywords: *Chemistry, Sugars, Liquid-phase measurements, Piezoelectric quartz crystal*

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Fil(S) Q181 A81 v50 2002

0157

Mechanical properties of freeze-dried and irradiated bone chips, fascia lata and dura mater

De Guzman, Zenaida M., Vajaradul, Yongyudth

The compression strengths of freeze-dried and irradiated bone chips such as three-dimensional cortex (3DC) and two-cortico cancellous (2CC) are investigated. The results show that the (3DC) exhibits a higher compression strength (1.2 kN cm^{-2}) as compared with the 2CC (0.475 kN cm^{-2}) in deep frozen states. Rehydration of the freeze-dried bone chips after 15 min with normal saline solution restores the strength of materials by 30%. The tensile strengths of fascia lata and dura mater are also studied. A marked decrease of tensile strength is noted in the irradiated and freeze-dried samples, however, reconstitution with normal saline solution restores the tensile strength of the tissues to about 40-56%. (**Author's abstract**)

Keywords: *Chemistry, Irradiated bone chips, Fascia lata, Dura mater*

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0158

Molecular assembly and electropolymerization of 3,4-ethylenedioxythiophene on Au(100) single crystal electrode using in-situ electrochemical scanning tunneling microscopy

Garcia, Jonyl L., Tongol, Bernard John V., Yau, Shueh-Lin

Electrochemical scanning tunneling microscopy (EC-STM) is a powerful technique that can provide molecular-level information regarding electrode surface processes in-situ in electrolyte solvent under ambient conditions. In this study, the adsorption and electropolymerization of an industrially important conducting polymer precursor, 3,4-ethylenedioxythiophene (EDOT), on Au(100) single crystal was probed using EC-STM. The Au(100) single crystal electrode substrate used for this study was fabricated using the well-known Clavilier's flame melting procedure. Cyclic voltammetry (CV) was used along with EC-STM to characterize the bare, EDOT-modified, and poly(EDOT)-modified Au(100) single crystal electrode. Time-dependent EC-STM imaging at 0.550 V showed the formation of an EDOT self-assembled monolayer through 2-D surface diffusion. The resulting EDOT molecular assembly on Au(100) single crystal electrode was found to fit in a $4\sqrt{2} \times 3\sqrt{2}$ unit cell. Difference in apparent corrugation between molecular rows was attributed to different angular orientation with respect to the substrate. The electropolymerization of EDOT on Au(100) single crystal electrode was done by potentiostatic and potentiodynamic methods. Both methods suggested a solution-process mechanism for EDOT electropolymerization. **(Author's abstract)**

Keywords: *Chemistry, Conducting polymers, Electrochemical scanning tunneling microscopy, Cyclic voltammetry, Molecular self-assembly, Electropolymerization*

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0159

Nitrogen assimilation of hydroponically -grown leaf lettuce applied with - polymer coated inorganic fertilizer in varying amounts of TiO_2 using nutrient film technique

Baute, S. D., Paragas,

This study determined the effect of titanium dioxide powder and polymercoated inorganic fertilizer on the nitrogen assimilation and selected agronomic properties of leaf lettuce such as plant weight, plant equatorial diameter, and plant leaf area index.

The uncontrolled temperature condition at the greenhouse highly affected the growth of lettuce. Treatment with TiO_2 enhanced the nitrogen availability to plants. This was amplified to by the high temperature.

Treatments with direct applications of TiO like T8 exhibited nitrogen toxicity. Those without TiO_2 nutrient solutions showed better pH (T_2) and better EC levels in T1 which are closer to the required range and require fewer adjustments. Lettuces at these treatments showed appreciable agronomic responses.

For Treatment T5, agronomic properties were promising and can be grown better if the temperature is controlled. Even at high temperature, plants managed to aquire better qualities due to the presence of photocalyst with encapsulation. **(Author's abstract)**

Keywords: *Chemistry, TiO2, Titanium dioxide powder, Nitrogen*

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0160

Photodegradation of pesticide-treated water using zeolite and TiO_2

Agoyaoy, L. A., Paragas

This study was conducted to remove organic water contaminants using zeolite, TiO_2 and zeolite-TiO_2. Samples were eradicated with UV and sunlight for 2 to 4 hours. Temperature and pH readings were noted. TiO_2 and zeolite were subjected to Scanning Electron Microscopic (SEM) analysis.

Results of gas chromatographic analysis using gas chromatography/bitrogen – phosphate detector (GC-NPD) revealed that TiO_2 alone could decompose malathion and carbaryl effectively. No traces were detected after 2 to 4 hours exposure of treatments containing the photocatalyst, regardless of the kind of light source used.

Effect of zeolite was found to be very negligible. Decomposition of pesticides was rapid at higher pH and slow at pH < 7. Temperature was found to affect the concentration change at higher degrees than below 28 °C of which effect was minimal.

TiO_2 alone can decompose malathion and carbaryl regardless of the kind of radiation source and decomposition was better at higher pH and temperature. Use of zeolite alone can be negligible.

SEM analysis of TiO_2 explains its activity on malathion and carbaryl. That is, no residues were detected after 2 to 4 hours exposure to either UV lamp or sunlight. **(Author's abstract)**

Keywords: *Chemistry, Zeolite, TiO2, Zeolite-TiO2, Scanning electron microscopic (SEM)*

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0161

Potentiometric sensor for melamine using electropolymerized polyaniline membrane

Fernandez, Dasha A., BiÃ±as, Francis G., Sevilla, III, Fortunato B.

A simple, rapid, and inexpensive way of quantifying melamine was devised using a potentiometric sensor based on the molecularly imprinted- polymer (MIP). Polyaniline (PAni) membrane was electrodeposited on a graphite/epoxy composite electrode using potentiostatic polymerization. Melamine, which served as the template molecule, was extracted from the polymer membrane. Several parameters were optimized such as the applied potential, polymerization time, melamine and aniline molar concentration ratio, conditioning time and pH. The linear range for melamine determination was $1.0x\ 10^{-10}$ - $1.0x\ 10^{-2}$ M in buffered solution with a sensitivity of 0.5380 mV / decade, linearity of 0.9990 (n= 3) and a limit of detection of $2.5x\ 10^{-15}$ M. The sensor response was found to be repeatable. The morphology of the polymer was probed by scanning electron microscopy (SEM). **(Author's abstract)**

Keywords: *Chemistry, Potentiometry, Graphite/epoxy composite, Electropolymerization, Polyaniline, Molecular imprinting*

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0162

Preparation and characterization of carbon-supported PTSN electrocatalysts for ethanol oxidation: possible application for inkjet ink formulations

Tongol, Bernard John V., Hsu, Hao Yuhn C.

The study aimed to utilized inkjet printing technique as a possible fabrication method for developing new Pt-based anode systems with enhanced electrocatalytic behavior towards ethanol oxidation, while reducing the cost of preparation. Carbon-supported Pt and PtSn catalysts of different atomic ratios (90:10, 80:20, 70:30, 60:40 and 50:50) were synthesized by using a modified polyol method. X-ray diffraction (XRD) data revealed that the estimated particle sizes of all synthesized catalysts were approximately 2.0-3.0 nm. Cyclic voltammetry (CV) was used to evaluate the catalytic activity of the synthesized catalysts towards ethanol oxidation. CV data showed that $Pt_{80}Sn_{20}$ exhibited the highest activity with current density of 88.192 $mA{\cdot}cm^{-2}$. Chronoamperometry (CA) data confirmed that $Pt_{70}Sn_{30}$ was the most stable among the prepared catalysts with long-term poisoning rate of $4.25\ x\ 10^{-3}$(% per s), which was 4 times lower than Pt ($1.70\ x\ 10^{-2}$). The catalyst with the optimum performance was used as the ink pigment of the inkjet ink formulations. It was seen that the addition of dispersant to the formulations affects the stability and catalytic performance of the ink catalysts. The ink formulations are being characterized by its dispersion stability, preservation stability, drying characteristic and clogging tendency. **(Author's abstract)**

Keywords: *Chemistry, PtSn catalyst, Polyol method, Cyclicvoltammetry, Ethanol oxidation, Inkjet printing technique, Ink formulation*

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0163

Preparation and characterization of dye-sensitized solar cell based on PT nanoparticles/poly(3,4-ethylenedioxythiophene)-poly(styrenesulfonate) on fluorine-doped tin oxide as counter electrode electrocatalyst

Morenos, Lei Angeli S., Tongol, Bernard John V., Mitsuke, Koichiro

Dye-sensitized solar cells (DSSCs) have attracted an increasing interest as an alternative source of energy because of its low cost, easy production, relatively high efficiency, potential transparency and flexibility. In this study, a simple and fast fabrication of DSSC counter electrode was demostrated based on electrodeposition of Pt nanoparticles on Poly(3,4-ethylenedioxythiophene) poly(styrenesulfonate) (PEDOT:PSS)-modified Fluorine-doped Tin Oxide (FTO) glass substrate. Cyclic Voltammetry (CV) shows that the electrocatalytic activity towards triiodide/iodide redox reaction of the electrodeposited Pt/PEDOT:PSS on FTO (I_{pc} = -2.07μA/cm^2) is more superior as compared to the spin-coated Pt/PEDOT:PSS electrocatalyst (I_{pc} = -1.47 μA/cm^2). It was also found that the electrocatalytic activity of the Pt particles was enhanced when PEDOT:PSS was used as a support matrix for the Pt particles. Similarly, an increase in the conversion efficiency of DSSC, prepared using Pt nanoparticles-based counter electrodes, was obtained when these nanoparticles were electrochemically deposited on PEDOT:PSS support matrix (6.6%) rather than on bare FTO substrate (6.2%). This efficiency is comparable to the DSSC fabricated using commercial Pt paste (~6.9%) counter electrode. Meanwhile, Field Emission Scanning Electron Microscopy (FESEM) revealed the dispersion and approximate size of Pt particles (~5 nm) on the FTO glass substrate. **(Author's abstract)**

Keywords: *Chemistry, Dye-sensitized solar cells, Counter electrode, Platinum nanoparticles, PEDOT:PSS, CV, FESEM*

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0164

Radioiodination of T3 and T4 by chloramine T method

de Jesus, Elizabeth M., Salabit, Ma. Teresa A.

Tracers for the radioimmunoassay of T_3 and T_4 were prepared using chloramine T method. Standard T_3 and NaI^{125} were mixed with chloramine T in phosphate buffer and incubated for 30 s. Sodium metabisulfite and potassium iodide were added to stop the reaction. A pre-equilibrated Sephadex G-25 column separated the labelled products with bicarbonate buffer as eluant. Chemical and Immunological assessment of the tracers presented in the paper substantiates the view that both T_3 and T_4 tracers and standards can be produced at a lower over-all cost in the Philippines. **(Author's abstract)**

Keywords: *Chemistry, Chloramine T method, Sodium metabisulfite, Potassium iodide*

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(Filipiniana Analytics)
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0165

Rates and products of photocatalytic degradation of malathion in water using TiO_2 and zeolite

Flores, I. D., PeÃ±aloza, Jr.,

This study was conducted to determine the rates and products of photocatalytic degradation of malathion in water using TiO_2 and zeolite irradiated in one ultraviolet lamp.

The change of concentration of the Malathion was determined using gas chromatography nitrogen phosporus detector. Its structure of degradation was monitored using Liquid Chromatography-Mass Spectometer. The characterization of zeolite and TiO_2 was determined using the Scanning electron Microscope.

Temperature and pH of the reaction were measured before and after collection period. Determination of degradation product was done using Liquid Chromatography-Mass Spectometer. Investigation was done using the graphical method.

Results showed that T1 (combination of zeolite and TiO_2 irridiated to 254 nm UV lamp) was a first order reaction. T2 (malathion in water irradiated to 254 nm) failed to determined. **(Author's abstract)**

Keywords: *Chemistry, TiO2, Zeolite, Nitrogen, Phosphorus detector, Phosphorus*

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0166

Removal of nitrates and phosphates from treated water using and TiO_2 zeolite

Lipana, M. M., PeÃ±aloza, Jr.,

This study was conducted to determine the rate order of nitrates and phosphates in different treatments of Tio_2 and TiO_2 incorporated with zeolite and exposed to the dark and different levels of UV lamps in contaminated water. This also measured the pH and temperature of the irradiated sample before and after exposure.

Results of the study showed that all the treatments caused a decrease in concentration of both nitrates and phosphate. Though there was a decrease in concentration, different treatments had comparable nitrate concentration except 6 hours of exposure which was attributed to the effect of radiation. T3 (TiO_2 + 2UV lamps) and T7 (TiO_2 + zeolite + 2UV lamps) gave the lowest nitrate concnetration among the treated water samples. For the phosphate, variable ability was seen at 3 hours collection period.

Also, calculated rate order in the reduction of nitrates was zero order in T5, T6, and T8. Treatment 1, 2, and 3 followed the first order rate of reaction. For T4 and T7, the rate order failed to be determined.

On the other hand, the rate order in the reduction of phosphates was found to be zero order and second order. Treatments which followed a zero order included T3, t4 and T8 while T1 and T6 followed a second order reaction. However, T2, T5 and T7 had undetermined rate order. **(Author's abstract)**

Keywords: *Chemistry, Zeolite, TiO2, UV lamps, Nitrate, Phosphate*

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(Filipiniana Analytics)
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0167

Removal of selected inorganic pollutants in contaminated water using zeolite-ZnO photocatalyst

Baute, S. D., Paragas,

This study was conducted to measure the concentration of inorganic pollutants containing minerals using ZnO-zeolite photocatalyst in contaminated water. Measurement of pH and temperature of the samples was done before the analysis.

The effect of zeolite-ZnO loadings on the concentration of the solution was determined using colorometric analysis.

Sunlight treatments (T5 and T10) yielded the highest percentage of decreased nitrates after 6 hours of exposure. This was the most effective among the other treatments. For phosphate, the effect of 3- UV lamps (T4 and T9) established the highest concentration eliminated from the original concentration.

Results showed that combined zeolite-ZnO effectively removed nitrate and phosphate present in the water samples. **(Author's abstract)**

Keywords: *Chemistry, zeolite-ZnO, Nitrate, Phosphate*

CLSU Scientific Journal, Volume No. 25 Issue No. 1, 70
(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0168

Removal of selected minerals from treated water using zeolite and TiO2 under laboratory condition

Sablay, E. N., Paragas,

This study was conducted to determine the effect if irradiated and non-irradiated TiO_2 and zeolite suspensions on the concentration of NO_3^- and $PO4^{3-}$ in contaminated water and assess the effect of different quantities of UV lamps on the change in concentration of nitrates and phosphates in the TiO^2 and zeolite suspensions. This study also assessed the viability of using sunlight as a radiation source for the reduction of nitrates and phosphates using TiO2 and zeolite.

Concentration of nitrates and phosphates were monitored using Brucine and Vanadomolybdate spectroscopic methods, respectively.

Sunlight treatments yielded the most favorable response in terms of reduction of NO_3^-. Under UV exposure, two UV lamps revealed the most effective. In terms reducing phosphates, exposure to sunlight gave a poor response. Exposure to 1 UV lamp under TiO_2 media gave the best result followed by the treatment exposed to 2 UV lamps. **(Author's abstract)**

Keywords: *Chemistry, Zeolite, TiO2, UV lamps, Nitrate, Phosphate, Brucine, Vanadomolybdate spectroscopic methods*

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(Filipiniana Analytics)
Fil(S) S539 P5C33 25/1 2005

0169

Secondary metabolites from the leaves of *Psychotria gitingensis* Elmer

Eusebio, Jameson A., Tan, Mario A.

Phytochemical studies involving the genus *Psychotria* (Rubiaceae) have been conducted and it has been established that many species under this genus contain interesting chemical constituents, mostly comprised of alkaloid-type metabolites. This research intends to isolate and identify the secondary metabolites from the crude foliar extract of *P. gitingensis* Elmer, a plant species endemic to the Philippines. The crude methanolic extract was subjected to acid-base partitioning which gave the crude base extract. Initial normal phase gravity column chromatography (silica gel 60) of the crude base extract afforded nine major

fractions (PgC-A to PgC-I) and PgC-F and PgC-G have light orange spots in TLC using Dragendorff's reagent, which may be indicative of the presence of alkaloids. Further normal phase gravity column chromatographic purification of PgC-F and PgC-G both led to the isolation of vomifoliol, a sesquiterpenoid whose structure was elucidated based on extensive spectroscopic analyses (1D and 2D NMR, and MS) and comparison with reported literature. Vomifoliol was also tested for its antimicrobial activity using the agar diffusion paper-disc method and it showed moderate activity towards *Klebsiella oxytoca* at 0.5 mg/mL. Structure identification and antibacterial evaluation of the other isolated constituents are in progress. The results of this study present an implication on the chemotaxonomic relationship of *P. gitingensis* with other members of genus *Psychotria*. This study represents the first phytochemical work on Philippine *Psychotria*, particularly on *P. gitingensis*, and the first isolation of vomifoliol from the genus *Psychotria*. **(Author's abstract)**

Keywords: *Chemistry, Psychotria gitingensis, Rubiaceae, Secondary metabolites, Vomifoliol, Dragendorff's reagent*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0170

A silver ion potentiometric sensor based on a synthesized 1,3-Benzocrown macrocyclic diamide as neutral carrier

del Mundo, Florian R., Capangpangan, Rey Y., Arco, Susan D., Solis, Jose S., Obena, Rofeamor P.

A synthesized benzo-crown macrocycle, 1,15-diaza-3,4;12,13-dibenzo-5,8,11-trioxacyclooctadecane-2,14-dione (1,3-MDA), was employed as an ionophore in the fabrication of polymeric ion-selective electrodes (ISE) for silver ion. The electrode membrane ingredients consisting of PVC/Plasticizer (*o*-NPOE) ratio of 0.94 and ionophore/additive ratio of 2.0 exhibited near Nernstian response of 57.75 mV/decade activity of Ag^{+} over a linear concentration range of 10^{-6} *M* to 10^{-3} *M* (R2 = 0.9921). The dynamic response time of this electrode was ~2 min at pH range of 3-9. The sensor has a limit of detection (LOD) of 6.32 x 10^{-7} *M*, and was stable for at least one month. Initial investigation on the applicability of this new ISE for the detection of silver ions in photographic wastewater sample and comparison of its performance with conventional method (Atomic Absorption Spectroscopy) were also reported. **(Author's abstract)**

Keywords: *Chemistry, Ionophore, Macrocyclic diamide, Potentiometry, PVC electrode, Silver ion-selective electrode*

Philippine Journal of Science, Volume No. 141 Issue No. 1, 45-55
(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0171

Synthesis and grafting of monochlorotriazinyl-ß-cyclodextrin (MCT-ß-CD) on knitted cotton and cotton-polyester fabrics

Gomez, Gilbert V., dela Rosa, Francis M., CariÃ±o, Argentina T., LeaÃ±o, Jr., Julius L.

Monochlorotriazinyl-ß-cyclodextrin (MCT-ß-CD), **4** was synthesized from cyanuric chloride, **1** and ß-cyclodetxrin, **3**. The synthesized MCT-ß-CD was applied to cotton and cotton-polyester (50/50 and 65/35) by pad-dry-cure method. Subsequent characterization of the grafted fabrics through Fourier Transform Infrared-Attenuated Total Reflectance (FTIR-ATR) Analysis revealed the successful grafting of MCT-ß-CD, **4** into cotton and cotton-polyester fabrics with the appearance of characteristic peaks at 1489 cm^{-1} and 1404 cm^{-1}. Further, the grafted fabrics through Energy Dispersive Spectroscopic (EDS) Analysis revealed the presence of Nitrogen, indicative of the presence of the synthesized MCT-ß-CD, **4** on the surface of cotton and cotton-polyester fabrics. Durability test revealed that MCT-ß-CD-grafted cotton and cotton-polyester fabrics can withstand at least one washing cycle. **(Author's abstract)**

Keywords: *Energy dispersive spectroscopic, Chemistry, Cyanuric chloride, Monochlorotriazinyl-ÃŸ-cyclodextrin (MCT-ÃŸ-CD), Nitrogen*

PTRI Samay Bulletin, Volume No. Issue No. , 23-30
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.13 2013

0172

Total phenolic content and textile dye performance of dried Coffea robusta (coffee) mesocarp

LeaÃ±o, Jr., Julius L., Tadeo, Neil Jhon G., Manalang, Evangeline Flor P.

The total phenolic content (TPC) of the Robusta coffee (*Coffea robusta*) pulp was successfully determined using Folin-Ciocalteu assay. Different factors, such as extraction methods, sample to solvent ratio, solvent system, temperature, rate, and duration, affect the amount of TPC extracted. Based on the results, refluxing with 50:50 EtOH-H_2O is the best extraction solvent-system and approach. The crude coffee pulp extracts were freeze dried and was found to have the highest powder yield of 54.6% from extraction by boiling in water. The powdered extract was characterized using FTIR-DRS and UV-Vis Spectroscopy. FTIR spectrum showed the presence of peaks corresponding to alcoholic O-H, alkyl C-H and aromatic C=C vibrations. UV-Vis spectrum showed a maximum peak at 312 nm corresponding to the electronic transitions of $_{TT}$ electrons in the benzene ring of the polyphenolic compounds. Results confirmed the presence of polyphenolic compounds as earlier detected by Folin-Ciocalteu assay. Dye potential of the coffee pulp powder was investigated and was found to impart light brown color to pineapple (*Ananas comosus*), abaca (*Musa textilis*), silk (*Bombyx mori*) and pineapple-silk) fabrics. Results further revealed that the dyed fabrics, whether pre-mordanted or not, showed satisfactory performance to colorfastness laundering and perspiration tests and these colorfastness properties proved that *C. robusta* mesocarp is a promising textile dye source. **(Author's abstract)**

Keywords: *Chemistry, Coffea robusta, Folin-ciocalteu assay, FTIR-DRS*

PTRI Samay Bulletin, Volume No. Issue No. , 31-48
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.13 2013

COMPUTER SCIENCE

0173

Synchronizing *p* timepieces in θ($\log_2 p$) steps

Pabico, Jaderick P.

In response to Department of Science and Technology's (DOST) "Juan Time, On Time" program, which aims to encourage Filipinos to use the Philippine Standard Time, we take it further by providing a log (p) broadcast and reduction protocol for automatic synchronization of p timepieces that are connected through some communication media (e.g. Wi-Fi, LAN, etc), where the current Berkeley protocol uses p steps. Given p timepieces displaying different time readings T_1, T_2, ..., T_p, respectively, the purpose of the communication schemes is to :

1. Perform a many-to-one reduction with log(p) steps of T_i, for all i's, to a designated master timepiece p_1, incorporating the time-delay due to reduction propagation r_i to each T_i at the ith reduction step.
2. The master timepiece p_1 performs an average T' of the $T_i + r_i$, and then updates its own time by $T'' = T' + C(T')$, where $C(x)$ is the time cost of performing the mathematical operation x.
3. The master then initiates a log(p)-step one-to-many broadcast of T''' where at the ith step of the broadcast, the time-delay b_i due to broadcast propagation is recorded, and the timepieces involved in the broadcast step updates its own clock by $b_i + T''$.

At the end of the reduction and broadcast, all P timepieces will display the same $b_{\log p} + T''$ time, which can be done in exactly $\theta(\log p)$. **(Author's abstract)**

Keywords: *Computer science, Clock synchronization, Berkeley algorithm, Broadcast, Reduction, Î¸(log2p) steps*

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ECOLOGY

0174

Autotrophic and heterotrophic carbon production by larger foraminifera from the shallow water area off Cebu, Philippines

Bolter, Manfred, Graf, Gerhard, Wefer, Gerold

The larger benthic Foraminifera *Marginopora vertebralis, Heterostegina depressa* and several species of the genera *Amphistegina* and *Calcarina* were investigated with respect to their carbon contribution to a tropical shallow water ecosystem. These foraminiferans harbor algal symbionts.

The incorporation of dissolved organic compounds, such as glucose, fructose, mannose, glutamic acid and amino acids, seemed to be of minor importance for the biomass production of the foraminiferans, and no preference for a specific substrate was detectable. The production based on the uptake of these dissolved organic compounds, however, is in the same range as the primary production of the endosymbiotic algae. This is especially true during the night as the production rates are 5 to 15 times higher during the dark phase as compared to the light period. The part of incorporated dissolved organic matter that is respired is also significantly increased during night hours, while the carbonate production turned out to be independent of light.

Primary production of *Marginopora vertebralis* by endosymbionts was in the range of 14.4-17.06 x 10^{-6} µg C h^{-1} mg^{-1} dry weight indicating a turnover of the organic biomass of the tests of 17-20 days. Only 15% of the carbon fixed by photosynthesis was incorporated into carbonates.

Marginopora vertebralis belonging to the suborder Milliolina showed a significantly decreased ratio of ATP-biomass versus ETS-activity when compared to the other investigated foraminiferans from the suborder Rotaliina. In the sediments of a *Sargassum* area 107,000 individuals per m^2 of the genus *Amphistegina* were found. The accounted for more than 50% of the ATP-content of the top sediment layer and for 7% of the observed ETS-activity **(Author's summary)**

Keywords: *Ecology, Foraminifera marginopora vertebralis, Heterostegina depressa, Amphistegina, Calcarina, Glutamic acid, Amino acid, Glucose, Fructose*

The Philippine Scientist, Volume No. Issue No. , 51-52
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0175

Fruit bats diversity in three sites in Argao watershed, Southern Cebu, Philippines

Alburo, Hemres M., Alcazar, Steve Michael T., Agbay, Eva A., Lillo, Edgardo P., Malaki, Archiebald B., Obiso, Leslie S., Hoyohoy, Glenn B., Rica, Rachel Luz V., Opiniano, Rosalyn, Manalastas, Rebecca

Field survey were conducted at the three sites in Argao watershed between 20 December 2004 to 18 April 2005 with a total sampling effort of 120 net-nights in each study site. Bats were assessed using mist-nets (1.22 m x 6 m) placed at different

elevation gradients. Eight species comprising 243 fruit-bats were recorded across the study sites. These included the critically endangered Philippine Tube-nosed fruit-bat *Nyctimene rabori*, the third locality record of both the Philippine Pygmy fruit-bat *Haplonycteris fischeri*. and the Little Golden-mantled flying-fox *Pteropus pumilus*.

The remaining natural forests in all sites are highly disturbed due to destructive activities such as cutting of trees for house construction and repair, charcoal and fuel wood business, clearing of forests for agricultural expansion, hunting of bats for food, and poaching. These activities are prevalent and have resulted in the decline of fruit bat populations. The presence but low abundance of three Philippine endemic species; namely, *H. fischeri, P. jagori,* and *N. rabori* in the study sites indicate the need to conserve the remaining natural forest in Argao.

There is a need for more comprehensive surveys in order to implement effective conservation programs for both endemic and threatened species. **(Author's abstract)**

Keywords: *Ecology, Argao watershed, Fruit bats, Southern Cebu, Philippine endemic fruit bats*

Silliman Journal, Volume No. 49 Issue No. 1, 45-56
(Filipiniana Analytics)
Fil(S) AS538 S46 49/1 2008

0176

Remineralization of organic substances on benthic surfaces in the intertidal reef area off mactan, Cebu, Philippines

Graf, Gerhard, Meyer-Reil, Lutz-Arend

This study attempts to estimate sediment's contribution to remineralization through the analysis of their oxygen consumption and its capacity to decompose particulate organic matter. ATP extraction were done according to Bancroft et al., while ATP analysis with the luciferine liciferase enzyme system was carried out using the JRB ATP-photometer through Witzel method. The ETS activity was determined following Pamatmat et al. All enzymatic methods were run at air temperatures. Results show that variability of benthic activities shows the fast response of organisms to the dominating light and tidal flux factors in the area.

Keywords: *Ecology, Marine ecosystem, Organic substances, Rhizomes, Sea grass, Sargassum*

The Philippine Scientist, Volume No. Issue No. , 42-46
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0177

Sedimentation of organic matter in Hilutangan Channel as affected by vertical fluxes and transport processes from adjacent areas

Pollehne, Falk, Balzer, Wolfgang, von Bodungen, Bodo

Sediment trap experiments were conducted at Mactan Island, Philippines to monitor the transport rates of organic matter from a reef system into an adjacent deep channel (Hilutangan Channel) and the subsequent loss of particles from its surface layer. The results showed a more constant flux of organic particles through both boundaries as compared to inorganic ones. Phosphorus and nitrogen as essential elements are retained by both systems so that mainly carbon compound-enriched material is lost from the euphotic cycles. **(Author's abstract)**

Keywords: *Ecology, Sedimentation, Organic particles, Phosphorus, Nitrogen*

The Philippine Scientist, Volume No. Issue No. , 25-29
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0178

Short-term variation of heterotrophic activity on the surface film of *Sargassum* and in the sediment

Meyer-Reil, Lutz-Arend, Graf, Gerhard

Concentration and decomposition rates of protein, as well as ETS activity in the surface film of Sargassum leaves studies were conducted to determine the extent of variation of heterotrophic activity on a short term scale (24 hour period). Results show that protein concentration was positively correlated with the rate of decomposition. Moreover, the study shows that ETS activity was negatively correlated with both concentration and decomposition rate of protein. Therefore, it should be expected that a constant biomass produces a constant potential activity.

Keywords: *Ecology, Sargassum, Tidal flux, Organic material, Oxygen*

The Philippine Scientist, Volume No. Issue No. , 47-50
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0179

Vulnerability of Philippine amphibians to climate change

Alcala, Angel C., Bucol, Abner A., Diesmos, Arvin C., Brown, Rafe M.

There are currently recognized 107 species of Philippine amphibians. In addition, several possible new species await formal taxonomic description. Most of them occupy microhabitats in moist or wet tropical rainforests. Based primarily on their known reproductive modes and microhabitats (including altitudinal distributions), the vulnerability of each amphibian species was assessed. The results of our assessment indicate that 26 species (24.30%) are Highly Vulnerable, 48 species (44.86%) are Moderately Vulnerable, 27 species (25.23%) are Vulnerable, and 6 species (5.61%) are Least Vulnerable to climate change. However, this preliminary assessment is tentative and requires verification through field studies using other sets of indicators. Additionally, virtually all new species currently awaiting description are known from forested mountain habitats. These species are deemed disproportionately susceptible to climate change. Thus, the percentages of vulnerable taxa are expected to climb sharply with ongoing taxonomic and ecological studies. **(Author's abstract)**

Keywords: *Ecology, Amphibians, Climate change, Montane, Moisture-dependent, Philippines, Vulnerability*

Philippine Journal of Science, Volume No. 141 Issue No. 1, 77-87
(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

EDUCATION

0180

Development of instructional materials in business communication: an action learning

Cubillas, Edorlita P., Abellanosa, Jovita Ann G.

In response to the need of improving college instruction, the authors attempted to design, monitor, and evaluate an instructional program and material in terms of effectiveness which meant improvement of knowledge, attitude, and skills. Its built-in action research aimed to monitor the process of the development of instruction and materials and to evaluate their results. The design therefore was an action learning process that linked analysis, prognosis, implementation, and testing of English 58 (Business Communication), a third year course offering of the College of Arts and Sciences at CMU for agriculture students. Results showed that students' learning needs matched with the contents and strategies used in the prototype design and materials; ninety percent (90%) of forty unit objective-based activities were fully actualized while only ten percent (10%) were not achieved due to time constraint; nine (9) out of thirteen (13) criteria on unit evaluations were rated by students as very effective; and a very high significant difference in pre - post T-test results. The results implied a consistency among the levels of evaluation, that the instruction was really effective. However, this did not set aside the interim assessments that showed suggestions for improving strategies and adding important contents. It resulted to the revision of instruction design and materials. **(Author's abstract)**

Keywords: *Education, Business communication, Action learning, Instructional materials*

CMU Journal of Science, Volume No. 10 Issue No. 2, 93-113
(Filipiniana Analytics)
Fil(S) Q1 C311 10/2 2002

0181

Educational asistance program: the case of the Nueva Ecija provincial government

Ben, D.L., Bulanan, M.I., PeÃ±aloza, Jr., D.P., Kollin, E.W.

This case study was conducted to determine the status of students in the Nueva Ecija Provincial Government (NEPG) extension classes being implemented by the Cenral Luzon State University. These classes are held late in the afternoon and early evening to help poor but deserving and working students interested in pursuing higher education.

Documentary analysis and interviews were used in gathering the data. Descriptive statistics was used in the data analysis.

Findings showed that enrollment in the NEPG program increased through the years from SY 1999 to 2003. However, it also had high attrition rate so that in 2003, it graduated only 354 after more than five years of implementation.

In terms of grades given by the teachers, English 100 and Math 100 had higher percentage of failures than the other subjects. The CLSU faculty gave lower average grade (2.74) than the CLSU non-faculty (2.66) and the non-CLSU faculty (2.55). Also, the percentage of failures was higher among the students taught by the CLSU faculty (11.25%) than the CLSU non-faculty (1.84%) and non-CLSU faculty (0.79%). **(Author's abstract)**

Keywords: *Education, Educational assistance progran, College admission test, Affirmative action program*

CLSU Scientific Journal, Volume No. 23 Issue No. 2, 27-36
(Filipiniana Analytics)
Fil(S) S539 P5C33 23/2 2003

ENGINEERING

0183

Disaster risk management background of DMAPS for infrastructure

Pacheco, Benito M.

The first part of this paper is a situationer for the Philippines in the most recent (2009) UN global assessment report that ranked it among the first 14 of approximately 200 countries and economies whose population is most at risk from earthquakes, cyclones, landslides, and floods. Second is an introduction of DMAPS for Infrastructure, a new (2009) public-private partnership agreement for disaster mitigation, adaptation, and preparedness strategies for infrastructure, involving scientists and enginers in the Philippines; this may be viewed as having evolved from the Philippine Institute of Civil Engineers DMAPS that was first conceptualized five years earlier (2004), and DQRP that was first institutionalized four years even before (2000), both volunteerism programs by Filipino civil engineers. Third and main part is a framework of concepts and terminologies that the author proposes for engineers and scientists to harmonize among themselves and with professionals in finance, medicine, and other disciplines. The author proposes that fundamental issues common to various professional disciplines concerning the management of risk be associated with four general steps of risk management, easily remembered as R-I-S-K: Recognize, Impute an estimate, Survey over time, and Keep inside tolerance range. The particular type of risk needs to be clearly recognized (in step 1 of risk management), before deciding on the ordinal or other level of measure to impute an estimate (in step 2 of risk management). The older paradigm of managing disaster meets the newer paradigm of managing risk, at the step of surveying the risk over time (in step 3 of risk management), by virtue of the recognition that risk factors do evolve. Risk reduction is cited as the preferred mode of keeping disaster risk inside the tolerance range, yet many risk control modes indeed exist (in step 4 of risk management) from many viewpoints. Highlights of the four steps of the risk management spiral are summarized; ideally, each complete cycle of risk management R-I-S-K brings down the level of uncertainty and reduces the risk. It is proposed that the DMAPS for Infrastructure public-private partnership program be viewed in this framework. In appendices, this paper includes three essays that offer an altrnative way of appreciating risk management concepts and terminologies. **(Author's abstract)**

Keywords: *Engineering, Risk factor, Hazard , Exposure, Vulnerability, Uncertainty, Human factor, Risk management spiral, Volunterism*

Philippine Engineering Journal, Volume No. 28 Issue No. 2, 1-28
(Filipiniana Analytics)
Fil(S) TA4 P532 28/2 2007

0184

History and development of prediction models of time-to-initiate-corrosion in reinforced concrete structures in marine environment.

Que, Norbert S.

This paper presents the history and development of mathematical models for the prediction of time to initiate corrosion of reinforced concrete exposed to chlorides in marine environment. Emphasis is given to prediction models (empirical and mathematical) that consider Fick's 2nd law of diffusion as the theoritical basis. Since repair and rehabilitation of corroded reinforced concrete marine structures draw significant portion of the budget for infrastructures, the capability to accurately predict deterioration levels due to to chloride attack, especially the time-to-initiate corrosion, in reinforced concrete structures exposed to chloride-induced corrosion can translate to major economic savings and possible extension of service life of a member or a structure. **(Author's abstract)**

Keywords: *Engineering, Chloride, Marine environment, Fick's 2nd Law, Reinforced concrete, Corrosion*

Philippine Engineering Journal, Volume No. 28 Issue No. 2, 29-44
(Filipiniana Analytics)
Fil(S) TA4 P532 28/2 2007

0185

Hydraulic computations for flood routing of a modular urban stormwater drainage system

Cruz, Eric C.

This paper discusses the htdraulic analyses carried out to evaluate flooding due to overbanking of stretches of a 4-meter-wide drainage canal through an existing subdivision in Metro Manila. The proposed land development will convert the upstream portion of the property into a mixed-use commercial residential area. Computations are carried out to determine the spatial extent of the present flooding potential, and to quantify the upstream-migrated inundated areas under the present condition of a submerged exit. Hydraulic analyses are also undertaken to solve the recurring problem of a submerged culvert outfall. The study also provides the quantitative bases for the structural measures to mitigate the flooding hazards associated with the land use modifications. It is concluded that hydraulic computations are necessary in predicting local flooding conditions, as well as in analyzing the effects of proposed engineering interventions to mitigate this condition. The methodology is demonstrated via project application involving an urban stormwater drainage system. **(Author's abstract)**

Keywords: *Engineering, Flood routing, Urban drainage, Stormwater, Hydraulic analysis*

Philippine Engineering Journal, Volume No. 28 Issue No. 2, 45-58
(Filipiniana Analytics)
Fil(S) TA4 P532 28/2 2007

0186

Leadership and strategic alignment in construction

Acacio, Alexis A.

Construction management and engineering is generally thought of as a purely technical part of construction management consisting of bar charts, scheduling, estimates and bidding. While these tools may guide a company to construct a project, the management skills and techniques employed are generally not enough to ensure the success and optimization of a construction project. A successful construction project manager needs three skills that are separate but nonetheless interrelated and interdependent. These skills are 1.) Leadership skills, 2.) General management skills, and: 3.) Construction engineering and technical management skills.

While civil engineers are expected to be competent in construction management skills, areas of expertise in project leadership , organizational alignment and general management are lacking. Organizational alignment is the congruence and compatibility of the various activities in a construction project and determines the outcome of success or failure. This looks at the external environment in which the firm operates and the internal capabilities that it can offer. It is important that the needs of the various stakeholders in a project are satisfactorily met to ensure project success.

This paper aims to describe the leadership and general management skills that are necessary for the successful completion of projects. The trategic fit that is necessary to ensure project success is described through a strategic alignment methodology. This simple process can be used by construction engineers to ensure that their project takes into account both the external environment and the congruence of internal processes within the organization. **(Author's abstract)**

Keywords: *Engineering, Strategy, Strategic alignment, Strategic construction management*

Philippine Engineering Journal, Volume No. 28 Issue No. 2, 59-64
(Filipiniana Analytics)

0187

Measuring the elasticity of some kinds of Philippine wood

Maxino, Theresa C.

A simple self-constructed instrument was used to measure Young's modulus of elasticity of 15 samples of Philippine wood. Loads were applied at the center of horizontal beams and the vertical deflections were measured. Values of Young's modulus of elasticity were obtained from calculations using a standard formula and from slopes of graphs of deflection vs. mass of load. The computed values of Young's modulus of elasticity range from 2.17 x 10^{10} to 2.17 x 10^{11} dynes/cm^2. **(Author's abstract)**

Keywords: *Engineering, Young's modulus of elasticity, Philippine wood, Pinus insularis*

The Philippine Scientist, Volume No. Issue No. , 121-130
(Filipiniana Analytics)
Fil(S) Q1 J95 v31 1994

0188

Parametric and kinetic studies on the treatability of distillery slop by photocatalysis using paint-immobilized titanium dioxide

Bautista, Ramer P., Movillon, Jovita L., Del Barrio, Marilyn C., Tengco, John Meynard M., Arocena, Rhebner E.

Distillery slop is the large amount of wastewater generated which is equivalent to about 12 to 15x of the volume of ethanol produced. It causes serious disposal problem due to to its large volume, high organic load, low pH, high temperature and dark color (if coming from molasses-based distilleries). This study aimed to determine the efficiency of using paint-immobilized titanium dioxide for the photocatalytic reduction of color and chemical oxygen demand (COD). Titanium dioxide is a non-toxic white powder, resistant to photocorrosion, relatively inexpensive and effective in oxidizing organic and inorganic compounds. The synthetic distillery slop (color of 127,200 PCU, 46,600 mg/L COD and pH 4) was tested using three parameters: presence of light, catalyst loading and pH (4, 5, 6, 7 and 8) to determine which conditions will give the maximum degradation of organic and inorganic materials at 20x dilution. Highest color reduction of 33.65% was measured for the catalysis under solar exposure using the optimum catalyst loading of 50 g titanium dioxide mixed with 50 mL both of water and BoysenTM Gloss Latex paint in Burnt Sienna. Two controls were used: plain paint and glass alone. Results of treatment with titanium dioxide were significant compared to those of the controls based on the analysis of variance. Kinetic parameters were calculated using the differential and integration methods, giving the preferred values of k at first order of reaction to be 3.5394 x 10^{-4}/min for color reduction; and k = 9.1497 x 10^{-4}/min for COD reduction. Photocatalysis using paint-immobilized titanium dioxide may be used as a primary treatment for decolorization and COD reduction of distillery slop. However, secondary treatment should be performed to make it compliant to the requirements of the Philippine Clean Water Act. **(Author's abstract)**

Keywords: *Engineering, Distillery slop, Titanium dioxide, Photocatalysis*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0189

Parametric study on the growth of green alga *Chlorella vulgaris* Biej. (*Chlorophyta*) cultivated in polyethylene photobioreactors under outdoor operations

Santiago, Denise Ester O., Goss, Milagrosa M., Demafelis, Rex B., Nacorda, June Owen O., Movillon, Jovita L., Aquino, Sammy D.C.

Microscopic alga is rich in oils (30% to 80% by weight in biomass), and can produce more than 30 times the amount of oil (per year per unit area of land) compared to oil seed crops used for biodiesel production. This study determined the growth kinetics (specific growth rate, doubling time, doublings per day and maximum cell concentration) of green algae *Chlorella vulgaris* Beijerinck, in polyethylene photobioreactor in batch and outdoor operation; and identified the effects of variations in the aeration rate, reactor diameter, and culture media. The batch and outdoor cultivation of *C. vulgaris* CV1 strain was done in polyethylene photobioreactors of varying diameters (4.0"D, 6.0"D, 7.0"D), aeration rates (vvm of 0.114, 0.275 and 0.377) and 3 kinds of culture media (fertilizer solution 0.17192 g/L of urea and 0.02073 g/L of NPK; hog manure mixture; BG-11 medium in Stanier et al, 1971). The biomass concentration at stationary phase for aeration settling of 0.275 vvm was 0.3202 g/L and for 0.114 vvm, it was 0.2670 g/L. The growth of *C. vulgaris* was most favorable in photobioreactor with smallest diameter (4.0"), and in the BG-11 in terms of specific growth rate. The highest oil yield (6.962%) was obtained from the reactor with 7.0"D, followed by 4.0"D (4.546%); least was 6.0"D (3.423%). **(Author's abstract)**

Keywords: *Engineering, Chlorella vulgaris Beijerinck, Chlorophyta, Polyethylene photobioreactors*

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0190

Synthesis of cobalt boride nanoparticles using radio frequency thermal plasma

Lapitan, Jr., Lorico DS., Chen, Ying Ying, Choi, Seesoek, Watanabe, Takayuki

Nanosize cobalt boride particles were synthesized from the vapor phase using a 30 kW – 4 MHz radio frequency (RF) thermal plasma. Cobalt and boron powder mixtures used as precursors in different composition and feed rate were evaporated immediately in the high temperature plasma and cobalt boride nanoparticles were produced through the quenching process. The X-ray diffractometry (XRD) patterns of cobalt boride nanoparticles prepared from the feed powder ratio of 1:2 and 1:3 for Co:B showed peaks that are associated with the Co_2B and CoB crystal phases of cobalt boride. The XRD analysis revealed that increasing the powder feed rate results in a higher mass fraction and a larger crystalline diameter of cobalt boride nanoparticles. The images obtained by field emission scanning electron microscopy (FE-SEM) revealed that cobalt boride nanoparticles have a spherical morphology. The crystallite size of the particles estimated with XRD was found to be 18 - 22 nm. **(Author's abstract)**

Keywords: *Engineering, Cobalt boride nanoparticles, Thermal plasma, X-ray diffraction, Scanning electron microscopy*

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(Filipiniana Analytics)
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0191

Validating the autoregressive model of the angat reservoir monthly inflows

Dizon, Cornelio Q.

Thirty six years of historical streamflow records (1946 to 1985), before and after construction of the Angat Reservoir, were used to identify the time series model that can forecast the Angat Reservoir monthly inflows. After more than twenty (20) years when the autoregressive model of the Angat Reservoir inflows was identified in a previous study by this author, its effectiveness and practicality to forecast the monthly inflows to the Angat Multipurpose Reservoir is validated by comparing the generated

model outputs with recent observed measurements from 1986 to 2008. The paper presented the ARMA model selection process and showed the validity of the selected autoregressive model. **(Author's abstract)**

Keywords: *Engineering, Angat multipurpose reservoir, Validating autoregressive model, Modeling, Streamflows, Precipitation*

Philippine Engineering Journal, Volume No. 28 Issue No. 2, 65-83
(Filipiniana Analytics)
Fil(S) TA4 P532 28/2 2007

ENVIRONMENTAL SCIENCE

0192

Assessment of plant diversity in Mt. Musuan, Bukidnon

Acma, Florfe M., Amoroso, Victor B., Timada, Jonna A.

An assessment of plant diversity was conducted in Mt. Musuan, Bukidnon for a period of five years. Inventory, collection and preservation of collected plants were done and this was followed by the classification, identification, description and determination of the status of the plants based on the IUCN's definition. The study revealed the presence of 524 species of plants in Mt. Musuan which can be placed in 353 genera and 135 families. Of these total number of species, 301 species were trees, 51 species were shrubs, 50 species were grasses and sedges, 46 species were herbs, 42 species were vines, 31 species were ferns and 3 species were fern allies. Mt. Musuan is dominated by trees with 6,354 individuals. Furthermore, assessment of status showed 188 species or about 35% are recorded to be economically important species, 128 (24%) species are endemic, and 3 (1%) endangered species. The species of trees recorded to have the highest density and frequency are *Mallotus multiglandulosus* and *Colona serratifolia*, while the species of trees with the highest dominance are *Clausena brevistyla* and *Alstonia scholaris*. Since Mt. Musuan has the presence of high tree species diversity and endemicity, there is a need to protect and conserve these floral resources. **(Author's abstract)**

Keywords: *Environmental science, Species richness, Endemic, Endangered, Flora, Mt. Musuan*

CMU Journal of Science, Volume No. 10 Issue No. 2, 38-58
(Filipiniana Analytics)
Fil(S) Q1 C311 10/2 2002

0193

Species account of marine diatoms of the genus Pseudo-nitzschia in San Pedro Bay, Philippines

Yap-Dejeto, Leni G., Omura, Takuo, Cinco, Genneline F., Cobacha, Marjorie M., Fukuyo, Yasuwo

Phytoplankton samples were collected by bucket, 20 µm mesh size plankton net and Van Dorn water sampler in San Pedro Bay, Leyte, Philippines from December 2006 to May 2008. Acid-washed valves of *Pseudo-nitzschia* were observed and critically identified using transmission electron microscopy (TEM). The following species were identified: *Pseudo-nitzschia brasiliana, P. cacianthа, P. micropora, P. pseudodelicatissima*, and *P. pungens*. Morphometric measurements of valves and descriptions of species are included herein. *P. pungens* was the most abundant species encountered in this study with maximum density at $3.5x10^4$cells$\cdot L^{-1}$ during February 2007. This is the first taxonomic account at the species level of this genus in the Philippines waters. **(Author's abstract)**

Keywords: *Diatom, Philippines, Environmental science, Amnesic shellfish poisoning (ASP), Pseudo-nitzschia species, San Pedro Bay, Taxonomy*

Philippine Journal of Science, Volume No. 142 Issue No. 1, 27-37
(Filipiniana Analytics)
Fil(S) Q1 P55 142/1 2013

FISHERIES

0194

Culture of *Siganus guttatus* in brackishwater ponds

Ganzon-Naret, Erlinda S., Catedrilla, Liah C.

This study was conducted to determine the feasibility of mono-culturing the siganid *S. guttatus* in brackishwater ponds, to determine the length of time needed for the fish to reach marketable size, and to study the effect of various stocking densities on growth and survival.

The growth and survival of *S. guttatus* stocked at 3000, 6000, 9000, 12000, and 15000 fish/ha in fifteen 200 m^2 earthen ponds were evaluated after a 210-day culture period.

Highest production of 4.82 kg was obtained at a stocking density of 3000 fish/ha, the lowest at a stocking density of 9000 fish/ha. However, no significant difference ($P > 0.05$) was observed among treatments.

Survival was low in all treatments. This is attributed mainly to poor growth of filamentous algae and the occurrence of fin rot and fungal infection. **(Author's abstract)**

Keywords: *Fisheries, Siganus guttatus, Brackishwater ponds, S. canaliculatus, S. vermiculatus, S. spinus, S. javus*

The Philippine Scientist, Volume No. Issue No. , 58-66
(Filipiniana Analytics)
Fil(S) Q1 J95 v31 1994

0195

Daily rates of ingestion of rotifers and *Artemia nauplii* by laboratory-reared grouper larvae of *Epinephelus suillus*

Duray, M.N

The amount of rotifers and *Artemia* nauplii consumed daily by the grouper *Epinephelus suillus* larvae was determined through examination of gut contents. The larvae (2.6 mm TL) were initially fed rotifers on day 2 and newly hatched *Artemia* nauplii on day 21 (9.1 mm TL). The amount of food consumed by the larvae increased with larval growth. Larvae also showed diurnal feeding pattern at day 7 (3.6 mm TL), day 14 (4.9 mm TL), day 21 (9.1 mm TL) and day 28 (11.1 mm TL). Feeding incidence increased in the evening and became zero at 2100-2200 h. Active feeding started earlier in the older larvae and satiation was between 0900-1100 hr. **(Author's abstract)**

Keywords: *Fisheries, Artemia nauplii, Epinephelus suillus, Epinephelus akaara, E. amblycephalus, E. fuscoguttatus, E. salmoides, E. tauvina*

The Philippine Scientist, Volume No. Issue No. , 32-41
(Filipiniana Analytics)
Fil(S) Q1 J95 v31 1994

0196

Diversity and distribution of freshwater fish assemblages in Tayabas River, Quezon (Philippines)

Paller, Vachel Gay V., Corpuz, Mark Nell C., Ocampo, Pablo P.

Three stream sections (upstream, midstream, and downstream) of Tayabas River, Philippines were surveyed during the wet and dry seasons of 2010 to evaluate the poortly known status of freshwater fish assemblages. The study collected a total of 1,070 individuals comprising 15 species, 13 genera, and 8 families. The three most abundant groups were poeciliids (61.85%), gobiids (26.16%), and cichlid (5.51%). Shannon-Weiner's diversity indices ranged from 1.270 to 2.171. Relatively high Shannon evenness indices (0.653-0.846) and low Simpson's dominance values (0.142-0.322) were calculated implying a fairly equitable distribution of niche space for dominant and non-dominant fishes. Significant change on fish assemblage in longitudinal gradient was observed ($p<0.05$), being the most diverse fish assemblage registered in the upstream. Species richness is mostly composed of native fish species (10 species) and mainly represented by stream gobiids (six species). The downstream, however, had the highest cumulative abundance, in which the larger proportion was from introduced species. Also wet season had considerably more fish species and individuals relative to dry season ($p<0.05$). This significant spatio-temporal differences in fish assemblage data were evaluated by multivariate analyses ($p<0.05$). Canonical correspondence analysis identified the depth (seasonal water level fluctuations), vegetation growth, and dissolved oxygen concentrations (in order of importance) as the most influential environmental parameters affecting fish assemblage structure. Also, climatic stress (prolonged drought) and anthropogenically-induced habitat alteration could negatively affect the integrity of freshwater fishes within the river. The study suggests extensive management programs of the river for the protection of native fish species. **(Author's abstract)**

Keywords: *Fisheries, Diversity, Fish assemblages, Native and introduced fish species*

Philippine Journal of Science, Volume No. 142 Issue No. 1, 55-67
(Filipiniana Analytics)
Fil(S) Q1 P55 142/1 2013

0197

The effect of lipid-enriched broodstock diets on spawning and on egg and larval quality of hatchery-bred rabbitfish (*Siganus guttatus*)

Duray, Marietta, Kohno, Hiroshi, Pascual, Felicitas

Three isocaloric and isonitrogenous diets formulated to contain 12 (diet A), 15 (B) and 18% (C) lipids were tested on hatchery-bred rabbitfish *Siganus guttatus* broodstock to determine their effect on spawning and quality of the eggs and larvae. The results show that fish on diet C has higher fecundity than those on diets B and A. Also fish on diet C yielded eggs of better quality than either fish on diet B or A. This was indicated by spawns resulting in higher percentage of normal hatchlings, larger newly-hatched larvae and higher survival rates until the 14th day of rearing. Dietary lipid levels, however, have no remarkable effects on fertilization, yolk and oil globule volumes, hatching rate nor larval size at harvest.**(Author's abstract)**

Keywords: *Fisheries, Siganus guttatus , Isocaloric, Isonitrogenous*

The Philippine Scientist, Volume No. Issue No. , 42-57
(Filipiniana Analytics)
Fil(S) Q1 J95 v31 1994

0198

Effects of different dosages of astaxanthin on giant freshwater prawn *Macrobrachium rosenbergii* (De Man) challenged with *Lactococcus garvieae*

Angeles, Jr., Isagani P., Chien, Yew-Hu, Tayamen, Melchor M.

Carotenoids, such as astaxanthin (AX), have received increasing attention in recent years due to their reported various functions not only as a pigment enhancer but also as an antioxidant. As an antioxidant, carotenoids inactive free radicals produced from normal cellular activity and various stressors. The health of stressed aquatic organisms is linked to the overproduction of reactive oxygen species, which is a precursor to the occurrence of disease. Antioxidants help protect cell membranes against the damage from excessive production of reactive oxygen species. The effects of astaxanthin (AX) injected at 0.67 and 1.34 nmol g^{-1} BW^{-1} on the survival, antioxidant capacity, total haemocyte count (THC) and hepatopancreas astaxanthin content of the giant freshwater prawn, *Macrobrachium rosenbergii*, challenged with *Lactococcus garvieae* were evaluated. AX-injected *M. rosenbergii* at 1.34 nmol g^{-1} BW-1 had significantly ($P \leq 0.05$) higher survival rates. However, AX showed no significant effects on the capacity of certain antioxidant indicators (superoxide dismutase, glutathione peroxidase and glutathione reductase). This implies that *L. garvieae* infection suppressed the activity of the haemolymph antioxidant system of infected *M. rosenbergii*. This result suggests that the two different dosages used in this study could not exert significant effects on the tested antioxidant capacity of *L. garvieae*-infected *M. rosenbergii.* On the other hand, AX-injected *M. rosenbergii* at either dose showed a significant increase in the THC and hepatopancreas AX content when compared with the challenged control group. Overall, the results of this study indicate that the injected AX led to an improvement in *M. rosenbergii's* resistance against *L. garvieae* infection. **(Author's abstract)**

Keywords: *Fisheries, Glutathione peroxidase, Glutathione reductase, Hepatopancreas, Lactococcus, Macrobrachium, Superoxide dismutase, Total hemocyte count*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 32/1 2010

0199

Immunostimulation of *Oreochromis niloticus* using commercial probiotics against *Aeromonas hydrophila*

Maniego, J.A., Bartolome, R.M.

The study aimed to determine the effect of different levels of commercial probiotics as immunostimulant for Nile tilapia challenged with *Aeromonas hydrophila* at concentration of 10^6 colony forming unit per mL (cfu/mL) of bacterial suspension. Treatments were: Treatment I- control (no probiotocs); Treatment II- 1 g probiotics per kilogram of feed; Treatment III- 3 g probiotics per kilogram of feed; Treatment IV - 5 g probiotics per kilogram of feed.

Fish subjected to all treatments had 100% relative percent survival. This was attributed to the lower virulence of the injected *Aeromonas hydrophila* and to the better resistance of genetically improved experimental fish.

Fish production and white blood cell count increased as the level of probiotics was increased. However, differences in the antibody formation and white blood cell count were not significant among the treatments. **(Author's abstract)**

Keywords: *Fisheries, Oreochromis niloticus, Aeromonas hydrophila, Tilapia*

CLSU Scientific Journal, Volume No. 23 Issue No. 1, 61-72
(Filipiniana Analytics)
Fil(S) S539 P5C33 23/1 2003

0200

The performance of two Philippine fisheries journals in international scientific literature

Dizon, Leticia B.

The use of two Philippine fisheries journals – the *Fisheries Research Journal of the Philippines* (FRJP) and *Kalikasan, the Philippine Journal of Biology* (fisheries articles only) – in international scientific literature, from 1972 to 1991, is investigated. The study, which is based on citations in the SCISEARCH computer database of the Institute of Scientific Information, yielded 59 citations to FRJP and 42 to *Kalikasan*. The average citation age was 7.5 years. Self-citation rates are 17% for FRJP and 12% for Kalikasan. Both journals had a low impact outside of the Philippines. **(Author's abstract)**

Keywords: *Fisheries, Kalikasan, Fisheries Research Journal of the Philippines (FRJP), Aquaculture*

The Philippine Scientist, Volume No. Issue No. , 158-168
(Filipiniana Analytics)
Fil(S) Q1 J95 v31 1994

0201

A red tide management scheme in the Philippines at the regional level

Sotto, Filipina B., Young, Jason, Rodriguez, Jose

In November 1992, a dinoflagellate bloom of *Pyrodinium bahamense* var. *compressum* occurred in Samar and Leyte, eastern Philippines. Several incidents of seafood poisoning were reported. Led by the Department of Health, various local government agencies formed Red Tide Task Force with responsibilities and decision-making capabilities quasi-independently from the sluggish National Red Tide Committee. Quick and timely action prevented any undue loss of life, and the task force gained credibility with the public. Training on sampling, identification and counting of *P. bahamense* cells was provided by the Marine Biology Section of the University of San Carlos. This report shows that a localized response team, separate from the national Committee, is more practical for archipelagic countries like the Philippines. **(Author's abstract)**

Keywords: *Fisheries, Pyrodinium bahamense var, Compressum, Red tide*

The Philippine Scientist, Volume No. Issue No. , 79-87
(Filipiniana Analytics)
Fil(S) Q1 J95 v31 1994

0202

Taxonomic study of icthyofauna in Tanduyong Island Anda, Pangasinan

Casipit, Gildence L., Ogabar, Ana Marcelina T., Elazegui, Erwin P.

This study was conducted to assess the fish fauna in three selected sites of Tanduyong Island in Anda, Pangasinan. It aims to provide baseline information on the commonly caught fish species of the island and generate a taxonomic listing of these species. Physico-chemical parameters such as water temperature, pH and salinity were determined. Fish hook and fish net were used to catch the species. Collection was done using transect-quadrat method in 500 m by 500 m area. A total of 46 fish species belonging to 6 orders, 27 families and 40 general have been documented. Order Perciformes and Family Carangidae has the most number of representative species having 5 genera and species type followed by Family Scaridae with 4 genera and Family Acanthuridae, Family Labridae, Family Lutjanidae with 3 genera, respectively. The most dominant species is *Stolephorus ronguilloi*, locally known as dilis. The gathered data will provide useful information on the survival of the taxa and promote effective strategies for conservation of fish fauna. **(Author's abstract)**

Keywords: *Fisheries, Conservation, Icthyofaunal resources, Taxa, Taxonomic*

Transactions of the National Academy of Science and Technology, Volume No. 32 Issue No. 1, 52
(Filipiniana Analytics)
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FORESTRY

0203

Biology of *Araecerus levipennis* jordan on ipil-ipil (*Leucaena leucocephala* (Lam.) de wit)

Golosino, Buenaventura B.

The different stages of pod development of both giant and native ipil-ipil trees were observed to determine the most preferred stage for oviposition by the beetle Araecerus levipennis Jordan. Adult female beetles started to lay eggs when the ipil-ipil pods began to bulge out; the pods continued to be suitable for oviposition until they turned brown.

The 4b stage of pod development of the native ipil-ipil and 5A stage of pod development of the giant ipil-ipil manifested similar characteristics. Distinctive features were pods full sized, greenish-yellow, seeds close to each other. Both stages of pod development provided the best characteristics for oviposition. Almost 70 percent of the eggs were laid on pod stages 4b and 5a in both cultivars.

Giant ipil-ipil pods yielded more eggs laid because their exposure for ovipositon was about 10 days longer compared to native ipil-ipil pods. Oviposition was made by puncturing small holes along the sides of the pods near the tips of the seeds and placing one or two eggs in a hole.

The newly emerged female adults usually laid eggs two days after the males were introduced to them for mating. A female adult laid a maximum of 45 eggs over an adult life span of 23 days. There was a distinct difference in the beetle's adult life stages and egg production when the pods from which they emerged and the pods for oviposition were different varieties. **(Author's abstract)**

Keywords: *Forestry, Araecerus levipennis, Leucaena leucocephala (Lam.) de wit, Ipil-ipil*

CMU Journal of Science, Volume No. 9 Issue No. 1, 46-60
(Filipiniana Analytics)
Fil(S) Q1 C311 9/1 2001

0204

Estimation of aboveground biomass in Mount Makiling Forest Reserve using landsat ETM+ data

Vallesteros, Shierel F., Bantayan, Nathaniel C., Vallesteros, Arvin P.

Several studies have been made to estimate the aboveground biomass (AGB) of the different forest stands in the Mt. Makiling Forest Reserve - an important mountain landscape in the Philippines for its rich biological diversity - using ground inventory data. Our study provides an estimate of the total AGB of the landscape. Inventory and Landsat ETM+ data were combined to develop AGB regression equations. The normalized difference vegetation index (NDVI) came out to be the most important predictor variable. The total AGB of MFR based on December 2009 Landsat ETM+ image is 1,602,200 tons. This translates to an average value of 368 ton^{-ha}. The forest reserve has varied land cover types but tree cover is generally high even in what are traditionally classified as cultivated, grassland and built-up areas. Our estimate seems to agree with previous estimates that are based on ground data only. Because we used an SLC-off Landsat product, or image with scan gap error, we created a simple method of filling in missing pixels and we compared the mean AGB estimates from an image with gap pixels masked out and the same mage with gap pixels were filled in. **(Author's abstract)**

Keywords: *Forestry, Aboveground biomass, NDVI, Scan-gap error, Makiling*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0205

Evaluation of lahar barrier to protect wood structures from Philippine Subterranean Termites

Acda, Menandro N.

Volcanic debris consisting of a sandy aggregate (lahar) from Mt. Pinatubo Central Luzon, Philippines was used as physical barrier to prevent tunneling and penetration of Philippine subterranean termites into a small wooden structure. The protective barrier consisting of mixed lahar particles was installed beneath floor and concrete foundation walls. Regular inspections were made over a five year period to determine signs of termite damage inside and outside of the structure. Results showed that Philippine subterranean termites were unable to penetrate the 5.0 cm thick layer of 1.18 to 2.40 mm lahar particles from the underground soil. The structure remained in good condition with no sign of termite damage to the wooden interior. The study indicated that lahar barrier could be used to protect wooden structures from entry of subterranean termites and offer a non-chemical alternative to commercially available termiticides. **(Author's abstract)**

Keywords: *Forestry, Lahar, Physical barrier, Non-chemical method, Termites, Mt. Pinatubo*

Philippine Journal of Science, Volume No. 142 Issue No. 1, 21-25
(Filipiniana Analytics)
Fil(S) Q1 P55 142/1 2013

0206

The influence of six-year old ipil-ipil stand on interception, surface runoff and soil loss

Ecuacion, Antonio O.

The study was conducted to determine the influence of an ipil-ipil (Leucaena leucocephala) stand on throughfall, stemflow, interception, surface runoff and soil loss as basic information on species selection for reforestation purposes.

Results of the study showed that seventy five percent of the rainfall was found to reach the forest floor as throughfall and around 25 percent of the rainfall was intercepted by the Ipil-ipil stand. Its stemflow depth per hectare was 4.92 x 10-5 centimeter during the period of observation period. There was a monthly average surface runoff of 174.40 gallons per hectare, with the total surface runoff of 1,220.82 gallons for the whole duration of the study. Sediment yield or soil loss has a monthly average of 3.60 kilograms per hectare, with a total soil loss of 25.19 kg/ha for the whole period of observation.

Surface runoff and soil los have negligible results sue to the presence of vegetation and reproduction under the ipil-ipil stand. It is good as watershed cover on adverse slopes due to its ability of having thick reproduction or understory seedlings thus reducing surface runoff and erosion. It is recommended on selected sites especially for watershed development. It requires similar study especially on disturb environment and degraded sites of the country. **(Author's abstract)**

Keywords: *Forestry, Leucaena, Leucocephala, Ipil-ipil, Reforestation, Stemflow, Throughfall, Surface runoff, Soil loss*

CMU Journal of Science, Volume No. 9 Issue No. 1, 33-45
(Filipiniana Analytics)
Fil(S) Q1 C311 9/1 2001

0207

Management of phosphorus for sustainable food crop production on acid upland soils in Mindanao, Philippines

Mugot, Isabelo O., Duque, Sr., Conrado M., Cagmat, Rebecca B.

The different stages of pod development of both giant and native ipil-ipil trees were observed to determine the most preferred stage for oviposition by the beetle Araecerus levipennis Jordan. Adult female beetles started to lay eggs when the ipil-ipil pods began to bulge out; the pods continued to be suitable for oviposition until they turned brown.

The 4b stage of pod development of the native ipil-ipil and 5a stage of pod development of the giant ipil-ipil manifested similar characteristics. Distinctive features were pods full sized, greenish-yellow, seeds close to each other. Both stages of pod development provided the best characteristics for oviposition. Almost 70 percent of the eggs were laid on pod stages 4b and 5a in both cultivars.

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The newly emerged female adults usually laid eggs two days after the males were introduced to them for mating. A female adult laid a maximum of 45 eggs over an adult life span of 23 days. There was a distinct difference in the beetle's adult life stages and egg production when the pods from which they emerged and the pods for oviposition were different varieties. **(Author's abstract)**

Keywords: *Forestry, Acidic uplands, Corn., Triple superphosphate, Rock phospate, Stylo, Chicken manure*

CMU Journal of Science, Volume No. 10 Issue No. 2, 1-37
(Filipiniana Analytics)
Fil(S) Q1 C311 10/2 2002

0208

A mathematical programming model for recycled paper furnish blend optimization

Lacandula, James O.

The substitution of recycled fibers for more expensive primary counterparts in the furnish blend of paper products recently became a necessity from the economic and environmental context. However, any economic benefits derived must be balanced against the required quality compromises that can be expected from this substitution. Blending recycled fibers that optimized their properties is one practical alternative.

The different waste paper grade inputs, the treatment processes, and the resultant qualities of paper sheets were conceptualized as a multivariable production system. A mathematical programming model for the system was formulated based on the concepts of linearity that systems of linear equations algebraically defined the functional relationships simultaneously. The model consisted of various pulp types produced from the different waste paper sources and treatments as the decision variables and aimed to minimize specific blend's cost while satisfying standard minimum strength and optical property requirements, and other technical constraints.

Optimal solutions showed that furnish blends of some paper grades were generally composed of recycled pulps from the same waste paper grades compensated by some amounts of primary pulps, while pure recycled pulps under specific treatments composed other furnishes of less demanding property specifications. Additional statistical analysis proved the wide variation of the different parameters with the treatment combinations. The optimal blends indicated that the treatments done improved the qualities of recycled pulps to some levels that satisfy property requirement of specific paper grades while conversely insufficient for highly demanding grades. This needed the addition of primary pulp into the blend but this increased blend's cost, yet more economically beneficial when processing cost of recycled fibers is comparatively higher. **(Author's abstract)**

Keywords: *Paper, Blend optimization, Economic benefits, Forestry*

CMU Journal of Science, Volume No. 9 Issue No. 1, 83-112
(Filipiniana Analytics)
Fil(S) Q1 C311 9/1 2001

GEOLOGY

0210

Internal structure and origin of the double reefs of north Bohol and the Olango Reef Flat (Philippines)

Willkom, Horst, Grobe, Hannes, Wefer, Gerold

Nine holes were drilled with a submersible hydraulic drill into the slopes and reef flats of the Caubyan and Calituban reefs as well as of Olango Flat. The maximum depth of core penetration was 11m. ^{14}C ages showed that the Caubyan and Calituban reefs were formed within the last 6,000 years. Corals settled on a pre-existing relief parallel to the island of Bohol, building a framework for other carbonate-producing organisms. The reef flat south of Olango has a different structure. Formation took place during a Pleistocene high sea level, e.g. 125,000 years ago. **(Author's abstract)**

Keywords: *Geology, Reefs, Corals, Caubyan Reefs, Calituban reefs*

The Philippine Scientist, Volume No. Issue No. , 83-94
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0211

Sedimentation in channels of the reef area off northwest Bohol (Philippines) as studied with high-resolution seismic and side-scan sonar

Werner, Friedrich, Wefer, Gerold

In channels between and off the barrier reef complex northwest of Bohol Island, high-resolution seismic and side-scan sonar surveys were made. Apart from some sheltered areas, the intra-reef channels (Calituban and Caubyan Channels) were largely free of a seismically detectable layer of young sediments. The maximum sediment thickness found in sheltered localities in the channels and in the small basin in front of the southwestern end of the channels do not exceed 5 m. In the deeper Olango Channel outside the barrier reef complex, at least 20 m of sediment were detected. However, the western, shallower part of the Olango Channel and the inlet channel connecting this channel with the intra-reef channels were also largely devoid of young sediments.

Although the deficit of young sediments in the channels is indicative of the action of (tidal) currents, the bottom character indicated otherwise a lack of bed-load transport apart from local megaripple fields due to topographical effects. Reef-derived sandy sediment of sand size is therefore thought to be retained within the reefs themselves and on their slopes, whereas fine materials were transported as suspended load by-passing the channels to the sedimentation areas. **(Author's abstract)**

Keywords: *Geology, Calituban channel, Caubyan channel, Olango channel, Sedimentation*

The Philippine Scientist, Volume No. Issue No. , 95-111
(Filipiniana Analytics)
Fil(S) Q1 J95 v22 1985

0212

Sedimentological study of a section of the "upper zigzag" formation along Bued River, Tuba, Benguet

Reyes, Milagros V., PeÃ±a, Rolando E.

Sedimentological study of the sedimentary section below the Middle Miocene Kennon Limestone along Bued River consisted of detailed description of selected local sections and subsequent evaluation of primary sedimentary structures and detailed petrographic analysis of representative rock samples.

Primary sedimentary structures shown mostly by sandstone interbeds in the dominantly conglomerate section are parallel lamination and cross stratification, normal and reverse graded bedding. Slump structures and sandwaves were also noted. Paleocurrent directions derived from reoriented foresets of cross stratification indicate a southwestern source of the sediments.

Textures and composition of the wackes and conglomerates of the section studied suggest that the sediments were principally derived from a volcanic terrain with considerable relief. These sediments were probably deposited in a nearby shallow marine basin by very strong fluvial currents whose energy diminished as it reached the basin area. Intermittent changes in current velocity during transport and at site of deposition were most likely responsible for the development of small and large scale cross stratification. **(Author's abstract)**

Keywords: *Sedimentation and deposition , Geology , Geology, Petrographic analysis of representative rock samples*

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(Filipiniana Analytics)
Fil(S) QE1 P54 v50 1995

0213

Tidal effects on groundwater in a very small tropical island: a study on the groundwater resources of Pag-asa Island, Kalayaan Island Group

Ong, John, Aguda, Nancy, Jaraula, Caroline, Mateo, Zenon, Pascua, Chelo, Foronda, Joseph

The Pag-asa Island, with its very small land area and low relief, has a very limited fresh water supply occurring as a thin freshwater lens. Climate, topography, vegetation, lithology, human abstractions, and tides affect the volume of the freshwater lens. Topographic and hydrogeologic surveys, coupled with a 72-hour groundwater-monitoring program were done to assess the effects of tides on the freshwater lens.

Ground water parameters measured in wells during the monitoring program include variations in water table depths, specific electrical conductivity (SEC), and temperature. Changes in these parameters were then correlated with the observed variations of the tides.

The groundwater levels oscillate with the tides at varying amplitudes. The hydraulic properties of the lithologies making up the island's aquifer influence the amplitude of the oscillations. Groundwater level oscillations are least in the reef materials and greatest in the sandy materials where it is nearly simultaneous with the tidal variations. High electrical conductivity values are marked in wells built near the coasts and in sandy materials.

The average annual precipitation is approximately 2,020 mm. Based on empirical studies, the estimated sustainable yield for small tropical islands is 6% of the lowest annual rainfall or about 20,300 m^3/yr for Pag-asa Island. **(Author's abstract)**

Keywords: *Geology, Kalayaan island group, Pag-asa island, Hydrogeology, Small island, Groundwater, Tidal effects*

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(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/2 2000

HEALTH AND WELLNESS

0214

Molecular identification of T4 and T5 genotypes of *Acanthamoeba* isolates in the Philippines

Buerano, Corazon C., Trinidad, Abigail D., Fajardo, Lindsay Sydney N., Cua, Irwin Y., Baclig, Michael O., Natividad, Filipinas F.

Acanthamoeba species are ubiquitous free-living single-celled, opportunistic pathogens, which can be isolated from water, soil, dust in the air, and from other organisms. It can cause sight threatening *Acanthamoeba* keratitis as well as the rare but fatal encephalitis in humans. Traditionally, laboratory procedures to detect this organism include culture on non-nutrient agar with heat-killed *E. coli* (NNE) and microscopic examination. Identification can easily be done at the genus level but not at the species level. A recent way of detecting and identifying the organism propagated on NNE is through molecular means. This technique is based on the presence of ASA.S1, a partial 18S ribosomal DNA (Rns) gene unique to the genus. Subgeneric level of identification can be achieved by genotyping. Here we report on the genotyping of *Acanthamoeba* species in corneal scrapings from three keratitis patients and in nasal swabs from six unrelated healthy volunteers. A 461-bp amplicon was amplified using genus specific JDP1 and JPD2 primers. DNA sequencing of the PCR product was carried out using conserved 892 and 892C primers to determine the sequence of diagnostic fragment (DF3) of Rns. Phylogenetic tree was constructed using MEGA5. Results showed that isolates from all three corneal scrapings and from five out of six nasal swabs belonged to genotypeT4, whereas one nasal swab was of the genotype T5. Phylogenetic analysis showed that these isolates clustered with the reference sequences most similar to them. T4 (89%) is the predominant genotype found among nine isolates analyzed in this study. Molecular-based technique is a useful tool for the identification of genotypes of *Acanthamoeba* from other free-living amoebas. Genotyping helps in decision-making for clinical management of *Acanthamoeba* infection, in tracking the source of infection, as well as in epidemiological and environmental studies. **(Author's abstract)**

Keywords: *Health and wellness, Acanthamoeba, Genotyping, Keratitis, 18S ribosomal DNA*

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(Filipiniana Analytics)
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0215

Study of nutritional index in relation to cost of snacks and meals served at the university tearoom

AlmiraÃ±ez-Macarayan, Nerissa

This study was conducted to determine the nutritional index in relation to cost of snacks and meals at the University Tearoom. Data were analyzed using the formula of Armstrong and Davis (1988). Every food item was weighed and the nutrient contents were calculated based on FNRI food composition table and RDA for the reference man/patron representing the majority of Tearoom customers. Findings revealed that a doughnut contains the highest amount with 391 K-calories followed by cinnamon with 381 K-calories, chocolate cake with 369 K-calories, loaf bread with 331 K-calories and ensaymada with 328 K-calories. Doughnut at P4.00/serving is the cheapest source of calorie among the snacks served. Loaf bread at P4.16/100 grams gives out an NIc of 3.1 equivalent to 3 day calorie requirement from snacks. Among the foods for meals, rice contains 132 K-calories with an NIc of 5.1. Due to relatively high cost of energy foods, one has to spend about P5.00 for rice per meal to meet the day's allowance for calorie needs of the reference patron. For viand recipes, fried chicken, pork dinuguan, pork adobo, beefsteak and fried bangus are expensive source of protein while sautéed mungo is the cheapest source of protein. Among the appetizers, kangkong and jackfruit salads are cheap sources of protein, vitamins and minerals. Among the dessert food items, banana (lakatan) is the cheapest source of calorie. Ripe jack fruit is a cheap source of calcium while maja blanca is an expensive source of calories and vitamins. **(Author's abstract)**

Keywords: *Health and wellness, K-calories, Reference person, Meals, Snacks, Appetizers, Dessert food items*

CMU Journal of Science, Volume No. 10 Issue No. 2, 59-76
(Filipiniana Analytics)
Fil(S) Q1 C311 10/2 2002

MARINE SCIENCE

0216

An annotated checklist of macrobenthic algae of the western coast of Zamboanga City (Mindanao, Philippines)

Tito, O., Sescon, C., Adalla, C., Asdani, J., Basilio, E. M., Climaco, A., Dagalea, A., Luna, M., Uddin, Y., Vega, R. A.

Seaweed collections were made at several sites along the western coast of Zamboanga City from July to August 1999. Ninety-four (94) taxa were identified. These represent the three (3) major algal divisions broken down into fifteen (15) orders, twenty-six (26) families and forty-four (44) genera.

Six species: *Botryocladia leptopoda* (J. Agardh) Kylin, *Halimeda distorta* (Yamada) Colinvaux, *Halimeda melanesica* Valet, *Kallymenia perforata* J. Agardh, *Sarconema filiforme* (Sonder) kylin and *Solieria robusta* (Greville) Kylin, and the genus *Sarconema* Zanardini represent new records for Zamboanga and the Philippines. All specimens are deposited in the Zamboanga State College of marine Sciences and Technology Herbarium. **(Author's abstract)**

Keywords: *Marine science, Checklist, Seaweed species, New records, Zamboanga*

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0217

Characterization of a κ-Carrageenase-producing marine bacterium, isolate ALAB-001

Tayco, Crimson C., Tablizo, Francis A., Regalia, Raymond S., Lluisma, Arturo O.

Carrageenases are glycoside hydrolases that specifically degrade carrageenan, a highly anionic polysaccharide found in the cell wall of many red algal species. To date, only a few of these enzymes have been characterized, and identifying additional sources is important considering the role of carrageenases in production of carrageenan derivatives. In this paper, we report the characterization of a marine bacterial strain that produces κ-carrageenase. The strain, which we designate as ALAB-001, was isolated from diseased thallus fragments of the red alga *Kappaphycus alvarezii*, a commercially important source of carrageenan. Genotypic and phenotypic data suggest that the isolate belongs to a relatively poorly-characterized group of bacteria in Alteromonadaseae (Alteromonadales) and is closely related to *Marinimicrobium* and *Microbulbifer*. Significant κ-carrageenase activity (175 U/mL) was evident when the isolate was grown in the presence of κ-carrageenan. Activity against starch was also high (180 U/mL), but activity against agar, alginate, cellulose, ι-carrageenan, and λ-carrageenan was significantly lower (25-50 U/mL). Laboratory-scale production of the enzyme using batch cultures of the isolate was achieved by optimizing culture medium, length of culture time and degree temperature. Optimal growth was observed at 25°C, though the isolate survived at 30°C. An in-house developed seawater-based medium containing equal concentrations of yeast extract and tryptone (YETS) yielded the highest cell growth based on total protein concentration (~ 3000 µg/mL) and enzyme activity (~45 U/mL). **(Author's abstract)**

Keywords: *Marine science, Î°-Carrageenan, Î°-Carrageenase, Carrageenan-degrading bacteria, Kappaphycus alvarezii*

Philippine Journal of Science, Volume No. 142 Issue No. 1, 45-54
(Filipiniana Analytics)
Fil(S) Q1 P55 142/1 2013

0218

Development and application of genetic markers for population structure analysis of the blue coral reef starfish, *Linckia laevigata* (Linn) (*Echinodermata:Asteroidea*)

Magsino, Richard M., Juinio-MeÃ±ez, Marie Antonette R., Ravago, Rachel V.

The tropical blue coral reef starfish, *Linckia laevigata*, is a good model species for examining genetic affinities among reef populations. Allozymes and mtDNA PCR-RFLP genetic markers were developed for this species. A total of nine (9) polymorphic and three (3) monomorphic allozyme marker loci were resolved out of 25 enzyme systems assessed for genetic activity in three electrophoretic buffers used. Polymorphic mitochondrial DNA gene segments of the control region with flanking sequences and the cytochrome oxidase I (CO1) were amplified after examining several gene regions for PCR product amplifications. Restriction enzyme screening of the CO1 region revealed variation of restriction profiles in seven (7) out of twenty (20) enzymes initially tested. Preliminary comparison of the genetic structure of *L. laevigata* based on allozyme and mtDNA markers for selected reefs are presented. The development of these genetic markers will be useful in inferring gene flow and reef connectivity in the South China Sea, Palawan shelf, and Sulu Sea. **(Author's abstract)**

Keywords: *Marine science, Genetic markers, Allozymes, PCR-RFLP, Linckia laevigata, Population genetics, Asteroidea*

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(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/2 2000

0219

Economic modeling of residual generation for the Lingayen Gulf Watershed

McGlone, Douglas H., Caringal, Herminia R.

The Philippines is one of four countries involved in the Southeast Asian core project of LOICZ (Land Ocean Interactions in the Coastal Zone) which has among its general goals the determination of how changes in human activities affect the fluxes of materials between land, sea, and atmosphere through the coastal zone. The economic component of the Philippine project addresses the questions: "Hoe does a changes in economic activity affect coastal waters?" Of particular concern is the introduction of anthropogenically-derived residuals (N, P, C, SS) into coastal waters.

A regional input-output (IO) mode for Region 1 of the Philippines has been developed to estimate how projected changes in economic activity may affect residual flows into Lingayen Gulf. A residual coefficient matrix, derived from information obtained with a rapid assessment model (RA) of residual generation in the Lingayen Gulf watershed, has been incorporated into the IO model. Such a model allows for analysis of various economic scenarios for the region, with projections of residual generation as the output. The resulting changes in residual flows may then serve as inputs to biogeochemical models of Lingayen Gulf. From this process, the impact of various economic sceanrios on the water quality of Lingayen Gulf may be ascertained.

This paper discusses and compares the RA and IO models of residual generation for the Lingayen Gulf watershed and provides examples of the scenario analysis process. **(Author's abstract)**

Keywords: *Marine science, Economic modeling, Lingayen Gulf, Rapid assessment watershed, Residual generation*

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(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/2 2000

0220

Enhancement effect of sea urchin grow-out cages in Lucero, Bolinao, Pangasinan

Malay, Maria Celia Defrance, Bangi, Helen Grace P., Juinio-MeÃ±ez, Marie Antonette R.

A preliminary study was conducted was conducted on the environmental impact of sea urchin (*Tripneustes gratilla Linnaeas*) grow-out culture in Lucero, Bolinao, Pangasinan. It was hypothesized that the feces generated by the caged urchins (~6,000 individuals at any one time) might cause localised sediment organic enrichment and subsequent shifts in benthic faunal communities. Results from preliminary surveys conducted in April and August of 1999 indicated minimal impact of sea urchin grow-out culture on the local reef flat community. Some enhancement of faunal abundance and sediment organic matter content in the cage area were noted; however, the impact was limited to a radius of 5-25 meters from the grow-out cages. The enhancement effects appeared to be seasonal occurrences that were dependent on local currents and degree of wave exposure. Epiphyte biomass, total suspended solids, sediment grain size, and relative water movement seemed largely unaffected by sea urchin grow-out culture. However, more frequent and thorough samplings are needed to validate these initial results. The presence of localised enrichment in sediment organic content and epibenthic faunal density suggest the possibility of converting the sea urchin grow-out area into polyculture systems that would make more efficient use of the food resources available while minimizing potential anthropogenic impacts on the environment. **(Author's abstract)**

Keywords: *Marine science, Sea urchin, Aquaculture, Environmental impact, Enhancement effect, Organic enrichment*

Science Diliman A Journal of Pure and Applied Science, Volume No. 12 Issue No. 2, 1-9
(Filipiniana Analytics)
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0221

Establishment and implementation of the Balingasay Marine Protected Area: a community-based approach

Salmo, III, Severino G., Turion, Renato A., Juinio-MeÃ±ez, Marie Antonette R., AliÃ±o, Porfirio M.

A community-based approach in the establishment and implementation of a marine protected area (MPA) in Balingasay, Bolinao, Pangasinan is presented. The factors necessary to facilitate the successful establishment and implementation of a community-managed MPA include heightening of environmental awareness, community mobilization, and legal/institutional and financial assistance. A heightened environmental awareness encouraged the community to undertake resource management action. The formation of a people's organization, SAMMABAL (Samahan ng mga Mangingisda at Mamamayan ng Balingasay), was crucial in assessing environmental problems (e.g., overfishing) and identifying the establishment of an MPA as a management tool to address the problem. SAMMABAL was also instrumental in eliciting community support for the issuance of a municipal ordinance in the establishment of the MPA. Subsequently, the organization initiated the patrolling of the MPA. Institutions involved in the community-based management of the MPA also included the multi-sectoral council (BRMC – Balingasay Resource Management Council) and representatives from the barangay council and the municipal government. This institutional arrangement has proven to be very resilient, indicating a high probability of sustaining its successes despite some obstacles and shortcomings. Clear delineation of the role and functions of the institutions and the stakeholders was essential in advancing the initiative. This case study will draw on the lessons from the experience of a four-year community-managed MPA. **(Author's abstract)**

Keywords: *Marine science, Community-based approach, Environmental awareness, Management tool, Marine protected area (MPA), Community mobilization, Inter-institutional interaction, CBCRM*

Science Diliman A Journal of Pure and Applied Science, Volume No. 12 Issue No. 2, 121-128
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/2 2000

0222

Ethnobotany of *Solieria robusta* (*Gigartinales, Rhodophyta*) in Zamboanga, Philippines

Tito, Oliver D., Liao, Lawrence M.

A market survey was made at the Zamboanga City public market to determine the diversity of economic macrobenthic algae sold by the local population. Interviews were conducted to obtain information on local names, uses, stock distribution, method of harvest, seasonality, and some aspects of marketing practices. **(Author's abstract)**

Keywords: *Marine science, Ethnobotany, Solieria robusta, Seaweed utilization*

Science Diliman A Journal of Pure and Applied Science, Volume No. 12 Issue No. 2, 75-77
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/2 2000

0223

Growth and reproductive pattern of intertidal and subtidal *Sargassum* (*Sargassaceae*, *Phaeophyta*) populations in Bolinao, Pangasinan

Ortiz, Ariel T., Trono, Jr., Gavino C.

First and second year populations of the Sargassum in the intertidal and subtidal portions of a seagrass bed were tagged and monitored over a period of 14 months (May 1996-June 1997). Statistical analysis (ANOVA and MANOVA) showed that there was a temporal variation in the thallus length of the *Sargassum* population between the intertidal and the subtidal regions ($p<0.05$). The subtidal population have longer thallus length than the intertidal population. Mean plant heights in the intertidal area (20.5 cm [1st year age group] and 25.0 cm [2nd year age group]) were significantly shorter than those in the subtidal region (26.0 cm [1st year age group] and 31.6cm [2nd year age group]). *Sargassum* population in the intertidal region reached full maturity a month earlier (November) than those in the subtidal area (December). Peak fertility stage occurred in December for both regions. **(Author's abstract)**

Keywords: *Marine science, Sargassum, Growth rate, Fertility, Reproductive pattern, Seasonality*

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(Filipiniana Analytics)
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0224

Induction of symbiosis in *Tridacna crocea* (*C. Bivalvia, F. Tridacnidae*) using *Zooxanthellae* from *T. gigas* and from *T. crocea*: effects on clam survival and growth

Mingoa-Licuanan, S. Suzanne

Survival and growth of post-metamorphic *Tridacna crocea* juveniles were improved by inducing symbiosis with fresh or cloned zooxanthellae (Tg 10) derived from *T. gigas*. Although clam growth was best with Tc4, survival was also poorest. Symbiosis with specific zooxanthellae was established at the pediveliger stage, with reinfection a few days after. It is suggested that while survival and growth may be easily monitored and may be used as indicators of good performance of a functional

holobiont, other phenotypic traits such as resistance to disease, bleaching, etc. may also be considered in evaluating the effectivity of the selected zooxanthellae. **(Author's abstract)**

Keywords: *Marine science, Symbiosis, Tridacna crocea, Zooxanthellae, Tridacna gigas, Survival, Growth*

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(Filipiniana Analytics)
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0225

Milkfish (*Chanos chanos*) fry concession system in Bolinao, Pangasinan: implications to coastal resources management

Salmo, III, Severino G., Juinio-MeÃ±ez, Marie Antonette R., AliÃ±o, Porfirio M.

The ecological and socioeconomic implications of the concession system on milkfish (*Chanos chanos* Forssk.) fry in Bolinao, Pangasinan were evaluated from 1996 to 1999. Monitoring of landed catch from 1996 to 1998 showed that the seasonal trend and annual volume of catch varied widely during the three-year period. The fry season in 1996 and 1997 lasted seven months, starting from the second week of April to the second week of October. However, during the 1998 season, fry were available for eight months starting in the second week of March and ending in November. The peak period also varied considerably during the three-year period. In 1996, peak abundance of fry was observed in the last week of July while in 1997 and 1998, the peak was during the second week of May. The volume of total catch for the entire season also varied widely, from as low as ~400,000 fry (1997) to as high as 2,400,000 fry (1996). The concessionaire "postor" has the sole right to buy all fry caught within the municipal waters. Thus, s/he dictates the buying price. Moreover, the existing concession system has no mechanism to regulate harvest of milkfish fry gathering. This arrangement allows the concessionaire to enjoy huge economic benefits while the fry gatherers only get a minimal share in the income. To promote sustainable and equitable harvest of milkfish fry , a new access arrangement through a permit system was proposed by the fry gatherers. The proposed permit system will promote a sustainable harvest of milkfish fry through the implementation of a closed period during the fry season. Compared to the present concession system, the permit system is believed to be more equitable because of the abolition of the 1/3 cut levied by the concessionaire on the landed catch. The permit system also facilitates a mechanism that provides for transparency on the selling/buying price. More importantly, fry gatherers will have the opportunity to sell to buyers offering a relatively higher in buying price. In addition, fry gatherers may also opt to grow out milkfish fry to fingerlings which may potentially give them higher economic returns for their catch. **(Author's abstract)**

Keywords: *Marine science, Milkfish fry, Concession system, Economic benefits, Sustainable/equitable resource use, Permit system*

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(Filipiniana Analytics)
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0226

Nitrogen and phosphorus in coastal systems: focus on dissolved organic N and P

Padayao, Daisy O., San Diego-McGlone, Maria Lourdes

Quantification of dissolved organic phosphorus (DOP) and dissolved organic nitrogen (DON) levels, and the relative importance of the organic fraction at various habitats (river, seagrass bed, mangrove area, coral reef, fishpen, and ocean) were the focus of this study. DON concentrations ranged from 9.5 to 44.3 µM during the dry season and from 10.9 to 23.7 µM during the wet season. DOP values ranged from 0.3 to 0.4 µM during the dry season and from 1.0 to 1.6 µM during the wet season. DON was 70-90% of the dissolved fraction in the first five habitats for both dry and wet seasons. DOP was approximately 15-35% during the dry season and 50-60% during the wet season. DON was highest in the river and lowest in the coral reef area for both

seasons. High DOP concentrations were determined in the river and mangrove area in the dry season while lowest values were seen in the coral reef area. During the wet season, DOP was highest in the coral reef area and lowest in the mangrove area. When compared with oceanic systems, dissolved inorganic nitrogen (DIN) and dissolved inorganic phosphorus (DIP) have higher percentages (25-58% for DIN and 71-83% for DIP) in the open ocean than in coastal areas (10-32% for DIN and 62-67% for DIP). However, DON and DOP were the dominant forms in the coastal sites (42-75% DON vs 7-32% DIN and 17-30% DOP vs35-67% DIP). The smaller fraction of the organic forms of N and P in the open ocean may be indicative of the greater efficiency in nutrient recycling/regeneration in the open ocean than in the coastal area. N:P ratios in the five habitats ranged from 2 to 14 with the highest ratio in the coral reef area. **(Author's abstract)**

Keywords: *Marine science, Dissolved organic nitrogen (DON), Dissolved organic phosphorus (DOP), Dissolved inorganic nitrogen (DIN), Dissolved inorganic phosphorus (DIP), Coastal habitals*

Science Diliman A Journal of Pure and Applied Science, Volume No. 12 Issue No. 2, 51-58
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0227

Participatory metalegal and legal processes for the coastal development plan of Bolinao, Pangasinan

Talaue-McManus, Liana, Asido, Jr., Wenceslao N.

The Coastal Development Plan that was passed into alw as the Municipal Fisheries Ordinance of Bolinao, Pangasinan, is a concrete example of community participation in policy development. Among the effective metalegal strategies used during the evolution of the plan into an ordinance were the lobbies staged by the federation of people's organizations (KAISAKA), the Municipal Fisheries and Aquatic Resources Management Council (MFARMC), and the Municipal Mayor. The capacity of various sectors to participate actively in the passage of the plan was enhanced through legal consultations and training provided by the Marine Fisheries Resources Management Project, in partnership with Tanggol Kalikasan, the legal arm of Haribon Foundation. The experience underscores the need for development projects to include the metalegal training of community constituents as a requisite for the latter to actively participate in the formulation of policies and laws for coastal resources management. **(Author's abstract)**

Keywords: *Marine science, Metalegal training, Coastal development planning, CBCRM*

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(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/2 2000

0228

Participatory monitoring and feedback system

Verceles, Lailany F., Talaue-McManus, Liana, AliÃ±o, Porfirio M.

The aquaculture industry in Caquiputan Channel contributed P2.3M to municipal revenues in 1998. However, the uncontrolled construction of fish pens and fish cages have contributed to the deterioration of the water quality in the Caquiputan Channel. Despite monitoring of parameters (e.g. DO, salinity, and temperature), low production was implicated because of limited dissolved oxygen supply.

A participatory monitoring of fish pens and fish cages was facilitated to pave the way for sustainable aquaculture. A system for monitoring and disseminating information on water quality, production and zonation of pens and cages, has been pursued to assess the situation and identify mechanisms to regulate aquaculture activities. The feedback system adopted has raised and facilitated environmental awareness, issue identification and implementation, of solutions to some major issues. Furthermore, the

results have resulted in policy reforms, as embodied in the provisions on aquaculture in the Municipal Fisheries Ordinance. **(Author's abstract)**

Keywords: *Marine science, Participatory monitoring, Fishpens and fishcages, Caquiputan Channel*

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(Filipiniana Analytics)
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0229

Strategies in mobilizing coastal communities for community-based coastal resources management in Bolinao, Pangasinan

Pinat, Jacquelyn, Turion, Renato A., Asido, Jr., Wenceslao N., Talaue-McManus, Liana

The Marine Fishery Resources management Project (MFRMP) hopes to facilitate partnership between the local government unit and the local communities in managing the coastal resources of Bolinao. Mobilization, both at the community and municipal levels, has been very important in promoting community-based strategies in coastal resources management. The community organization process in the municipality has gone through several levels; and different organizations have been formed. In empowering individuals and organizations, strategies tend to be varied and fluid depending on the need, the reason for mobilization, and the resources at hand. The Bolinao experience showcases different strategies used in implementing the resource enhancement, coastal zoning, harvest regulation, and capability building components of the program. These have included the formation of people's organizations, the mobilization of zonal action teams for each of the four zones, the creation and orientation of fishery and aquatic resources management councils at the barangay and municipal levels, and the active collaboration with the local government unit. These strategies and approaches have provided the people and the communities a wealth of experience and lessons that provide helpful insights in undertaking different endeavors. The strategies employed in the mobilization activities have significantly contributed to the empowerment of communities and individuals who are the primary managers of their resources. **(Author's abstract)**

Keywords: *Marine science, Community mobilization, Participatory planning, Integrated management, CBCRM, Coastal resources management*

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(Filipiniana Analytics)
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0230

The use of science in environmental advocacy for coastal resource management

Aguinaldo, Maria Maida S., Talaue-McManus, Liana

Environmental advocacy in Bolinao has played an important role in the prevention, remediation, and rehabilitation of potential and felt impacts of the various activities in the coastal zone. Most initiatives have been spurred by the sharing of knowledge and information in mobilizing community advocates. Facilitating action in four key areas-development planning, coastal aquaculture, concession systems, and tourism- involved the provision of venues for information transfer. This included the conduct of orientations and consultations, sharing of results of research project undertaken, lobbying, and use of primers, newsletters, and theater. Mechanisms for sustaining these actions and upholding the Coastal Resources Management (CRM) principles (sustainable, equitable, empowering) long after projects have been phased out were initiated through the establishment of a Coastal Resource Management Center, and the institutionalization activities through existing institutions, such as the local government, academic institutions, and peoples' organizations.

Maximizing knowledge and information, popularizing information, and sharing this with members of the community and

getting them to use it, as well as enjoining them to act, are the challenges that must be faced. Environmental advocacy, as a tool empowering different community sectors in evolving a consensus for CRM has become an integral feature of development work in Bolinao. **(Author's abstract)**

Keywords: *Marine science, Environmental advocacy, Information transfer, Coastal zone management, CBCRM, Resource management*

Science Diliman A Journal of Pure and Applied Science, Volume No. 12 Issue No. 2, 88-100
(Filipiniana Analytics)
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MATHEMATICS

0231

Extension of modular operations from Z to R and the groups under these operations

See, Richard W.

Up to the present, congruences of numbers are confined to the set **Z** of integers, although the congruence of complex numbers modulo the set **R** of real numbers hea been defined [1]. But in the latter case, the modulo is a set – the set **R**, not a number.

This work seeks to extend the concept of congruence and modulo operations from the set **Z** to the set **R** with nonzero real numbers as moduli. Thus, for every nonzero real number α and a pair of real numbers x and y, we may define x = y (modα) if and only if there exists an integer n such that x-y = nα.

Since congruence of real numbers is an equivalence relation, the set **R** is partitioned into congruence classes for every nonzero real number α. It is then possible to define addition of congruence classes of real numbers for every nonzero real modulo α and obtain a group structure under this operation.

Although we based our definition of congruence of real numbers on the congruence of integers and defined addition of congruence classes of real numbers in the same way as addition of congruence classes of integers, but the mathematical structure of equivalence classes of real numbers modulo a∈**R**-{0} is different from that of equivalence classes of integers modulo n∈**Z**-{0}. The result is that multiplication of congruence classes of real numbers does not behave the way congruence classes of integers do in multiplication. We may, however, define a scalar multiplication for the congruence classes of real numbers and obtain interesting results. **(Author's abstract)**

Keywords: *Mathematics, Complex number, Real number, Congruence operations, Modulo operations*

Acta Manilana, Volume No. Issue No. , 55-61
(Filipiniana Analytics)
Fil(S) Q181 A81 v50 2002

0232

Numerical computations on feedback control state estimation of the kuramoto-sivashinsky equation

Lampayan, Valentine Blez L., Arellano, Christian Victor L., Lope, Jose Ernie C., del Rosario, Ricardo C.H.

We considered the problem of minimizing the fluctuations of thin film flow which was modeled by the Kuramoto-Sivashinsky equation, a scalar nonlinear partial differential equation. We specifically addressed the problems of determining the optimal locations of the sensors and actuators, estimating the state from partial state observations and formulating a feedback control method. The control methodology was based on the LQR/LQG theory and its extension to nonlinear problems. In the numerical

implementation of the feedback control methods, we considered systems with different viscosities, and we compared the performance of feedback controls based on the linear and nonlinear systems. Our results showed that the control and state estimation strategies based on the linear system performed as well as the strategies based on the nonlinear system. This result is useful for real-time applications where the computation time for the feedback coefficients is crucial. **(Author's abstract)**

Keywords: *Mathematics, Feedback control, Kuramoto-Sivashinsky, LQR, LQG, State estimation, Thin film flow control*

Philippine Journal of Science, Volume No. 141 Issue No. 1, 89-101
(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0233

On the representation of AB-generalized Lucas sequence by Hessenberg matrices

Frondoza, Michael B., Labendia, Mhelmar A.

Let n be a positive integer. The Lucas sequence {Ln} has the recurrence relation $L_{n+1}=L_n+L_{n-1}$, where $L_0=2$ and $L_1=1$. A lower Hessenberg matrix $M_n = (a_{ij})$ is an nXn matrix where $a_{jk} = 0$ whenever $k>j+1$ and $a_{j(j+1)} \neq 0$ for some j. In this paper, we introduce the second order linear recurrence relation of the AB-generalized Lucas sequence $\{v_n\}$ and give the relationships between $\{v_n\}$ and Hessenberg permanents and determinants. Moreover, we also give representations of $\{v_{2n}\}$ and $\{v_{2n+1}\}$. **(Author's abstract)**

Keywords: *Mathematics, Lucas sequence, AB-generalized Lucas sequence, Hessenberg matrix, Hessenberg permanent, Hessenberg determinant*

Transactions of the National Academy of Science and Technology, Volume No. 34 Issue No. 1, page 129
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

MEDICINE

0234

A 2-week comparative study on the efficacy of 2 different concentrations of acapulco ointment among residents in two barangays in Metro manila with tinea pedis using a randomized experimental design

Dumlao, Aldo C., Dumlao, Lourdes Carolina I., Dy Tiapco, Rafael Paulo T., Echiverri, Carmenchu Marie S., Elbo, April May F., Encanto, Pamela J., Paredes, Georgina T.

The study was undertaken to determine the efficacy of 2 different concnetrations of Acapulco ointment in the treatment of tinea pedis (athlete's foot) using a randomized experimental design. Forty three subjects living in two barangays, Bagong Silang in Cainta Rizal and Dona Imelda in Quezon City, were included in the study. Data were collected weekly during the course of the study using a checklist scale of symptomatology. A t-test with logistics regression to control for confounders produced the following results: for pruritus at 3 days t was significant ($t= -3.86$, $p<0.002$) as well as for erythema at 3 days ($t = -5.19$, $p<0.0004$) and scale formation at 14 days ($t= 4.33$, $p<0.002$). Corrected cure rates using the logistics regression for treatment A were 100, 84.6, 61.5 and 69.2 percent for pruritus, growth and extension of the lesions, erythema and scale formation, respectively. Cure rate for treatment B were 69.2, 61.5, 84.6 and 61.5 percent for pruritus, growth and extension of the lesions, erythema and scale formation, respectively. Eight subjects were dropped from the study due to follow-up failure and usage of other medications during the course of the study. **(Author's abstract)**

Keywords: *Medicine, Tinea pedis, Acapulco ointment, Erythema*

UERMMMC Journal of Health Sciences, Volume No. 5 Issue No. 1, 35-45
(Filipiniana Analytics)
Fil(S) R97.4 U37 5/1 2002

0235

The accessibility and utilization of mobile phones among TB patients: a feasibility survey for short messaging service (SMS) as s strategy to improve adherence to TB services

Alejandria, Marissa M., Amarillo, Maria Lourdes E., Lansang, Mary Ann D.

Objectives: To estimate the proportion of TB patients who have access to mobile phones and to describe mobile phone utilization practices of TB patients.

Methods: Sic public and six private TB clinics representing the four districts of Metro Manila and one institution in Cavite were purposively selected for this cross-sectional survey conducted in 2006. Using an interviewer-administered questionnaire, patients suspected to have TB, those newly diagnosed and those currently on treatment under either DOTS or non-DOTS were interviewed.

Results: Of the 337 patients interviewed, 65% (95% CI 60.2 to 70.6) have access to mobile phones (45% currently own a mobile phone and 20% share a mobile phone with a household member). The mean duration of ownership was 1.8 years (SD1.7). Almost all had prepaid subscriptions (99%) and 72% had some credit/load in their mobile phones at the time of interview. Of the three existing networks, subscription to SMART was highest, followed by the Globe network. Most of them use their phones for social purposes and emergency-related communications.

Most of the respondents were male (60%) in the age group of 20-39 (54%) and 40-59 years old (33%). Half of the respondents were from public TB clinics (52%). On multivariable analysis, patients consulting in private clinics [OR 2.25, 95% CI 1.36 to 3.74], belonging to the younger age of <20 [OR4.54, 95% CI 1.48 to 13.89] and 20-39 years old [OR 2.56, 95% CI 1.48 to 4.39], who had college education [OR 4.97, 95% CI 1.84 to 13.43] and currently employed [OR 3.23, 95% CI 1.92 to 5.47] were more likely to have access to mobile phones.

Conclusion: Considering the fair access (65%) to mobile phones of the patients interviewed, it is feasible to conduct a pilot intervention using SMS as a strategy to improve adherence to treatment. The intervention should consider that majority use prepaid subscriptions and that sharing of phones among household members is a common practice. **(Author's abstract)**

Keywords: *Medicine, Tuberculosis, Short-messaging service, Survey*

Acta Medica Philippina, Volume No. 43 Issue No. 4, 10-14
(Filipiniana Analytics)
Fil(S) R97.4 A21 43/4 2009

0236

Adenocarcinoma of the fallopian tube: Primary or Metastatic?

Malvar, Ellsa Patricia May R.

The study on Adenocarcinoma of the fallopian tube is presented through a case report on the 48 year old woman admitted in the De La Salle University College of Medicine, due to vaginal bleeding. She had stopped menstruating three years prior to admission and had started bleeding seven months before her admission. “Clinical history was observed to be unremarkable.” Adenocarcinoma was considered rare and this case attempted to prove if the patient’s case is one wherein the tumor is a primary tumor or a metastatic tumor. Since the patient declined further medical testing and procedures, the researchers relied on the initial data available. From these data, various metastasis of carcinomas of urinary tract, lungs, breasts and others were ruled out. The case was concluded to be that of a primary adenocarcinoma of the fallopian tube.

Keywords: *Adenocarcinoma, Fallopian tube, Medicine, Vaginal bleeding*

The Medical Journal of De La Salle University, Volume No. 11 Issue No. 2, 27-32
(Filipiniana Analytics)
Fil(S) R935 M468 11/2 1995

0237

The art of healing and poetry

Evasco, Marjorie

The paper explores the relationship between the art of poetry and medicine, and advances the institutionalization of Medical Humanities in the Philippine pre-medical and medical schools, to train medical professionals in the active appreciation of poetry as a language of empathy, that can enrich and expand the horizon of practices and protocols of medicine in the Philippines. The paper presents the experiences of five Filipino doctors, namely two oncologists, a neurosurgeon, an obstetrician-gynecologist, and an anesthesiologist, who embody the training and share instances of their practice of the art of healing through the language of empathy. **(Author's abstract)**

Keywords: *Medicine, Poetry, Medical humanities, Medicine, Healing*

Silliman Journal, Volume No. 49 Issue No. 1, 19-34
(Filipiniana Analytics)
Fil(S) AS538 S46 49/1 2008

0238

Artificial intrauterine insemination: How I Do It

Ubaldo, Cesar C.

The paper discussed how Artificial Intrauterine Insemination is done. The Intrauterine insemination (IUI) is a form of "treatment for patients who failed to produce adequate cervical mucus and were unable to achieve an adequate post-coital test." The Artificial Insemination (AI), on the other hand, is "defined by the location in the reproductive tract where the sperm is deposited and the source of the sperm." Some of the cases cited wherein IUI may be important are the following: "cervical hostility; failure of sperm transport; unexplained infertility and endometriosis. The paper also cited techniques, timing, and sperm preparation. The paper concludes that IUI "should not be continued for more than six cycles." It was found that 60% to 80% of the pregnancies are likely to occur within the first 2-cycles and the chance increases up to the 5th cycle. Thus, IUI should be restricted to 6 cycles.

Keywords: *Medicine, Intrauterine, Artificial insemination, Insemination*

The Medical Journal of De La Salle University, Volume No. 11 Issue No. 4, 38-39
(Filipiniana Analytics)
Fil(S) R935 M468 11/4 1995

0239

Assessment of distal gut microbial diversity among Filipino children of different nutritional status through the rRNA gene

Dalmacio, Leslie Michelle M., Destura, Raul V., Tecson-Mendoza, Evelyn Mae

Acanthamoeba species are ubiquitos free-living single-celled, opportunistic pathogens, which can be isolated from water, soil, dust in the air, and from other organisms. It can cause sight threatening *Acanthamoeba* keratitis as well as the rare but fatal encephalitis in humans. Traditionally, laboratory procedures to detect this organisms include culture on non-nutrient agar with heat killed *E. coli* (NNE) and microscopic examination. Identification can easily be done at the genus level but not at the species level. A recent way of detecting and identifying the organism propagated on NNE is through molecular means. This technique is based on the presence of ASA.S1, a partial 18S ribosomal DNA (Rns) gene unique to the genus. Subgeneric level of identification can be achieved by genotyping. Here we report on the genotyping of *Acanthamoeba* species in corneal scrapings from three keratitis patients and in nasal swabs from six unrelated healthy volunteers. A 461-bp amplicon was amplified using genus specific JDP1 and JDP2 primers. DNA sequencing of the PCR product was carried out using conserved 892 and 892C primers to determine the sequence of diagnostic fragment (DF3) on Rns. Phylogenetic tree was constructed using MEGA5. Results showed that isolates from all three corneal scrapings and from five out of six nasal swabs belonged to genotype T4, whereas one nasal swab was of the genotype T5. Phylogenetic analysis showed that these isolates clustered with the reference sequences most similar to them. T4 (89%) is the predominant genotype found among nine isolates analyzed in this study. Molecular-based technique is a useful tool for the identification of genotypes of *Acanthamoeba* from other free-living amoebas. Genotyping helps in decision-making for clinical management of *Acanthamoeba* infection, in tracking the source of infection, as well as in epidemiological and environmental studies. **(Author's abstract)**

Keywords: *Medicine, Acanthamoeba, Genotyping, Keratitis, 18S ribosomal DNA*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0240

Basic factors that affect dose distribution in the irradiation box

Borras, Alan M.

Experimental irradiations at cell No. 2 of the ^{60}Co Food Irradiation Facility of Takasaki Radiation Chemistry Research Establishment (TRCRE), Takasaki-shi, Japan were carried out using Radix RN-15 (polymethylmethacrylate, PMMA) dosimeters to determine the basic factors that affect the uniformity of the distribution of absorbed dose in the target material inside an irradiation box.

Based on the results obtained, the uniformity ratio and distribution of the absorbed dose in the target material are greatly affected by material density, air gap, thickness of the material and mode of irradiation. **(Author's abstract)**

Keywords: *Medicine, Radix RN-15, 60Co irradiation, Takasaki Radiation Chemistry Research Establishment (TRCRE)*

The Nucleus: Official Journal of the Radioisotope Society of the Philippines, Inc, Volume No. Issue No. , 23-35
(Filipiniana Analytics)
Fil(S) QC173 N88 v30 1992

0241

The behaviour of the streak-breasted bulbul *Ixos siquijorensis siquijorensis* on Siquijor Island, Philippines

Bucol, Abner A.

This paper describes some feeding habits, vocalizations, visual displays, roosting, aggression, bathing and preening, as well as the nest and eggs of the endangered Siquijor Streak-breasted Bulbul (*Ixos siquijorensis siquijorensis*). Although the species occur in scrub habitats and nest even in degraded forests, survival of fledglings is probably low owing to predation and collection of

eggs by the locals. Given the gaps of information of the species' behavior, possible directions for future studies are also discussed. **(Author's abstract)**

Keywords: *Medicine, Ixos siquijorensis, Behavior, Vocalization, Reproduction, Aggression, Frugivory*

Silliman Journal, Volume No. 49 Issue No. 1, 35-44
(Filipiniana Analytics)
Fil(S) AS538 S46 49/1 2008

0242

A biomechanical study on single rod spinal instrumentation system in an unstable thoracolumbar injury model: a finite element analysis

Atupan, Jereme B., Bundoc, Rafael C.

Objectives. To develop three dimensional computer models of the anterior thoracolumbar spine implants or constructs (the novel single rod-screw implant and the standard implants) and to evaluate its biomechanical properties through a graphically reconstructed testing standard.

Methods. We developed a finite element modeling technique based on actual geometry of the implant constructs and mechanical property data from standard biomechanical studies on anterior thoracolumbar spinal instrumentation systems. Seven constructs were mounted on simulated vertebral bodies. Axial load sharing was measured through a range of applied axial loads from 100 N to 1600 N. The static destructive tests were conducted. The bending strength of each construct was calculated with a full length corpectomy graft in place, simulating reconstruction of the anterior column, and with no graft in place, simulating catastrophic graft failure.

Results. Static testing parameter demonstrated highly significant differences between devices. The plate construct formed the highest subset in bending strength of 1000-1100 N, whereas the single rod showed the lowest value of 300-400N. However, the bending strengths of single, rod and dual rod both without bone grafts were not significantly different. With the graft in place, bending strength of the constructs significantly increased beyond the maximum set load of 1600N, underlying the importance of the graft in overall construct strength.

Conclusion. The 3-D finite element models for anterior thoracolumbar instrumentation system were designed with mechanical properties comparable to the actual biomechanical testing results. Although single rod construct has the lowest value, its bending strength is comparable to the standard dual rod system under static axial loading. Bone graft contributed to overall construct stiffness. **(Author's abstract)**

Keywords: *Medicine, Anterior spinal instrumentation, Thoracolumbar spine, Biomechanical testing, Finite element analysis*

Acta Medica Philippina, Volume No. 46 Issue No. 2, 38-43
(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0243

A case-control study on *Helicobacter pylori* seropositivity and myocardial infarction among adult Filipino male patients in selected hospitals in Metro Manila

Endriga, David T., Escurel, Dhamscen L., Esguerra, Cheryl Rachel L., Espaldon, Visvanath E., Espinosa, Johanna N., Molina, Joseph Antonio D., Parungao, Daniel M., Uy, Norbert Lingling D.

A case-control study was done to determine if there is an association between *H. pylori* seropositivity and myocardial infarction. 134 subjects were recruited from Philippine Heart Center and East Avenue Medical Center, 67 of which are cases

(Filipino male patients aged 30-70 years diagnosed with Acute Myocardial Infarction, not taking anti *H. pylori* infection treatment/therapy for the past 2 months, no history of peptic ulcer disease), 67 are controls (same as cases but without Acute Myocardial Infarction and without history of Coronary Artery Dísease or Hypertensive Cardiovascular Disease. Serum of the subjects were tested for the presence of IgG antibodies to *H. pylori* using the ImmunoComb II *H. pylori* Test. Results show that 37 (57%) cases and 30(49%) controls were positive for H. pylori. Odds ratio was computed to be 1.62 (95% CI 0.75-3.32, p=0.27) which shows that the association between *H. pylori* seropositivity and MI is not significant. based on the multiple logistic regression, true confounders were identified to be age, history of high cholesterol, family history of diabetes, and family history of heart disease. After adjusting for these confounders using Bivariable analysis, the association remained not significant Therefore, H. pylori may not be an important contributor in the occurrence of myocardial infarction. (**Author's abstract**)

Keywords: *Medicine, Helicobacter pylori, ImmunoComb II, Myocardial infarction, Coronary arteries*

UERMMMC Journal of Health Sciences, Volume No. 5 Issue No. 1, 5-14
(Filipiniana Analytics)
Fil(S) R97.4 U37 5/1 2002

0244

Causes of Infertility

Tongo, Caesar D.

This paper presented in a scientific meeting discussed the possible factors causing infertility consultations among couples: (1) delayed marriage; (2) low sperm count arising from exposure to pollution; (3) sexually transmitted disease; (4) declining number of children for adoption; (5) rise in surgical sterilization. The factors vary depending on gender. Factors for male infertility are different from factors for female infertility. The main factors affecting male infertility are "failure to deliver sperms and poor timing," and "problems in sperm production." On the former, common challenge encountered by males are poor timing, premature ejaculation, ejaculatory incompetence, retrograde ejaculation and impotence. A brief discussion on diagnostic evaluations and treatment were also mentioned. Among the factors and problems cited for female infertility are: vaginal, uterine, tubal, ovarian and peritoneal.

Keywords: *Medicine, Infertility, Causes of infertility, Sperm*

The Medical Journal of De La Salle University, Volume No. 11 Issue No. 4, 28-34
(Filipiniana Analytics)
Fil(S) R935 M468 11/4 1995

0245

The causes of vaginal discharge in children and adolescents

Ferrolino, Joseline A.

The paper distinguishes the types and causes of vaginal discharge complained mostly by children and adolescents. One type is the common discharge, which is referred to as physiologic leukorrhea, a normal discharge due to "vaginal estrogen stimulation." This type of discharge can occur in early adolescence at the onset of gonadal estrogen production. The other type is Abnormal discharge often cause by infection. For girls who are not yet having their menstrual period (premenarcheal), the common infection is vulvovaginitis, an infection which occurs mostly in the vulva and vagina. It was also mentioned that infection occurs in these forms: vulvitis, vaginitis or cervicitis. For the adolescents, however, "specific microbiologic agents," causes vaginal discharge. The symptoms and treatment for genital infections among adolescents are the same as those among adults.

Keywords: *Medicine, vaginal discharge, causes of vaginal discharge, discharge*

The Medical Journal of De La Salle University, Volume No. 11 Issue No. 4, 35-37
(Filipiniana Analytics)
Fil(S) R935 M468 11/4 1995

0246

Cellular response to *Aglaia loheri* Blanco active principle, maldi 531.2[M+H]$^+$ is predicted by genes

Galutan, Else F., Jacinto, Sonia D., Efferth, Thomas

The expression of genes can be influenced by the presence of drugs or chemicals in cellular environment. The newly isolated *Aglaia loheri* active principle, Maldi 531.2[M+H]$^+$ was investigated for its *in vitro* cytotoxicity against human leukemia cell lines, CCRF-CEM and their multidrug resistant (MDR) type, ADR5000-CEM. Changes in the regulation of genes of two human leukemic cell lines were also evaluated after treatment with the active principle. XTT tetrazolium hydroxide for the non-radioactive quantification of cell proliferation and viability was used for cytotoxic test, and human illumina chip ID 6247215020 for DNA microarray analysis. Maldi 531.2 [M+H]$^+$ showed potent anticancer activity against both CCRF-CEM and ADR5000-CEM cells with IC50 of 0.02 and 0.03 μM respectively. The active principle further caused down-regulation of genes associated with cell survival: *ALDH1 A2* and *AKR1 C3*, including genes which play a role in maintaining mitochondrial DNA, NIPSNAP1. The data indicate that cytotoxic principles derived from *A. loheri* maybe a valuable source for the development of novel treatment options for cancer as it is seen that cellular response to Maldi 531.2[M+H]$^+$ is predictable by genes. **(Author's abstract)**

Keywords: *Medicine, Aglaia, loheri, Cytotoxicity, Expression analysis, Illumina sequencing, Multidrug resistance, Leukemia*

Transactions of the National Academy of Science and Technology, Volume No. 34 Issue No. 1, page 153
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0247

Characterization of mutations and polymorphisms in the G6PD gene among Filipino newborns with clucose-6-phosphate dehydrogenase deficiency

David-Padilla, Carmencita, Abaya, Christian Eric S., Cutiongco-de la Paz, Eva Maria, Silao, Catherine Lynn T., Shirakawa, Taku, Nishiyama, Kauru, Matsuo, Masafumi

Background: Glicose-6-phosphate (G6PD) deficiency is the most prevalent enzyme deficiency to date. The global prevalence of G6PD deficiency is estimated at around 330 million people affected with the disease worldwide. This 4.9 percent prevalence, correlates highly with geographic areas endemic to malaria. It is the most common among the disorders in the Newborn Screening (NBS) panel in the Philippines, with one confirmed case for every 52 newborns (1.52). This paper determines the molecular background of G6PD deficiency among Filipino newborns detected by newborn screening.

Methods: A total of 200 cases confirmed to have G6PD deficiency, 180 males and 20 females, were identified through the Philippine Newborn Screening Program from 2001-2003. Genomic DNA was extracted from dried blood spots followed by multiplex polymerase chain reaction using multiple tandem forward primers and a common mutations and polymorphisms in exons 5,6,9,11 and 12 of the G6PD gene.

Results: Of the 200 samples analyzed, mutations and polymorphisms in the G6PD gene were identified in 148 cases (74%). The most common mutation was a G to A transition on nucleotide 871 (Viangchan) of exon 9 in combination with a silent mutation on exon 11, accounting for 32.9% of the cases. This was followed by a C to T transition on nucleotide 1360 (Union) in 21.1% of the cases. Other mutations were Vanua Lava in 10% Chatham in 9.4% and Canton in 3.5% of the newborns, The silent polymorphism on nucleotide 1311 was present in 12.9% of cases. There were combinations of these mutations and polymorphisms present in a minority of cases.

Conclusion: Results of this study showed the molecular heterogeneity underlying G6PD deficiency among Filipino newborns. **(Author's abstract)**

Keywords: *Medicine, Glicose-6-phosphate dehydrogenase deficiency, G6PD, Mutations, Filipino*

Acta Medica Philippina, Volume No. 45 Issue No. 4, 53-57
(Filipiniana Analytics)
Fil(S) R97.4 A21 45/4 2011

0248

Comparative analysis of the classic lachman's test with the drop leg lachman's test

Monicit, Dilbert A., Valdez, III, Ambrosio Emilio S.

Objective. The objective of this study is to compare the validity of the Drop Leg Lachman's test (DDLT) with Lachman's test (LT) in appreciating abnormal knee AP lzxity using KT-1000, specifically comparing LT and DLLT in terms of sensitivity and specificity.

Methods. A prospective randomized cross-sectional study was used on 36 patients complaining of unilateral knee symptoms from April 2009 to November 2009, 18 to 50 years of age consulting at the UP-PGH Department of Orthopedics Sports Clinic. Descriptive statistics were used to obtain the frequency, percentage, mean, standard deviation and range. Data was analyzed and calculated using the KT-1000and STATA software.

Results. The subjects included 31 (86) males and 5 (14%) females. Thirty-six percent were students and the rest were employed. The average age of the subjects was 28 years old with a range from 17 to 50 years. Their average weight was 72 kilograms with a range of 50 to 92 kilograms. Their average height was 170 centimeters with a range of 157-187 centimeters. Twenty eight (78%) complained of knee pain, 7 (17%) of knee instability and 1 (2%) of knee tightness. All of these subjects attribute the current complaint to a previous trauma, 72% were basketball-related. The average duration of onset of symptoms to testing was 22 mo nths. Our study showed identical results of 95.45% sensitivity and 50.0% specificity when DLLT and LT were compared to KT-1000.

Conclusions. The drop Leg Lachman's test shows no statistical difference with that of Lachman's Test in diagnosing knee instability using the KT-1000 as gold standard. It has an identical sensitivity of 95.45% and specificity of 50%. **(Author's abstract)**

Keywords: *Medicine, Instability, Sensitive exam, ACL, Drop leg*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0249

Comparison between surface electrode and monopolar needle electrode in the determination of the nerve conduction studies of the radial nerve

Dela Cruz, Jerico S., Ignacio, Sharon D.

Objective: This cross-sectional study aims to determine the accuracy of using a surface electrode compared with using a needle electrode in the determination of the latency, amplitude, and duration of the compound motor action potential and nerve conduction velocity of the radial nerve.

Methods: A cohort of 42 males and 30 females consisting of patients from the Philippine General Hospital referred for

electrodiagnostic studies of the upper extremity and healthy volunteers were included in the study. The compound motor action potential of the radial nerve in each participant was determined using the surface electrode technique and the monopolar needle technique, and the results were compared. The main outcome measures were: compound motor action potential amplitude, latency, duration, and nerve conduction velocity; sensitivity; specificity; and agreement between the two techniques under investigation.

Results: When all parameters in the nerve conduction studies were considered, the sensitivity of the surface electrode compared with the monopolar needle electrode in determining radial nerve abnormalities was 46.14% (95% Confidence Interval (CI) 0.27 - 0.65), with a specificity of 82.61% (95% CI 0.72 - 0.94) and an overall diagnostic accuracy of 69.44%. When the parameters were taken individually, analysis of the latency showed sensitivity of 60% (95% CI 0.17 - 1.03), and specificity of 100%, with overall diagnostic accuracy of 97.22%. The test for amplitude yielded sensitivity of 50% (95% CI 0.1 - 0.90) and specificity of 100%. The overall diagnostic accuracy was 95.83%. Analysis of the duration showed a sensitivity of 71.43% (95% CI 0.38 - 1.05) and specificity of 100%, with overall diagnostic accuracy of 97.22%. The nerve conduction velocity alone showed sensitivity of 55% (95% CI 0.33 - 0.77), specificity of 84.61% (95% CI 0.75 - 0.94), and overall diagnostic accuracy of 76.39%. The kappa test revealed a fair association or agreement when all the parameters of the compound motor action potential were taken into consideration (k=0.30), moderate association between the surface and the needle electrode in nerve conduction velocity (k=0.40), a substantial association in amplitude (k=0.65) and latency (k=0.74), and a high association between the two techniques for the duration (k=0.81).

Conclusion: In the comparison of the surface electrode and the monopolar needle electrode techniques in the determination of the compound motor action potential of the radial nerve, the parameters have high specificity and a high probability of a negative test in individuals who are disease-free. The kappa test indicated a fair association between the two techniques. When the parameters of compound motor action potential are taken separately, the latency, amplitude, duration and nerve conduction velocity of the radial nerve have a high probability of positive test results in people with disease and a high probability of negative test results in people with no disease. The study showed that the surface electrode technique is a fair to good alternative to the needle electrode when conducting a radial motor nerve study. **(Author's abstract)**

Keywords: *Medicine, Rehabilitation medicine, Electrodiagnosis, Nerve conduction studies, Radial Nerve, Surface electrode, Needle electrode*

Acta Medica Philippina, Volume No. 44 Issue No. 2, 23-27
(Filipiniana Analytics)
Fil(S) R97.4 A21 44/2 2010

0250

Comparison of the hybrid locking plate, standard dynamic compression plate, and standard dynamic compression plate augmented with bone cement for fixation of osteoporotic humeral shaft fractures: a cadaveric biomechanical study

Tabu, Irewin A., Arbatin, Jr., Jose Joefrey F., Bundoc, Rafael C.

Background. Studies comparing the relative strength of polymethylmethacrylate (PMMA) augmented fixation, standard plating and locked compression plate (LCP) system are few. The use of either the bone cement-augmented dynamic compression plate or the Hybrid LCP constructs may provide an additional tool for the treatment of fractures in patients with osteoporosis.

Methods. Eighteen (18) osteoporotic cadaveric humeral bones were assigned randomly to each of three groups (Dynamic Compression Plate [DCP], DCP Augmented with bone cement, and the Hybrid LCP system) and tsted in anterior-posterior bending and torsion/external rotation. The load to failure values were obtained and the results for each specimen compared.

Results. Significant differences were observed between the standard DCP and Hybrid LCP group (p-value=0.012), and in the cement-augmented and Hybrid LCP group (p-value=0.099) in torsion/external rotation loading . No significant difference was observed between the standard DCP and bone-cement augmented group (p-value=0.248). No significant difference was observed among the three groups in terms of stiffness (p-value=0.3868) in the four-point anterior-posterior bending modality. Screw pull-out of the implant was observed only in the regular DCP group in torsion/external rotation loading stress.

Conclusion. Significant differences were seen between the three constructs in torsion/external rotation but not in anterior-posterior four-point bending. Bone failure, but not screw pull-out, was seen in the Hybrid LCP and bone cement-augmented DCP

groups in torsion. This study showed that the LCP system and the bone cement-augmented constructs may provide greater screw purchase to the osteoporotic humerus. **(Author's abstract)**

Keywords: *Medicine, Humeral shaft fracture, Osteoporosis, Dynamic compression plate, Polymethylmethacrylate (PMMA), Locking compression (LCP)*

Acta Medica Philippina, Volume No. 46 Issue No. 2, 24-31
(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0251

Computer-assisted dosimetry in the radiotherapy of cancer of the cervix

Calaguas, M.J.C., FPCR, Rodriguez, L.V., M. Sc., Vito Cruz, E.Q., Legaspi, G.C., de Luna, R.M., Hermoso, T.M., B.S.M.E., Razon, E.C., Madrid, E.T., Viray, R.G.

Cancer of the cervix is the third leading cause of cancer in the Philippines. The Department of Radiotherapy of the Jose R. Reyes Memorial Medical Center has participated in the Regional Coordinated Research project sponsored by the International Atomic Energy Agency (IAEA) to undertake a study to compare computer treatment planning and manual calculations in radiotherapy of the cancer of the cervix; and to perform actual measurements on bladder and rectal points using TLDs.

Twenty-seven patients with Stage II-B to III-B were included in the study. External beam teletherapy of 40 Gy without shielding for 4 weeks and 50 Gy with blocks plus brachytherapy of 20-40 Gy were given using LDR or HDR machine. Point A, bladder and rectal points were defined following ICRU 38 recommendations. The results showed dose calculations between commercially available computers and IAEA- provided computers agree to within 20%. Results of TLD measurement in bladder and rectum however have shown wide range of variation. **(Author's abstract)**

Keywords: *Medicine, Bladder, Rectal, LDR and HDR machine, TLD*

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(Filipiniana Analytics)
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0252

Cost analysis for the management of acute coronary syndrome using different quality of care indicators

Tumanan-Mendoza, Bernadette A., Mendoza, Victor L., Morales, Dante D.

Objectives: This study determined the economic burden for nonfatal uncomplicated acute coronary syndrome (ACS) using 100% compliance to certain a) non-invasive or b) invasive and non-invasive diagnostic and therapeutic interventions with class I recommendations in the American College of Cardiology-American Heart Association (ACC-AHA) clinical practice guidelines for ACS in three tertiary hospitals using the societal perspective. It also determined the costs using the patient's perspective in the setting of one private tertiary hospital.

Methods: This study was a cost analysis that included a) costs of patient's resources, b) production losses, and c) costs of other resources or sectors, from hospitalization to one month post-discharge for ACS. Several models were constructed due to variations in the costs of diagnostic and therapeutic interventions in the three settings.

Results: Using the societal perspective, one model for non-invasive options yielded the following (costs as of January 31, 2009): hospital A, Php87,014 - 124,799; hospital B, Php75,592 - 96,072; hospital C, Php71,969 - 92,148. excluding fibrinolytic therapy, the lowest total cost would be Php65,000. However, if coronary angiography was added to the models for hospital C, the

cost was Php107,154 - 134,574 (coronary angiography was not available in hospitals A and B). Using the patient's perspective, the adjusted mean cost for the model which used the least expensive medication was Php96,421 (Standard Deviation = 34,076).

Conclusion: The economic burden for nonfatal uncomplicated ACS may range from Php65,000 - 134,574. **(Author's abstract)**

Keywords: *Medicine, Cost analysis, Nonfatal acute coronary syndrome, Economics, Out-of-pocket payments, ACS quality of care indicators*

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0253

Cost of mass drug administration for filariasis elimination in the province of Sorsogon, Philippines

Amarillo, Maria Lourdes E., Belizario, Jr., Vicente Y., Panelo, Carlo Irwin A., Sison, Stephanie Anne M., de Leon, Winifreda U., Ramirez, Bernadette L., Adrid, Leah P.

Objective: Elimination efforts for lymphatic filariasis underway in the Philippines using mass drug administration (MDA) of diethylcarbamazine and albendazole as one of the main strategies. This cost analysis was done to determine the MDA implementation cost and provide useful information to the control programme on how to best utilize limited resources.

Methods: This cost analysis study was conducted in the province of Sorsogon, Philippines in 2004. The study was done from a program perspective. Cost data for 2003 was obtained retrospectively via key informant interviews and records review using a standardized guide from a multi-country cost analysis study of filariasis elimination programs. Cost figures were classified as either economic or financial costs and expressed in real terms using 2002 as base year. Sensitivity analysis was likewise performed.

Results: The total economic cost and cost per person treated with MDA were estimated at US$223,549.55 (Php12,116,385.48) and US$0.40 respectively. The financial costs were less than half of the economic costs. The main cost driver was drug distribution. The highest economic and financial costs were incurred at the national (54.5%) and municipal (74.4%) levels, respectively. High variation in costs of MDA activities was observed.

Conclusion: This cost analysis provides reasonable estimates which may be used to assist government and other stakeholders in program planning and resource generation for filariasis elimination programs in endemic areas. **(Author's abstract)**

Keywords: *Medicine, Cost analysis, Lymphatic filariasis, Mass drug administration, Diethylcarbamazine, Albendazole*

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(Filipiniana Analytics)
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0254

A cross-sectional study of the magnitude and pattern of glaucoma supects in a representative community of Bagong Nayon, Antipolo City

Miguel, Rophel T., Mondelo, Diosdado H., Monsalud, Amor M., Nadela, Ma. Virginia M., Neira, Rhodney A., Nepomuceno, Jerome F., Ng, Lesley Stuart K.

Objective: There have been no previous studies conducted to measure the prevalence of glaucoma in the Philippines. This study aims to provide a reasonable estimate of glaucoma prevalence and its age and sex distribution.

Methodology: A cross-sectional epidemiological study was conducted in a defined population. Screening for glaucoma was conducted by 2nd year medical students. Residents of the University of the last Ramon Magsaysay Memorial Medical Center (UERM-MMC) did further re-evaluation. Suspects were determined by retinal changes observed through direct fundoscopy.

Results: The data obtained from this study demonstrated an overall prevalence of 2.35% for glaucoma suspects in the representative community of Bagong nayon, Antipolo City. There is no significant difference in the prevalence rate for female (2.26%) and male glaucoma suspects (2.55%)

Conclusion: The prevalence rate was found to be consistent with those obtained by studies conducted in other countries. The results were also consistent, such that the prevalence of glaucoma is rare below age 40 and increases with age. Furthermore, there was no significant difference in the prevalence between males and females. **(Author's abstract)**

Keywords: *Medicine, Glaucoma, Bagong Nayon, Antipolo City , Epidemiological study, Retinal*

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0255

Detection of dengue virus using a quartz crystal microbalance (QCM)-based immunosensor

Monlinong, Jason Paul C., Corales, Olga, Miguel, Roland Jay, Sison, Luiz, Pascual, Cherrie , Matias, Ronald

Continuing efforts to develop fast and reliable methods for the early detection of dengue virus in human blood samples prompted us to develop a Quartz Crystal Microbalance (QCM)-based immunosensor. Following surface functionalization on the gold electrode surface of the quartz crystal, the immunosensor was used to detect dengue viral antigen using a laboratory-fabricated QCM set-up. Dengue monoclonal antibody (mAb) was immobilized on the gold electrode surface of the 5-MHz crystal using Protein A. C6/36 cells were then infected with dengue 2 viruses and propagated. Harvested infected culture fluid was utilized to determine the sensitivity of the QCM-immunosensor. Binding of the dengue virus antigen to the immobilized dengue monoclonal antibody induced detectable changes in the oscillation frequency of the quartz crystal. Baseline oscillation frequencies (finitial) were measured and compared with the oscillation frequency at the time of binding of the dengue antigen to the dengue mAb (f_{final}). Quantification of the frequency shifts (âˆ†f = f_{final}-$f_{initial}$) yielded a reliable signal for the detection of the dengue virus. Parameters that were optimized for the QCM-immunosensor include dengue mAb concentration, Protein A concentration and incubation time. Optimum parameters used in the fabrication of the immunosensor were the following: 120 min of Protein A incubation using 10.0 mg/mL Protein A concentration and 180 min of dengue mAb incubation using 0.1 mg/mL dengue mAb. The QCM-immunosensor shows promise as a reliable diagnostic method for the detection of dengue. Using this technology, clinical samples will be tested parallel to IgM Capture ELISA and real-time PCR methods which are currently used to diagnose dengue virus infection. **(Author's abstract)**

Keywords: *Medicine, Dengue viral antigen, Quartz crystal microbalance (QCM), Immunosensor, Protein A, Monoclonal antibody (mAb)*

Transactions of the National Academy of Science and Technology, Volume No. 34 Issue No. 1, page 156
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0256

Development and validation of screening test for *Genital chlamydia trachomatis* and *Neisseria gonorrhea* infections

Tolabing, Ma. Carmen, Saniel, Ofelia P.

Objectives: To develop and validate a screening tool for *Chlamydia trachomatis* and *Neisseria honorrhea* that can be used as a screen-to-treat tool among female commercial sex workers.

Methods: The cross-sectional study design was employed. The records of female sex workers who participated in the prevalence survey on C. trachomatis and N. gonorrhea infections were reviewed. The data included information that was obtained from interview and cervical examination of female sex workers. Interview data included personal and medical history (risk factors and symptoms of infection). The clinical data included the results of the polymerase chain reaction test (PCR), gram stain of cervical specimen, and cervical examination. Two screening algorithms were developed using a personal risk score and validated on a separate sample: 1) screening test based on personal medical history factors, and 2) screening test incorporating personal-medical history and clinical examination factors. Validation of infection status was carried out using the result of the polymerase chain reaction test as the gold standard of diagnosis.

Results: *C. trachomatis* and/or *N. gonorrhea* were present in 35.5% of the test sample and in 38% of the validation sample. The screening algorithm based on personal-medical history factors and the screening algorithm that combined personal-medical history and clinical examination factors had a sensitivity of 79.9% and 76.3%, respectively, while their specificity and positive predictive value were 28.1% and 34.1% and 38% and 41.6%, respectively, while their specificity and positive predictive value were 28.1% and 34.1% and 38% and 41.6%, respectively.

Conclusion: The screening algorithms derived from this study cannot be used as a screen-to-treat tool because of their poor validity and predictive values. However, they may be useful for screening female commercial sex workers for further diagnostic testing. **(Author's abstract)**

Keywords: *Medicine, Screening, Validation, Sexually transmitted diseases*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 41/2 2007

0257

Diagnosis and molecular characterization of *Trichomonas vaginalis* in sex workers in the Philippines

Queza, Macario Ireneo P., Rivera, Windell L.

Trichomonas vaginalis is a pathogenic protozoan which causes the sexually transmitted infection, trichomoniasis. The absence or non-specificity of symptoms often leads to misdiagnosis of the infection. In this study, 969 samples consisting of vaginal swabs and urine were collected and screened from social hygiene clinics across the Philippines. Of the 969 samples, 216 were used for the comparative analysis of diagnostic tools such as wet mount microscopy, culture and PCR utilizing universal trichomonad primers, TFR1/2 and species-specific primers, TVK3/7 and TV1/2. PCR demonstrated higher sensitivity of 100% compared to 76.92% of the wet mount. PCR primer set TVK3/7 and culture had the same and the best expected average performance (ROC, 0.9848). Prevalence of infection in the sample population was 6.81%. Restriction fragment length polymorphism (RFLP) and phylogenetic analyses of the 18S rRNA gene and ITS1-5.8S-ITS2 region revealed that majority of the *T. vaginalis* isolates belonged to one main group. This study could serve as a trigger in enhancing cooperation among health institutions including local government units, health departments, non-government organizations, research and the academe to improve the prevention of the increasing cases of STI/STDs in the country. **(Author's abstract)**

Keywords: *Medicine, Trichomonas vaginalis, Diagnosis, PCR, Microscopy, Culture, Phylogenetic analysis*

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(Filipiniana Analytics)
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0258

Differential expression of GFAP and vimentin in the evaluation of high grade astrocytoma

Deang-Domingo, Jocelyn, Nazareno, Eliosofo, Tan, Edgardo, de Castro-Bernas, Gloria

Malignant astrocytoma is the most prevalent of the primary brain tumours. In spite of modern techniques of surgery and radiation therapy, prognosis of the disease remains dismal. In diagnostic pathology, intermediate filaments proved to be valuable markers in tumour diagnosis. Determining the levels of expression of glial fibrillary acidic protein (GFAP) and vimentin, immunocytochemically, provide information on the relative proportion of differentiated cells to immature forms of astrocytes. The prognostic value of their expressions when combined with duration of survival showed that patients with high expression of GFAP than vimentin have lived longer (> 180 days) regardless of whether total or partial resection was performed. **(Author's abstract)**

Keywords: *Medicine, Astrocytoma, Intermidiate filament proteins, Glial fibrillary acidic protein (GFAP), Vimentin*

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(Filipiniana Analytics)
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0259

Distal radius fractures

Ranjeet, Niraj, Estrella, Emmanuel P.

Background. Distal radius fractures (DRFs) are the most common fractures of the upper extremity. At present, it can be treated by various options that include closed reduction and cast, open reduction and internal fixation using plates and screws with or without Kirschner wires and external fixation. Thus, the primary objective of this study was to determine if the radiographic parameters, pain score and grip strength was associated with the Gartland and Werley's Functional Scoring System and Modified Mayo Scoring System functional scores. The secondary objective was to determine the association between the Gartland and Werley scores and the Modified Mayo scores.

Methods. We retrospectively reviewed 18 patients with distal radius fractures treated within 3 weeks of injury by closed reduction and casting, closed reduction and pinning or open reduction with internal or external fixation. Patients were followed up at 1.5 and 3 months and were evaluated in terms of functional scoring using the Gartland and Werley's and Modified Mayo Functional Scoring System.

Results. The radiological parameters improved from preoperative to immediate postoperative x-ray and all parameters remained the same until 3 months follow-up. Grip strength improved from 50.3±18.1 % of the contralateral at 1.5 months to 70.33±11.2 % at 3 months follow up. This was significant ($p<0.05$). There was no association between the x-ray score (Sarmiento's modification of the Lindstorm score) and the functional outcome scores of Modified Wrist Mayo and Gartland and Werley score (p=0.53 and 0.21, respectively). Overall, the average Modified mayo wrist score was 77.5 and the average Gartland and Werley score was 2.1. A higher grip score was also associated with a higher Modified Mayo Wrist score ($r^2=0.51$, p=0.03) and a better Gartland and Werley Score ($r^2=0.70$, p=0.001). Lower pain scores were associated with a higher Modified Mayo Wrist score ($r^2=-0.52$, p=0.03), but not with a better Gartland and Werley Score. Of 18 patients, two developed pin tract infection.

Conclusion. We could not find any correlation btween the radiologic scoring of distal radius fractures after treatment to the functional outcome scoring according to the Gartland and Werley and Modified Mayo score. **(Author's abstract)**

Keywords: *Medicine, Distal radius fractures, Functional outcome, Radiologic outcome*

Acta Medica Philippina, Volume No. 46 Issue No. 2, 55-59
(Filipiniana Analytics)

0260

A double blind randomized controlled trial on the effectiveness of 10% lemongrass oil (*Cymbopogon citratus*) vs. 1% clotrimazole solution in treating *Tinea corporis* and *Tinea cruris*

Cue, Pamela Christine C., Torres, Rosalinda C., Paliza, Arnelfa C.

Superficial fungal infection is among the most common reasons for dermatologic consultation. This superficial infection is usually treated with topical antifungal agents such as the azoles & allylamines, sold usually as topical creams but not in solution forms. The essential oil of *Cymbopogon citratus* (lemongrass) exhibits antifungal activity. This porject therefore aims to compare the efficacy of 10% lemongrass oil with 1% clotrimazole solution in treating *tinea corporis* and *tinea cruris* in terms of complete cure and adverse events. Ninety-six patients clinically and mycologically diagnosed with tinea corporis and/or tinea cruris were assigned randomly to apply either 10% lemongrass oil or 1% clotrimazole solution twice daily for 4 weeks. Clinical and mycological evaluations were conducted at baseline, and weekly up to 2 weeks post-therapy. Complete cure was achieved if there was clinical and mycological cure at 4 weeks. There was no statistically significant difference in terms of complete cure at four weeks between the two groups (p = 1.0, Fisher's exact test). There was no recurrence 2 weeks post-treatment in both groups. Erythema and burning sensation from the application of lemongrass were observed in two patients. This randomized controlled trial showed that 10% lemongrass oil was as effective as 1% clotrimazole solution in treating *tinea corporis* and *tinea cruris* based on clinical, mycological and complete cure assessments. **(Author's abstract)**

Keywords: *Medicine, Lemon grass, Tanglad, Clotrimazole, Tinea corporis, Tinea cruris*

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(Filipiniana Analytics)
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0261

Effect of taping on pain and range of motion of athletes with shoulder impingement syndrome: a pilot study

Ventura, M. G., MPhty (Sports Phty), Chua, C. D. M., Espiritu, J. E., Gonzalez, M. B., Lopez, S.

Objectives: The purpose of this study is to investigate the effect of a taping technique on pain and ROM of shoulder on athletes with impingement syndrome.

Methodology: Nine subjects each went through three different testing days: experimental, controlled and sham days. Pain Visual Analog Scale (PVAS), a tape measure and a still digital photo measurement was used to measure the outcome before and after the taping technique. ANOVA was used to test the homogeneity of the pretest results and t-test was used to test the correlation of the pre and post test values for pain and ROM.

Results: There was a statistically significant decrease in pain, as well as in ROM in the experimental test. No significant effect was seen in the sham and control test.

Conclusion: Results suggest that the taping technique can significantly decrease the pain of the athlete; however, a concomitant decrease in ROM was noted. **(Author's abstract)**

Keywords: *Medicine, Shoulder pain, Range of motion, Shoulder impingement syndrome, Shoulder*

PJAHS - Philippine Journal of Allied Health Sciences, Volume No. 1 Issue No. 1, 34-40
(Filipiniana Analytics)

Fil(S) RH930 P53 1/1 2006

0262

The effectiveness of handwashing with an alcohol-based gel solution versus soap and water: a randomized clinical trial

Lopez-Ballelos, Pacita Jay M., Santos, Roberto P.

Hand washing remains to be the simplest and most important intervension in preventing infection. Despite its simplicity, several studies have documented poor compliance with handwashing procedure.

OBJECTIVE: To assess the effectiveness of handwashing using an alcohol-based gel solution against the standard hygienic handwashing with soap and water.

METHODOLOGY: A prospective, randomized clinical trial was done at a tertiary hospital in Manila. Thirty health care workers of a pediatric unit were randomly assigned to regular handwashing with soap and water (SW) or handwashing with a commercially available alcohol-based gel solution (AG) using a crossover design. The number of colony-forming units (CFU) on an agar plate using the fingerprint method was counted before and after each handwashing procedure.

RESULTS: The average reduction in the CFU from samples before handwashing to samples after handwashing was 71.55% for SW and 82.25% for AG. There was a significant difference in the decrease of CFU after handwashing with SW and AG (both $p < 0.001$). There was no significant difference when the mean difference of CFU using AG was compared to SW ($p = 0.309$).

CONCLUSION: Handwashing with soap and water is still the gold standard procedure but the use of an alcohol-based gel solution is as effective and deserves more attention especially in situations in which compliance must be improved and water is not available. **(Author's abstract)**

Keywords: *Medicine, Handwashing, Alcohol-based gel, Soap and water*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 6-9
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0263

An experimental study on the effect of exercise training on cardiopulmonary parameters of healthy male high school students in Central Colleges of the Philippines and San Juan Municipal High School

Bigcas, Melanie V., Buena, Gladys C., Buendia, Flynn M., Buliyat, Mary Joyce F., Cabaccan, Joyce E., Rabe, Milagros B.

Objective: To determine the effects of exercise training on the different cardiopulmonary parameters (CP) among 13-16 years old healthy male high school students of Central Colleges of the Philippines and San Juan Municipal High School.

Method: This is an experimental study involving a control group and an exercise group. Students were screened and selected based from the criteria set. Both groups met for the initial determination of CP parameters (pretest), and underwent an exercise training after which CP parameters were again measured. On the other hand, students within the control group were asked to continue with their usual daily tasks but to refrain from commencing any new program of prescribed physical activity for the duration of the study.

Results: The findings observed among the exercise group did not support the hypothesis that there will be significant difference in the Resting Heart Rate (HR_{REST}), Immediate Post Exercise Heart Rate (HR_{IPE}), Resting Diastolic Blood Pressure (DBP_{REST}), Immediate Post Exercise (DBP_{IPE}), Resting Systolic Blood Pressure (SBP_{REST}), Immediate Post Exercise (SBP_{IPE}),

Resting Respiratory Rate (RR_{REST}), Immediate Post Exercise Resting Rate (RR_{IPE}) and an increase in Resting Peak Expiratory Flow (PEF_{REST}) and Immediate Post Exercise Peak Expiratory Flow (PEF_{IPE}) results from the computation of the percentage of subjects who had significant changes on CP parameters showed that the exercise group had higher percentage as compared to the control group.

Conclusion: Based on the study, the one-month exercise training did not produce significant difference in cardiopulmonary parameters between the exercise group and the control group. However, percentage of subjects who had a significant change in the their CP parameters was generally higher among the exercise group that the control group. **(Author's abstract)**

Keywords: *Medicine, Cardiopulmonary, Resting heart rate, Resting respiratory rate, Exercise, Physiology, Cardiovascular parameters*

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(Filipiniana Analytics)
Fil(S) R97.4 U37 5/1 2002

0264

An experimental study on the effect of topical application of *Areca catechu* L. extract on the cornea of rabbits

Lacuesta, Vanessa Christine Y., Kuo, Tzy shiuan, Labanda, Jr., Felix F., Lagman, Joseph Dominic N., Lagunzad, John Kenneth D., Yu-Hsien, Lai Yuh-Shiun, Lansangan, Rhona I., Lapitan, Jeromel M., Lara, Kurt Miguelito N., Leal, Vincelli L., Yee, Jiun, Lee, Louie Michael Y.

Glaucoma is one of the leading causes of blindness. Alternative treatments have been tested to provide similar but cheaper relieving effects. Betel nut, the fruit of *Areca catechu* L., contains arecoline, an agent that has parasympathomimetic properties similar to pilocarpine. In previous study, betel nut was found to reduce intra-ocular pressure be as much as 32%. To investigate the adverse effects of betel nut on the eye, 10 rabbits were used as subjects to extract administration on the cornea. Out of the seven rabbits that survived, only one showed a positive result under slit lamp biomicroscopy. A positive resut was indicated by a resolution of the corneal changes seven days after betel nut extract was withdrawn. The result of this study showed 14.28% of the test eyes developed infiltrates while 28.57% showed pacities in their corneas. Thus, based on the result of this study, we conclude that although betel nut extract purportedly holds a promising effect on lowering intraocular pressure, its use as topical agent is not entirely safe. **(Author's abstract)**

Keywords: *Medicine, Areca catechu L., Cornea, Glaucoma, Blindness, Betel nut*

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(Filipiniana Analytics)
Fil(S) R97.4 U37 6/2 2003

0265

An experimental study on the use of *Areca catechu* Linn. ('betel nut'/'bunga') in decreasing intraocular pressure in rabbits

Torres, Roderick Irvin D., Tseng, Jui-ju, Umali, Charnel S., Trinidad, Anthony M., Tsunoda, Mitchell S., Umandap, Sharon Rose S., Tuazon, Jasper Aldous S.

Glaucoma is one of the leading causes of blindness. Current treatment of Glaucoma is geared towards decreasing intraocular pressure. These drugs are expensive that the common Filipino is not able to sustain his treatment. This problem prompted the search for effective yet cheaper drugs that can be made available to the masses. Medicinal plants are the likeliest candidates being locally available and much less expensive. This study aims to determine the effectiveness of *Areca catechu* (betel nut or bunga) in reducing intraocular pressure. An experimental study was conducted on twenty 8-months old rabbits. Half of the rabbits

received the test drug and the rest became part of the control group. Results of the study showed a 32% difference between the intraocular pressures of the subjects receiving the interventions compared with the subjects that did not receive the intervention. **(Author's abstract)**

Keywords: *Medicine, Areca catechu Linn., Glaucoma, 'betel nut'/'bunga'*

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(Filipiniana Analytics)
Fil(S) R97.4 U37 6/2 2003

0266

An experimental study to determine the efficacy of *Capsicum frutescens* (Siling Labuyo) against *Aspergillus fumigatus In vitro*

Versola, Christine O., Victoria, Edward S., Villamor, Christine R., Villanueva, Anthony Russell T., Villavicencio, Jay B., Cañal, Jesus Randy O.

C. frutescens (Siling labuyo) fruit infusion with a concentration of 3g/ml was compared with 4% acetic acid (positive control) and distilled water (negative control) on their inhibitory effect on the growth of *Aspergillus fumigatus*, using the agar well diffusion method. C. frutescens had a mean zone of inhibition diameter of 38.625mm ± 1.11 SD, as compared to the 4% acetic acid which had a mean diameter of 20.375mm ± 0.581 SD, and distilled water which had a mean diameter of 10mm ± 0 SD. The antimicrobial index of *Capsicum frutescens* was 2.86 ± 0.111, while 4% acetic acid and distilled water were 1.04 ± 0.82 SD and 0 ± 0 SD, respectively. With a 90% increase in the mean zone of inhibition diameter and a 175% increase in the antimicrobial index, these results showed the *C. frutescens* had a significant inhibition of growth as compared to 4% acetic acid. However, *C. frutescens* yielded only partial inhibition of growth. T-test values for mean zone of inhibition and antimicrobial index between *C. frutescens* and 4% acetic acid were 46.5 and 46.38, respectively, and are within the critical region of $1.895 \leq t \leq 1.895$. Therefore, the mean zone of inhibition and antimicrobial index of *C. frutescens* are not equal to 4% acetic acid, but are significantly higher. **(Author's abstract)**

Keywords: *Medicine, Capsicum frutescens , Aspergillus fumigatus, Acetic acid, Distilled water*

UERMMMC Journal of Health Sciences, Volume No. 5 Issue No. 1, 57-62
(Filipiniana Analytics)
Fil(S) R97.4 U37 5/1 2002

0267

Extreme presentations of anomalous left coronary artery from the pulmonary artery (Alcapa):: A wheezy infant and an asymptomatic adolescent

Sison, Ma. Concepcion C., Del Rosario, Jonas D., Sison, Eric Oliver D.

In summary, we presented two cases of ALCAPA, one with cardiac failure early in life and the other, asymptomatic to this date. The first already underwent LMA litigation but succumbed to nosocomial infection while the14-year-old patient still has to undergo ALCAPA repair. Disparity in presentations is attributed to the extent of intercoronary collaterals and myocardium perfused by the RCA (**Author's summar**y)

Keywords: *Medicine, Anomalous left coronary artery, Pulmonary artery, ECG, Coronary angiography, 2D-echocardiogram*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 39/1 2005

0268

Fascial versus fascio-cutaneous pedicled sural flaps in the reconstruction of distal leg, ankle and food soft tissue defects

Estrella, Emmanuel P., Lee, Ellen Y.

Background. The coverage of soft tissue defects of the distal leg, ankle or foot poses several challenges to the reconstructive surgeon. Reconstructive procedures may range from simple skin grafting to complicated free tissue transfers. The reverse sural flap has been one of the most dependable methods for soft tissue coverage of such complex wounds. The purpose of this paper was to compare the clinical results of reverse sural flaps harvested with a fascial versus a fasciocutaneous pedicle.

Methods. A retrospective cohort of twenty-six patients who underwent a reverse sural flap procedure for complex wounds of the distal lower extremity was examined from January 1, 2003 to December 31, 2009, with a minimum follow-up of one month. Fifteen patients had a fascial pedicled flap, while eleven patients had fasciocutaneous pedicled flaps with a minimum of one month follow-up. The primary outcome was flap-related complications. Fisher's exact test was used to determine the differences between the two groups and the level of significance was set at $p \leq 0.05$.

Results. All flaps survived. Flap-related complications were more common in the fascial pedicled flap (6/15) compared with the fasciocutaneous pedicled flap (1/11). The difference was not significant (p=0.09). In terms of cosmetic acceptability, 11 patients (11/15) in the fascial pedicle group and five patients (5/11) in the fasciocutaneous pedicle group expressed that the sural flap was acceptable.

Conclusion. Reverse sural flap was a reliable reconstructive procedure for coverage of soft tissue defects of the distal leg, ankle or foot. There was no significant difference in terms of complication rates for those with fascial compared with those with fasciocutaneous flaps. Cosmetic acceptability was higher for the fascial pedicled flap. **(Author's abstract)**

Keywords: *Medicine, Soft tissue defect, Sural flap, Distal leg, Pedictleg, Pedicled flaps*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0269

Fetal monitoring: Applications and limitations

Reyles, Ramon

In summary, monitoring of fetal well-being during labor is accomplished by the use of a stethoscope, fetoscope or fetal Doppler ultrasound device. Their limitation is the inability to provide a continuous means of fetal assessment and its recording. The use of EFM, on the other hand, enables clinicians to identify fetuses who are compromised much earlier thus increasing their chances of survival. Fetal scalp stimulation and vibro-acoustic stimulation coupled with EFM provide an alternative almost comparable if not better than fetal scalp blood pH determination. **(Author's summary)**

Keywords: *Medicine, Fetal monitoring, fetal, Electronic fetal monitoring, Fetal heart rate*

The Medical Journal of De La Salle University, Volume No. 11 Issue No. 4, 47-48
(Filipiniana Analytics)
Fil(S) R935 M468 11/4 1995

0270

The gait, arms, legs and spine (GALS) locomotor screen teaching learning package: has it achieved its intended learning outcome

Tee, Michael L., Mojica, Alvin P.

Introduction: Clinicians rarely screen their patients for musculoskeletal disorders during routine physical examination. Reasons vary, but inadequate teaching of musculoskeletal medicine is cited as a major factor. to Address the above issue, the Section of Rheumatology, Department of Medicine, College of Medicine, and Philippine General Hospital, University of the Philippines Manila recently adopted the Gait, Arms, Legs and Spine Locomotor Screen (GALS) as the central focus of instruction for musculoskeletal conditions.

Objectives: A total of 189 medical interns participated in this descriptive study to determine whether GALS is deemed useful and can be readily applied in the outpatient clinics.

Methods: Data was gathered using a questionnaire, key informant interviews, and chart review. The data was analyzed using measures of central tendency, percentages and qualitative evaluation.

Results: Only 26% claimed to routinely perform the musculoskeletal screening examination and only 21% claimed the used the GALS technique. The medical interns emphasized that they were adequately taught to perform the GALS technique but felt that the routine use of GALS was time consuming. Emphasis on musculoskeletal screening was done only during clinical rotations in specialties like rheumatology, rehabilitation medicine or orthopedics, but not in other specialties. In addition, only the Section of Rheumatology used the GALS technique.

Conclusion. The findings of this study suggest that while medical interns feel competent in performing the GALS technique, its application in the clinics leaves much room for emphasis and that there is a need to standardize instruction on musculoskeletal screening. **(Author's abstract)**

Keywords: *Medicine, GALS, Locomotor screen, Learning outcome*

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(Filipiniana Analytics)
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0271

Gluteal taping on running performance of healthy young adults: a randomized controlled pilot study

Cerdenia, J. T., Ang, A., Asuque, J. D., Bucasas, P. A., Datinguinoo, L., Be Belen, J. J., Eugenio, E. C., Maralit,

Objective: To determine the effect of gluteal taping on gluteal muscle activity, running speed and stride length.

Methodology: University students were recruited to participate. Of 46 students who gave consent, 33 were included and randomly allocated into a TAPE group (N=15) or a control (NMES) group (N=18). Baseline running time over 100 m, stride length and gluteal muscle EMG activity were measured. These were followed by either gluteal taping (TAPE) or 10 minutes of electrical stimulation (NMES). Running time, stride length, and EMG activity were then re-measured. Data were analyzed using planned contrasts within an ANOVA framework with significance testing done at $p<0.05$.

Results: Running time decreased in both groups but this only approached statistical significance ($F=3.94$, $p=0.057$); there were no significant differences between groups. Changes in stride length were variable and were not statistically significant ($F=0.09$, $p=0.766$); no significant between-group differences were noted. EMG activity of the gluteus maximus decreased after both taping and NMES but this was not statistically significant ($F=0.511$, $p=0.480$).

Conclusion: This study has demonstrated that gluteal taping decreases running time over a 100-m distance in healthy young adults but not to a statistically significant level. **(Author's abstract)**

Keywords: *Medicine, Running, Gluteal taping, Stride length*

PJAHS - Philippine Journal of Allied Health Sciences, Volume No. 1 Issue No. 1, 51-52
(Filipiniana Analytics)
Fil(S) RH930 P53 1/1 2006

0272

Hair lead bio-monitoring among school children in the province of Cavite, Philippines

Macawile, Janet P., Sia Su, Glenn L.

Airborne lead is one of the pressing environmental problems that cause neuropsychological impairments to people who are exposed to it. In assessing people's exposure to airborne lead, bio-monitoring techniques has been used as an indicator of chemical exposure. This study aims to determine the hair lead concentrations among school children in the Province of Cavite and compare the hair lead concentrations of the school children living and studying in the urban and rural areas of the Province of Cavite, Philippines. Consenting public and private school children of the municipalities of Bacoor and Alfonso were involved in the study. Hair strands were obtained from each student and analyzed for lead concentrations. Results of hair lead concentrations were compared for significant differences between the public and private schools in both areas using the t test under the $P < 0.05$ level of significance. A total of 922 consenting school children participated in this study. The mean ± SD hair lead concentrations of all school children surveyed was 0.2814 ± 0.1245 ppm. Hair lead concentrations of children studying in public schools (0.3044 ± 0.1081 ppm) were higher relative to those in private schools (0.2259 ± 0.1428 ppm). School children residing in the urban areas (0.3079 ± 0.1442 ppm) had a higher hair lead concentrations compared to those residing in the rural areas (0.2499 ± 0.0863 ppm). Hair lead concentrations of school children living in urban and rural areas and those studying in private and public schools in Bacoor and Alfonso were found to be significantly different ($t=9.096$ and $t=6.867$, respectively, $P<0.05$). Findings indicate that school children are exposed to airborne lead. Higher hair lead concentrations were evident among school children who were residing in urban areas and studying in public schools. **(Author's abstract)**

Keywords: *Medicine, Airborne lead, School children, Bio-monitoring, Cavite, Chemical exposure*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0273

Haplotype and mutation analysis in a Filipino patient with Wilson disease

Faustino, Edward Vincent S., Cutiongco, Eva Maria C.

Wilson disease is a rare autosomal recessive disorder due to a defect in the body's elimination of copper. Such defects have been attributed to mutations in the Wilson disease gene found on chromosome 13. We present a case of a 9-year old male with unexplained liver disease with a diagnosis of Wilson disease on the basis of clinical and biochemical findings. Haplotype and mutation analyses are performed on the patient, his parents and his surviving siblings. The following polymorphic markers are tsted: D13S314-D13S301-D13S316. The patient is found to have the haplotype 12-6-8 for both chromosomes. None of his siblings carries a pair of the said haplotype. The most common Arg778Leu and His1069Glu mutations are not detected. Sequencing of exons 8 and 9 do not reveal any spcific mutation. **(Author's abstract)**

Keywords: *Medicine, Wilson disease, Hepatolenticular degeneration, Copper, Haplotype analysis, Mutation analysis*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 2-5
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0274

Headache among Filipino adolescents consulting at the UP PGH outpatient clinic a retrospective review

Del Rosario-Daya, Lourdes M., Nancho, Rosa Ma

The study is the review of the five year (1990-1994) out-patient adolescent records of UP PGH, who consulted for headache. The retrospective study aims to determine the following: frequency of headache among adolescent patients; common causes of headache; factors associated to headache; and the required initial laboratory exam. The charts of 345 patients, complaining of headache, aged 10-20 years old were analyzed. Most patients are female and among the leading causes of headache are problems in the family, muscle imbalance related to the use of the eyes, neurologic causes such as migraine and tension. The study recommends further exploration by individually looking at the causes of headache, using a bigger sample size.

Keywords: *Medicine, Headache, Adolescent, Neurologic*

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 71-84
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

0275

Heterocepon marginatum shiino, 1936, (crustacea: isopoda: epicaridea: bopyridae): a new hyperparasite from the Philippines, and a short review of the biology of the bopyridae

Janssen, Hans Heinrich, Brandt, Angelika

The number of close associations between different species is unusually high in tropical waters compared with that in temperate climates. In the present paper, we describe symbiosis involving more than two organisms. A hyperparasitic isopod was found in the gill chamber of the decapod crab *Pinnotheres palaensis* BÜRGER 1895 (Crustacea: Brachyura: Pinnotheridae), living as a commensal in the commercial bivalve *Anadara maculosa* REEVE 1884 (Taxodonta-Filibranchia: Arcidae). This was identified as *Heterocepon marginatum* SHIINO, 1936 (Crustacea: Isopoda: Epicaridea), so far known only to occur in Japanese waters, parasitizing *Pinnotheres parvulus* STIMPSON and *P. Cardii* BÜRGER. The new Philippine material is presented with drawings and micrographs. As incentive for further studies on the faunistic, ecological and behavioral aspects of this symbiosis, a short introductory review on bopyrid biology is given. **(Author's abstract)**

Keywords: *Medicine, Heterocepon marginatum shiino, Pinnotheres palaensis BURGER, Pinnotheres parvulus STIMPSON, P. Cardii BURGER, Bopyrid biology, Anadara maculosa REEVE , Hyperparasitic isopod*

The Philippine Scientist, Volume No. Issue No. , 5-31
(Filipiniana Analytics)
Fil(S) Q1 J95 v31 1994

0276

HPLC analysis of cortisol and cortisone in human urine

Portilla, Ma. Cristina B., Apa, Jessa Karyl R., Monlinong, Jason Paul C., Pascual, Cherrie B.

Cortisol is a steroid hormone which increases blood sugar, suppresses the immune system and aids in fat, protein and carbohydrate metabolism. It is clinically important to measure urinary free cortisol and its metabolite, cortisone, to diagnose and treat adrenal dysfunctions like Cushing's and Addison's syndrome. A reversed-phase HPLC method was developed for the determination of free cortisol and cortisone in human urine, using 6α-methylprednisolone as internal standard. The steroids were separated on a Lichrosphere C18 column using mobile phase of 40:60(v/v) acetonitrile:water mixture with UV detection set at 248 nm. The average retention times were 7.9 minutes for cortisol, 8.5 minutes for cortisone and 10.0 minutes for 6α-methylprednisolone. Linear response for cortisol and cortisone dissolved in mobile phase and spiked in urine was within the range 0.50-10.00 µg/mL. The limit of detection (LOD) for cortisol and cortisone was 0.002 µg/mL and 0.001 µg/mL respectively, while the the limit of quantification (LOQ) was 0.007 µg/mL and 0.003 µg/L respectively. Intra-batch and inter-batch CV were all less than 13%. Prior to chromatography, samples were extracted with solid-phase extraction (SPE) column. Recoveries after SPE ranged from 90.3-115.3% for cortisol and 93.0- 107.1% for cortisone. Human urine samples were analyzed and cortisol concentration ranged from 0.06-0.09 µg/mL which was within the normal cortisol concentration range of 0.05-0.16 µg/mL. The method described here may be used to quantify cortisol and cortisone in human urine. **(Author's abstract)**

Keywords: *Medicine, HPLC, Cortisol, Cortisone, Chromatography, SPE*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0277

Immunomodulatory effect of *Tinospora rumphii* Boerl lotion in *Sarcoptes scabiei* var *hominis*-infected patients and its predicted shelf life: a pilot study

Castillo, Agnes L., Osi, Marina O., Ramos, John Donnie A., De Francia, Jean L., Dyjunco, Marylaine U., Quilala, Peter F.

Scabies is a major public health problem affecting 10% of the general population. It is caused by the *Sarcoptes scabiei* mite that has the ability to modulate the host's inflammatory and immune responses. A randomized, controlled, double-blind, pilot clinical study was performed to investigate the immunomodulatory effect and clinical efficacy of the *Tinospora* lotion in 66 scabies-infected patients through Enzyme-linked Immunosorbent Assay (ELISA) for Interleukin-1, Interleukin-6, Interleukin-8 and Monocyte Chemoattractant Protein-1 (MCP-1) in the serum samples. The pediatric patients were treated with *Tinospora* and Permethrin lotions for three consecutive days for two weeks and blood extraction was performed before treatment, during and after treatment. Clinical assessment of each patient was performed every week for five weeks. *Tinospora* lotion is comparable with Permethrin as anti-scabies agent (p=0.315) with significant reduction in the mean global evaluation score from baseline (7.20 ± 0.48 vs 7.264 ± 0.44) to day 28 (0.933 ± 0.35 vs 0.95 ± 0.25). No significant difference in the clinical improvement of the patients treated by both lotions (p=0.9123) and at different periods of observation (p=0.4747). The mean clearance time is 23, 20.47 to 25.53; and 21, 17.39 to 23.67; p=0.226 for *Tinospora* and Permethrin lotions, respectively. *Tinospora* lotion significantly reduced the IL-1, IL-6, IL-8 levels from Day 14 to Day 28 (p=0.0002, p=0.0002, p=0.0065) which is comparable to Permethrin lotion (p<0.050) with the exception of MCP (p=0.3497). Its predicted shelf life is 6 months. *Tinospora* lotion exhibits significant antiscabies activity through down-regulation of IL-1, IL-6 and IL-8 levels. Its incorporation as therapeutic reagent in Sarcoptes scabiei infections is highly recommended. **(Author's abstract)**

Keywords: *Medicine, Tinospora, Scabicide, Immunomodulatory, Interleukin, MCP-1*

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0278

Inter-observer and intra-observer reliability of the Harris Hip Scoring System

Ganal-Antonio, Anne Kathleen B., Azores, Gregorio Marcelo S.

Objective. The Harris hip score (HHS) is a 100-point scale for rating pain, function, absence of deformity, and range of motion. The purpose of this study is to assess the inter-observer and intra-observer reliability of the Harris hip score among senior orthopedic residents at the Philippine General Hospital.

Methods. Twenty-four hips from 20 patients were evaluated using the Harris hip score by four senior residents from the Department of Orthopedics, Philippine General Hospital. All patients were interviewed twice in the clinic and the reliability of the HHS was evaluated.

Results. The inter-observer coefficient of concordance (Kendall coefficient of concordance W) was 0.9 for both groups of observers. The intra-observer coefficients of concordance were 0.8, 1.0, 0.9, and 0.9, for the four observers. A 0 value indicates no concordance among a set of raters while a score of 1 indicates perfect concordance. Obtaining a score greater than 0.75 represents excellent level of agreement.

Conclusion. We conclude that the Harris hip score has high inter-observer and inter-observer reliability among senior Orthopedic residents at the Philippine General Hospital. **(Author's abstract)**

Keywords: *Medicine, Harris hip scores, Inter-observer, Intra-observed reliability*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0279

Intravenous pamidronate treatment in Filipino children with moderate to severe osteogenesis imperfecta

Alcausin, Maria Melanie B., de Dios, John karl L., Chiong, Mary Anne D., Cavan, Barbara Charina V., David-Padilla, Carmencita, Cutiongco-de la Paz, Eva Maria

Objective: To present preliminary data on the effects of intravenous pamidronate in children with moderate to severe Osteogenesis Imperfecta (OI).

Methods: This is a retrospective study wherein a review of medical records and available serial radiographs of children (N=14) with moderate to severe OI started on pamidronate from 2006 to 2010 was done.

Results: Two children have OI Type I, 8 have OI Type III and 4 have OI Type IV. At baseline, 2 had normal height, 8 had height <2SD and the rest with <-1SD. Twelve out of 14 had vertebral compression fractures. Mean age at start of pamidronate was 5.4 years (range 0.5- 11 years). First infusion fever in five patients and transient generalized macular rash in five patients and transient generalized macular rash in one child were noted. Serum calcium and phosphorus levels were normal at baseline and remained stable. Based on parental report, improvement of motor function was noted. In the 10 children who had at least a year of treatment, long bone fractures decreased from a mean annualized fracture rate of 2.6 at baseline to 0.9. In patients with vertebral compression fractures, serial radiographs showed improvement of vertebral shape.

Conclusion: This preliminary study shows that treatment was generally well tolerated and led to decrease in long bone fractures, improved vertebral shape and improved function. **(Author's abstract)**

Keywords: *Medicine, Osteogenesis imperfecta , Bisphosphonate, Primary osteoporosis*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 45/4 2011

0280

Investigation on the level of evidence in researches done by orthopedic residents of the Department of Orthopedics, Philippine General Hospital over the past twenty-seven years.

Estrella, Emmanuel P., Orillaza, Jr., Nathaniel S., Decenteceo, Ana Cristina D.

Background. Clinical research has been part of the orthopedic residents' training program over the past 27 years of the Department of Orthopedics, Philippine General Hospital. The purpose of the present study was to determine the levels of evidence in the researches done by orthopedic residents in training from January 1983 to December 2010.

Methods. The authors reviewed all completed research performed by the department's orthopedic residents in training from January 1983 to December 31, 2010. The exclusion criteria for the study were as follows: review articles, research articles whose full texts were not available and those research articles in which consultants were primary authors. The research articles were scored according to the level of evidence proposed by the *Journal of Bone* and *Joint Surgery* (American Volume), and were categorized according to decade: 1980s, 1990s, and 2000s.

Results. A total of 224 research articles were retrieved and reviewed. There were no Level I studies performed in the department by the residents since 1983. There was a significant increase in the number of Level II and Level III studies from the 1980s to the 2000s (p=0.00010. The Hand Section had the highest number of Level II studies 8.6% (3 out of 35) while the Adult Section had the highest number of Level III studies at 21% (11 out of 53). The Pediatric Section had the highest number of Level IV studies at 91% (30 out of 33).

Conclusion. The level of evidence in research conducted by the orthopedic residents in training of the Department of Orthopedics, Philippine General Hospital has improved significantly in the past 27 years. **(Author's abstract)**

Keywords: *Medicine, Level of evidence, Orthopedic residents, Residents' research, Research in orthopedic training*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0281

Isolation and structure characterization of chemical constituents from *Micromelum compressum* with *in vitro* antituberculosis activity

Vidar, Warren S., Macabeo, Allan Patrick G., Kohls, Paul, Wang, Yuehong, Franzblau, Scott G., Aguinaldo, Ma. Alicia M.

This study investigated polymethoxy flavones from the leaves of *Micromelum compressum* with synergistic inhibitory effect against *Mycobacterium tuberculosis* H37Rv. The crude DCM-MeOH extract obtained from the sample exhibited 84% inhibition against *M. tb.* at 128 µg/mL using the colorimetric microplate Alamar blue assay (MABA). It was subjected to acid-base partitioning, followed by partitioning by polarity using petroleum ether, DCM, and water and gave three fractions (McP, McD, and McW). McD was partitioned using vacuum liquid chromatography yielding five fractions where the third showed 96% inhibition against *M. tb.*, while McP showed 92%, at 128 µg/mL. Silica chromatographic purification of McD3 resulted in the isolation of the following: 3,5,7,4' -tetramethoxyflavone (McD3.3), a 1:1 mixture of McD3.3 and 3,5,7,8,4' -pentamethoxyflavone (McD3.5), and a mixture with the pentamethoxyflavone and traces of McD3.3 (McD3.6) The structures were elucidated using HREIMS, 1H-NMR, 13C-NMR, COSY, HSQC and HMBC. MABA showed McD3.3 and McD3.6 to have low inhibition against *M. tb.* Surprisingly, McD3.5, exhibited a good activity with a minimum inhibitory concentration (MIC) of 15.98 µg/mL. The results also uniquely present the synergism of two polymethoxy flavones in enhancing the inhibition of *M. tb.*, making it a potential source of antitubercular constituents. **(Author's abstract)**

Keywords: *Medicine, Micromelum compressum, Polymethoxy flavones, Synergistic effect, Antitubercular inhibitory activity, Antitubercular constituents*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0282

Jejunal ischemia in a 15 year old female with primary antiphospholipid antibody syndrome: a case report and review of literature

Genuino, Maria Lourdes G.

Antiphospholipid antibody syndrome (APS) is increasingly being recognized in pediatrics as a cause of vascular thrombosis. Thrombotic events are diverse and could affect any organ system. Intestinal involvement however, is rarely reported for both the pediatric and adult population. This paper describes the first locally reported case of primary APS with jejunal ischemia in the pediatric age group. It aims to highlight the pertinent clinical features as seen in this patient. A review of literature is also provided on the current issues on clinical significance of antiphospholipid antibodies and on optimal anticoagulation treatment to prevent recurrence of thrombosis. **(Author's abstract)**

Keywords: *Medicine, Antiphospholipid antibodies, Antiphospholipid antibody syndrome, Thrombosis, Jejunal ischemia, Pediatric, Heparin*

Acta Medica Philippina, Volume No. 43 Issue No. 3, 56-60
(Filipiniana Analytics)
Fil(S) R97.4 A21 43/3 2009

0283

Making sense of ultrasound results in obstetrics and gynecology

Crisostomo, Conrado P.

Sonographic features of normal and abnormal gestations during the three trimesters have been discussed. Emphasis was made on sonographic findings in abortion, ectopic gestation, determination of gestational age, fetal weight, assessment of amniotic fluid and diagnosis of placenta previa and placenta accreta. In gynecology, TVS features of the normal uterus and ovary were discussed. Findings in ovarian neoplasms were also elaborated. Limitations with the use of the ultrasound and the advantages of the TVS over the TAS were discussed. Lastly, recommendations to maximize the use of the US machine for the improvement of delivery of health care for women were enumerated. **(Author's conclusion)**

Keywords: *Medicine, Ultrasound, Obstetrics, Gynecology*

The Medical Journal of De La Salle University, Volume No. 11 Issue No. 4, 40-45
(Filipiniana Analytics)
Fil(S) R935 M468 11/4 1995

0284

A master of science in genetic counseling program in the Philippines

Laurino, Mercy Ygona, David-Padilla, Carmencita, Alcausin, Maria Melanie B., Silao, Catherine Lynn T., Cutiongco-de la Paz, Eva Maria

In the Philippines, there is an urgent need to expand the clinical services for diagnosis, management and emotional support for patients with genetic conditions and their family members. Despite the lack of trained health care providers with specialization in genetics, public health-related genetics programs are continuously being implemented. To address these current demands,

strategic planning began in 2009 between local medical geneticists and international genetic professionals to develop the curriculum for an advanced degree in genetic counseling program. The Board of Regents at the University of the Philippines approved the proposed curriculum in January 2011, and training of the Philippines' first cohort of genetic counseling students commenced in June 2011. The successful implementation of the MS in Genetic Counseling program will provide the opportunity to incorporate the much needed genetic counseling services in the country. **(Author's abstract)**

Keywords: *Medicine, Genetic counseling, Philippines*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 45/4 2011

0285

Modified Mc Robert's Maneuver vs Mc Robert's Maneuver in shortening the second sstage of labor

Monzon, Liza, Alvero, Rita Grace

This study, which involves forty-eight primigravida, aims to determine which birth method will shorten the second stage of labor, which specifically refers to that "period of cervical dilatation to expulsion of the fetus." Two methods of birthing position were compared: The Modified McRobert's Maneuver group (designed by Ocampo et.al) which "requires a lesser degree of flexion of the patient's legs," and Mc Robert's Maneuver (a position described by Williams), where "the legs were sharply flexed upon the patient's abdomen." Inclusion and exclusion criteria for the patients involved were indicated in this study. The results which were analyzed using Independent T-test, processed in Dbase and SPSS, showed that the period of second stage labor is shorter in McRobert's Manuever (Williams) than in the Modified McRobert's group (Ocampo et. Al.) Thus, the former position is strongly recommended to mothers giving birth to shorten the duration of the second stage of labor.

Keywords: *Mc Robert's Maneuver, Modified Mc Robert's Maneuver, Medicine, Independent T-test*

The Medical Journal of De La Salle University, Volume No. 11 Issue No. 2, 17-20
(Filipiniana Analytics)
Fil(S) R935 M468 11/2 1995

0286

Modified negative pressure wound therapy (NPWT): an experience of 106 cases at Philippine General Hospital

Dy, Jr., Albert U., Ranjeet, Niraj

We studied 106 cases of Negative Pressure Wound Therapy (NPWT) or Vacuum Assisted Closure (VAC) from 2000-2004 on open wounds. Our modification using packing foam, infant feeding tube, wall suction set at 60-70 mmHg and Glad® or Saran® wrap showed similar good results. **(Author's abstract)**

Keywords: *Medicine, Negative pressure wound thepary (NPWT), Vacuum assisted closure (VAC), Open wounds*

Acta Medica Philippina, Volume No. 43 Issue No. 3, 29-33
(Filipiniana Analytics)
Fil(S) R97.4 A21 43/3 2009

0287

Molecular differentiation of selected Pandanus spp. by random amplified polymorphic DNA (RAPD) analysis

Sarile, Angelita S., Menguito, Corazon A.

Random Amplified Polymorphic DNA (RAPD) was utilized to analyze the genetic material of six *Pandanus* species and four varieties. DNA was amplified using 60 arbitrary decamer primers with 60-70% GC content. Of the 60 primers, 12 produced multibanded fingerprints for the ten *Pandanus* spp. A total of 457 fragments was amplified, 31% of which were polymorphic, and whose sizes ranged from 204 – 2344 base pairs.

From the RAPD data, a dendrogram was constructed based on similarity coefficient using NTSYSpc (Rohlf, 2000). Three clusters were generated: cluster I consisted of *P. tectorius, P. sanderi, P. amaryllifolius 'variegatus', P. tectorius 'veitchii'* and *P. dubius*. Cluster II grouped together *P. tectorius var. 'laevis' cv, P. tectorius var. 'laevis'* and *P. luzonensis* while cluster III consisted of *P. amaryllifolius* and *P. simplex*. Bootstrap analysis demonstrated that subgroups consisting of *P. tectorius var. 'leavis' cv, P. tectorius var. 'laevis'* were robust (100% confidence estimate). Results also demonstrated that P. sanderi and *P. amaryllifolius 'variegatus'* appeared to have identical RAPD DNA profiles in 22 primers while *P. luzonensis* appeared to be most distantly related to *P. dubius* with the smallest similarity coefficient of 0.062. **(Author's abstract)**

Keywords: *Medicine, RAPD, Pandanus, Dendrogram, P. sanderi, P. tectorius, P. amaryllifolius 'variegatus', P. tectorius 'veitchii', P. dubius*

Acta Manilana, Volume No. Issue No. , 59-68
(Filipiniana Analytics)
Fil(S) Q181 A81 v55 2007

0288

Myocardial perfusion scintigraphy: utilization patterns and impact on patient management at the Philippine Heart Center

Obaldo, J.M., Torres, Jr., J.F, Monzon, O.P., Martinez, A.O., Bolotaulo-Sadava, T.M.

The clinical use of SPECT myocardial perfusion scintigraphy in 101 patients referred to the nuclear medicine department of a tertiary care hospital was evaluated. The most common indications for requesting the test were for assessment of myocardial viability after infarction, determination of the size of the infarcted or ischemic area, and confirmation of the presence or absence of suspected coronary artery disease (CAD). Using the chest symptoms and demographic data to calculate pretest likelihood for CAD, it was determined that 10 had high probability, 34 had intermediate probability and 8 had low probability for the disease. The rest (49 patients) had proven CAD. The test result contributed to a modest degree of stratification into the extremes of CAD likelihood. There was a change in the decision to catheterize in 17 of the 101 patients, planned catheterizations being reduced by 25% (16/64) as a result of the scan findings. A normal scan had greater impact however, with the perceived need for catheterization going down by 80%. A change in whether to proceed with surgical procedures (angioplasty or bypass) or not was also noted in 17 patients. Finally, the results contributed to achange in medical management in 29 patients. Our data indicate that perfusion scanning is used more often for the functional information it gives, rather than simply for CAD detection, and has substantial impact on subsequent clinical decision-making. **(Author's abstract)**

Keywords: *Medicine, SPECT, Coronary artery disease (CAD), Myocardial perfusion scintigraphy*

The Nucleus: Official Journal of the Radioisotope Society of the Philippines, Inc, Volume No. Issue No. , 1-5
(Filipiniana Analytics)
Fil(S) QC173 N88 v30 1992

0289

Non-microsurgical technique of fingertip replantation: a report of three cases

Estrella, Emmanuel P.

The goal of surgery in fingertip amputation is to restore finger length, preserve function and at the same time provide cosmetic acceptability. Treatment options are varied and can range from simple suturing of the stump to microvascular replantation surgery. We report three cases of fingertip amputations in one adult and two pediatric patients treated with non-microsurgical replantation of the fingertip using the palmar "pocket" technique. **(Author's abstract)**

Keywords: *Medicine, Fingertip amputation, Non-microsurgical replantation, Finger replantation*

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(Filipiniana Analytics)
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0290

Outcome of child prostitution in Barangay Kamagayan, Cebu City

Samson-Malapitan, Sofia

CONTEXT: A number of reports and newspaper accounts have come out articulating the rise in child prostitution. Yet despite the promulgation of republic Act No. 7610 or the Special Protection of Children Against Abuse, Exploitation and Discrimination and the mushrooming of child-care and rehabilitation centers, many children are still trapped, forced and lured into the flesh trade. This study describes the consequences of child prostitution.

OBJECTIVE: To determine the outcome of child prostitution in Barangay Kamagayan, Cebu City in terms of pregnancy, sexually transmitted diseases (STD), physical assault, and drug use.

STUDY DESIGN: A cross-sectional study.

STUDY SETTING: All female commercial sex workers below 18 years old found in Barangay Kamagayan, Cebu City.

MAIN OUTCOME MEASURE: Outcome of child prostitution.

CONCLUSION: A total of 50 female subjects were interviewed aged 14-17 years old, of the 50 respondents, 24 (48%) got pregnant of who, 12 of them had abortion which were all intentional, 21 (42%) contracted STD, 23 (46%) suffered physical assaults, and 24 (48%) were drug users. **(Author's abstract)**

Keywords: *Medicine, Child prostitution, Barangay Kamagayan, Cebu City, Republic Act No. 7610*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 16-20
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0291

Outcome of pregnancies in women with treated antiphospholipid antibody syndrome

Lu-Segui, Mary Christine, de Leon-Mendoza, Socorro, Lim, Eduardo, Silvestre, Ma. Asuncion

OBJECTIVE: To determine the outcome of pregnancies in women with treated antiphospholipid antibody syndrome.

STUDY DESIGN: A restrospective study. Seventeen pregnancies were studied. Maternal data for history miscarriages, results of LA or aCL tests and therapies received were obtained. Neonatal data obtained were birth weight, sex, length, head

circumference, Apgars at 1 and 5 minutes, ventilation and oxygen therapy and clinical outcome. Any other significant complications were recorded. Growth restriction was defined when birth weight falls at or below the tenth percentile for age of gestation.

RESULTS: There were a total of 25 pregnant women treated for antiphospholipid antibody syndrome (APAS). Six of them did not meet the clinical criteria for the diagnosis but were positive for the antiphospholipid antibody tests. The nineteen remaining subjects delivered live neonates except for one which resulted into intrauterine fetal death at 19 weeks AOG. Out of the nineteen, 12 were preterm due to elective caesarian section delivery prior to term to avoid the risk of uteroplacental insufficiency during active labor. The rest were all term neonates. Among them, two were growth restricted in size of whom, one was a preterm and died of sepsis.

CONCLUSION: Based on published data, in women who were diagnosed to have antiphospholipid antibody syndrome the chance for successful pregnancy is reduced. In these cases, treatment appears to be a clear option. The favorable pregnancy outcomes reported in this series supports this option in the management of these cases. **(Author's abstract)**

Keywords: *Medicine, Antiphospholipid antibody syndrome, Pregnancies in women, Apgars*

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(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0292

Posterior fossa tumors: clinical outcome of surgery without cerebrospinal fluid diversion

Legaspi, Gerardo D., Jimenez, Kay Celine P.

Objective: To present the results of surgery for posterior fossa tumors without CSF diversion and describe the patients who may require permanent CSF diversion post op.

Methods: We analyzed data of 72 patients with posterior fossa tumors and hydrocephalus who were treated surgically through a suboccipital craniotomy/craniectomy and tumor excision without CSF diversion. All of the patients were operated on by the authors and the surgical technique standardized as follows: suboccipital craniotomy/craniectomy, early access of the cisterna magna and evacuation of CSF until the posterior fossa compartment is relaxed, then tumor excision. Data underwent statistical tests for significance for the variables age, tumor type, tumor location, degree of hydrocephalus and extent of tumor excision using Mantel-Haenszel estimates and p values.

Results: The mean age of patients was 36.15 years. The most common tumor type was schwannoma. Eighty-six percent (86%) of patients had moderate to severe hydrocephalus. Eighty-one percent (81%) had total tumor excision. No patient required any other form of CSF drainage or diversion intra-op. The complication rate was 4.2%, with pseydomeningocoele being the most common complication. Four patients required a permanent VP shunt post tumor excision.

Conclusion: The good clinical outcome and low postoperative shunt insertion rate in our series led us to believe that posterior fossa tumor surgery without CSF diversion is a safe and effective treatment plan for posterior fossa tumors with hydrocephalus, and routine CSF diversion for posterior fossa tumor surgery may not be entirely justified. Factors such as age, tumor type, tumor location, degree of hydrocephalus and extent of excision, which showed a statistically significant association with the postoperative shunt requirement in our study, should be considered when the decision regarding CSF diversion is made. **(Author's abstract)**

Keywords: *Medicine, Posterior fossa, Tumors, CSF diversion*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 43/3 2009

0293

Predictive value of lateral bending, push-prone, and fulcrum-bending radiographs in adolescent idiopathic scoliosis

Arbatin, Jr., Jose Joefrey F., Bundoc, Rafael C.

Introduction. The advent of pedicle screws which provide distraction and derotation has led to higher correction of major curves. Newer methods have been devised to evaluate preoperative coronal flexibility, including lateral-bending (LB), push-prone (PP) and Fulcrum-bending (FB) radiographs. Documentation of a consistent radiographic method predictive of correction rate has not been established.

Objective. To determine the most predictive radiographic method for evaluating spine flexibility and correction by comparing the correction rate (CR), flexibility rate (FR) and correction index (CI) of the Cobb's angle using the different radiographic methods.

Methods. Preoperative radiographs of 20 patients who underwent spinal fusion for adolescent scoliosis were obtained using the LB, PP, and FB method and compared with postoperative radiographs.

Results. Comparing the mean Cobb angles using the different methods to that of postoperative standing showed that only the FB method is not significantly different from the latter (p=0.669). There was significant difference between the Cobb's angle measured on the LB and PP and that measured on postoperative standing (p=0.043, p=0.008). Comparing the mean flexibility of the different methods with the mean CR also showed that the mean FR of LB (p=0.007) and PP (p=0.00013) were significantly different from the CR (p=0.687).

Conclusion. The FB radiograph demonstrated no statistical difference compared to postoperative radiograph, FR, and CI. **(Author's abstract)**

Keywords: *Medicine, Scoliosis, Radiography, Adolescent, Spinal fusion*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0294

Prevalence of cumulative trauma disorders of the upper extremity and identification of risk factors among non-medical personnel in the University of the Philippines – Philippine General Hospital

Dizon-Mangubat, Hiyasmine, Galinato, Primavera B., Rafanan, Jose Bonifacio S.

Objectives: This cross-sectional study aimed to determine the prevalence of cumulative trauma disorders (CTDs) of the upper extremity among non-medical personnel of the University of Philippines – Philippine General Hospital (UP-PGH) and to identify risk factors that may have contributed to their development.

Methods: A total of 87 participants from five different administrative divisions of the UP-PGH were included in this study. Three assessment tools were administered, namely: 1) symptoms survey form, 2) Rapid Upper Limb Assessment, and 3) ergonomic workstation evaluation checklist.

Results: The study showed that the prevalence of CTDs of the upper extremity was 47.1%. The highest prevalence of CTDs was noted in the Budget division (75%), which was composed mainly of budget officers and clerks. The most common CTD identified was myofascial pain syndrome. Among the socio-demographic factors, only handedness was significantly related to the development of CTDs (p=0.022).

Conclusion: This study did not show a significant relationship between the identified risk factors and the development of CTDs. Awareness of the existence of CTD cases as documented in this study, however, should raise concern from the authorities

to implement corrective measures to reduce or prevent CTDs and to improve the general health and thus, productivity of the non-medical personnel at the UP-PGH. **(Author's abstract)**

Keywords: *Medicine, Cumulative trauma disorders, Repetitive strain injury, Occupational overuse syndrome, Upper extremity, Office workers, Administrative personnel*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 44/2 2010

0296

A profile on child workers involved in the production of pyrotechnics in Radar Babag, Lapu-Lapu City

Brodith-Dauz, Migresa P.

CONTEXT: despite several attemps to combat the proliferation of child labor, it is still very much a problem at present. This study describes a form of child labor involving hazardous work activities specifically pyrotechnics production.

OBJECTIVES: To describe the epidemiology of child labor focusing on the manufacturing of pyrotechnics in Radar, Babag, Lapu-Lapu city.

STUDY DESIGN: A cross-sectional survey.

STUDY SETTING: Radar, Babag, Lapu-Lapu City.

STUDY POPULATION: All children 7-17 years old living in Radar, Babag, Lapu-Lapu City.

MAIN OUTCOME MEASURES: Prevalence, demographic characteristics of children involved in pyrotechnics production, type of tasks assigned, daily earnings and work related injuries.

RESULTS: The total number of respondents was 386. Two hundred sixty (67.4%) of whom were involved in making firecrackers with a mean age of 12.7 ± 2.9 years. There were more females (54.2%) than males (45.8%). Distribution of those making pyrotechnics based on levels of educational attainment showed that 25% were grades 1-3, 44.6% were in grades 4%-6% and 30.4% were in high school. Majority (79.6%) claimed to have work — associated illness such as body aches/pains (89.9%), skin diseases (29.5%) and recurrent cough (20.8%). Thirteen respondents (5%) encountered injury while making firecrackers, namely burns (61.5%) and cuts/wounds (38.5%).

CONCLUSION: Working children involved in pyrotechnics production is prevalent (67.4%) in Radar, Babag, Lapu-Lapu City. Majority (79.6%) of these children claimed to have work —associated illness and 13 (5%) of them suffered injury related to making firecrackers. **(Author's Abstract)**

Keywords: *Medicine, Radar Babag, Lapu-Lapu City , Child workers, Pyrotechnics*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 21-26
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0297

The prognostic value of pathologic fractures in patients with high-grade classic osteosarcoma

Wang, Edward H.M., Durban, Claire Marie C., Serrano, Ma. Victoria T.

Pathologic fracture in osteosarcoma has traditionally been associated with a poor prognosis and is an immediate indication for amputation of the affected extremity. This concept has been questioned and remains an area of debate, especially because advances in osteosarcoma treatment have today resulted in better survival and limb salvage rates.

It is the objective of this paper to analyze the survival and limb salvage rate of osteosarcoma patients presenting with pathologic fractures and compare these with the population of osteosarcoma patients without pathologic fractures.

Over a 15-year period (1993-2008), there were 84 patients presenting with non-metastatic high-grade classic osteosarcoma of the extremities (Enneking Stage IIB) who received complete treatment from the University of the Philippines-Musculoskeletal Tumor (UP-MuST) Unit and who had a follow up of at least 2 years. Ten of these 84 patients had pathologic fractures prior to surgery. Their overall survival was 50%, similar to the 50.38% overall survival of the entire group of 84 osteosarcoma patients. Limb salvage rate was 60%, similar to the 59% rate of patients without pathologic fractures.

This study shows that contrary to traditional teaching, overall survival for this subset of osteosarcoma patients with pathologic fractures is acceptable at 50% and is equal to that of the entire group of osteosarcoma patients. At the same time, successful limb salvage surgery is possible despite the presence of a pathologic fracture, especially in patients with good response to chemotheraphy. **(Author's abstract)**

Keywords: *Medicine, Pathologic fractures, Osteosarcoma, Limb salvage surgery*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0298

Prosthesis for a patient with proximal femoral focal deficiency

de Leon, Kristopher P., Inciong, Gaerlan D.

Proximal femoral focal deficiency is a rare birth defect that affects the hip bone and the proximal femur. The incidence is one case per 50,000 to 200,000 population. The disorder may be unilateral or bilateral, with the hip being deformed and the leg shortened. The goal of treatment is to provide optimal function during standing and ambulation. A 15-year-old male diagnosed with left proximal femoral focal deficiency was admitted for prosthetic reahbilitation. He presented with a very short left lower extremity, 38 cm leg length discrepancy, flail left hip and knee joints, and normal range of motion at the left ankle, and with muscles graded at 4/5. The patient was independent in transfer activities and ambulated with bilateral axillary crutches. A combination of orthosis and prosthesis (henceforth "prosthosis") was designed for the patient with a mechanical hinge joint to equalize the leg length and to improve lower extremity function during standing and ambulation. Upon discharge, the patient was independent in donning and doffing the prosthesis, was ambulatory using the prosthesis without gait aid but with minimal listing during the stance phase on the prosthesis side. During the patient's two-year follow-up, adjustment of the prosthesis was done to accommodate growth; checking of the prosthesis for mechanical breakdown and anticipatory management of potential musculoskeletal complications and psychosocial concerns on the use of the prosthesis were also done. **(Author's abstract)**

Keywords: *Medicine, Proximal femoral focal deficiency, Leg length discrepancy, Prosthesis, Prosthosis*

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(Filipiniana Analytics)
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0299

A randomized, double-blinded parallel-controlled clinical trial on the effectiveness of different doses of *Moringa oleifera* (malunggay) in promoting growth in infants of breastfeeding mothers from UERMMMC and different hospitals in Metro Manila f

Balahibo, Marlon F., Balde, Jennifer C., Baldovino, Zea Leigh D., Baquiran, Pocholo C., Barillos, Chanda Marie O., Barredo, Carlo G., Madarcos, Floro B., Mendoza, Suzette M.

Malunggay (Moringa oleifera) leaves have long been used in the Philippines as a galactogogie. A controlled randomozed, double-blind study was done to determine the optimum dose of Natalac capsules consisting of 250 mg of dried malunggay leaves. These capsules were given to 60 nursing Filipino mothers for 2 months in an attempt to increase the amount of breast milk.

Sixty Filipino mother and their newborns were randomly assigned to four trial groups. Within a two-month trial period, group A mothers were given one Natalac capsule OD, group B mothers were given one Natalac Capsule BID, group C mothers were given one placebo capsule OD, while group D mothers were given one placebo capsule BID. Increases in both length and weight were obtained every two weeks and compared. An increase of twenty-five percent in length and weight of the newborns were obtained every two weeks and comparisons among the four trial groups were done.

The study found significant increases in the weight and length for both OD and BID Natalac treatment groups. Additional findings showed that BID Natalac significantly improved lactation over OD Natalac group and OD and BID placebo within a study period of eight weeks. **(Author's abstract)**

Keywords: *Medicine, Moringa oleifera, Galactogogues, Breastfeeding*

UERMMMC Journal of Health Sciences, Volume No. 5 Issue No. 1, 21-27
(Filipiniana Analytics)
Fil(S) R97.4 U37 5/1 2002

0300

Rash of motorcycle accidents: a growing national health concern

Geronilla, Mario B., Sison, Joseph Keat T.

Introduction. Discussions on road safety are both timely and relevant. From its sixth place in 1995, death from road accidents rose to fourth in 2004, and is expected to become the second leading cause of death worldwide by 2020. It is notable that road accidents specifically motorcycle accidents are increasingly more common among developing countries such as the Philippines.

Objectives. Because of this growing public concern, this cross-sectional descriptive study aims to determine the profile of motorcycle accidents in Metro Manila, the prevalence of musculoskeletal injuries resulting from such accidents, and to proposed recommendations for its prevention.

Methods. Charts and clinical records of road accident victims from three major institutions namely, the Philippine General Hospital, Philippine Orthopedic Center and East Avenue Medical Center were selected. The profile of these patients and the incidence of musculoskeletal injuries were gathered.

Results. Males were found to be more involved in these accidents with an average age in the range of 21 to 35 years. The most common time of fatal vehicular accidents was at 9 p.m. while nonfatal injuries occurred most commonly around 4 a.m. Motorcycles rank as the leading cause of injuries to motorists, both fatal and nonfatal. There was a 16.3% increase in the incidence of motorcycle-related musculoskeletal injuries from 2007 to 2008. The lower extremity was involved in half of cases with the rest occurring in the spine and upper extremity. The most commonly involved segment was the tibia (25%), followed by the femur (20%) and the forearm (12.5%).

Summary and Recommendations. It is apparent that the increase in vehicular crash causing fatal accidents is due to an increased number of motorcycles and cars, and these commonly involve the pedestrian and drivers. It is understandable that in order to improve road safety, education should be enhanced among motorists and students alike as a form of prevention, and

primary trauma centers should be determined to facilitate identifying which centers can adequately manage these injured motorists. **(Author's abstract)**

Keywords: *Medicine, Road safety, Motorcycle accident, Fatal injuries, Nonfatal injuries, Musculoskeletal injuries*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0301

Recognition of the major antigens of *Cryptosporidium parvum* by serum antibodies from calf, mouse and man

Cauyan, Gil A., Omata, Yoshitaka, Saito, Atsushi

An evaluation of the serum humoral immune response to *Cryptosporidium parvum* was done in mouse, calf and man. electrophoretic and Western Blot Analysis showed that specific animal antibody response appeared between Day 8 and Day 25 post challenge. The two main target antigens had apparent molecular weights of 15-17 and 23 kDa antigen. This study demonstrates that these two antigens are consistent targets of humoral immune response and can therefore be of great interest in studies for the therapy and prophylaxis against *Cryptosporidium parvum*. **(Author's abstract)**

Keywords: *Medicine, Cryptosporidium parvum, Immunoglobulin A, Zoonosis*

Acta Manilana, Volume No. Issue No. , 17-23
(Filipiniana Analytics)
Fil(S) Q181 A81 v50 2002

0302

Reconstruction of the first metacarpal after giant cell tumor excision using non-vascularised fibular autograft, ligament reconstruction and tendon interposition arthroplasty of the carpometacarpal joint

Orillaza, Jr., Nathaniel S., dela Rosa, Tammy L., ASTRO (Advanced Study and Research in Orthopedics) Study Group

We report an innovative approach to reconstructing the defect after excision of a giant cell tumor (GCT) involving the entire first metacarpal. Reconstruction was performed using non-vascularized fibular autograft fused at the metacarpo-phalangeal (MP) joint and soft tissue arthroplasty using ligament reconstruction and tendon interposition (LRTI) at the carpometacarpal (CMC) joint of the thumb.

Two years after the procedure, the CMC joint had functional pain-free motion and radiographs showed fusion of the MP joint. The patient did not present with any major complication and was satisfied with the outcome of the procedure. **(Author's abstract)**

Keywords: *Medicine, Metacarpal giant cell tumor, Suspension arthroplasty, Hand tumor reconstruction, Non-vascularized fibula graft*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0303

Resiliency in sexually abused children and adolescents seen at the child protection unit of a tertiary government hospital

Calma-Balderrama, Norieta

Resiliency is "the capacity to withstand, recover, and even grow from negative experiences." (Banaag, 1997) This study examines the demographic characteristics and most common resiliency factors seen in sexually abused pre-adolescents and adolescents screened for mental illness at the University of the Philippines-Philippine General Hospital (UP-PGH) Child Protection Unit. The subjects of the study were all sexually abused children and adolescents screened at the Child Protection Unit from January to April 2009 who were not found to have any behavioral problems or mental disorders. Of the 28 subjects, 19 were adolescent and 9 were pre -adolescent. Sixteen subjects were legitimate children and seventeen were not enrolled in school during the interview. Seven of the subjects only completed grade 3 while seven completed grade 6; and fourteen students were in high school. Among the children who had parents who were not married, they had more than four household members. All the subjects had low socioeconomic backgrounds and were mostly being cared for by their mothers. Using the resiliency scale translated by Cadao, Rubia, and Banson (Cadao, et al. 2008), 36 items were found to contribute to their resiliency. The items that were also the most common resiliency factors in the order of importance were: verbal ability as part of interpersonal skills; spirituality; adult support; the child's use of her talents; and opportunities for major life changes. This study differs in some aspects compared with other studies done in the Philippines and will be helpful in mapping out resiliency modules for sexually abused adolescents. **(Author's abstract)**

Keywords: *Medicine, Resilliency, Sexual abuse, Mental illness*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 43/3 2009

0304

Resurgence of Schistosomiasis japonicum in school children in Agusan del Sur, Philippines: Opportunities for control in the school setting

Belizario, Jr., Vicente Y., Amarillo, Maria Lourdes E., Martinez, Ruth M., Mallari, Alexander O., Tai, Cyndi Mae C.

Objectives: The aim of this study was to describe baseline prevalence rates and intensity of schistosome infection in public school children in Bunawan and Trento.

Methodology: The municipalities of Bunawan and Trento, which are located in the province of Agusan del Sur in Mindanao Island, Philippines, were chosen as study sites. The study targeted individuals belonging to the 10 to 19 year old age group. The Kato Katz technique was used for quantitative assessment of infection. The data gathered was used to derive the cumulative prevalence and intensity of infection. The results of the study were encoded using EpiInfo Version 6.0 and Stata 8.0 software. Ten percent of all Kato-Katz slides were reread by a reference microscopist.

Results: The overall prevalence of schistosomiasis was 31.8%. Among the 351 pupils examined in Bunawan, 23.1% were positive for *Schistosoma* infection. Moderate to heavy intensity infections were observed in 46.9% of the pupils. In Trento, 33.9% of the1,497 pupils examined had *Schistosoma* infection. A little more than half (54.4%) had moderate to heavy intensities of infection.

Conclusion: The overall prevalence of schistosomiasis in school children remains high, with a strong possibility of the existence of significant morbidity. School-based strategies are recommended to address the high prevalence of schistosomiasis in the community.
Integration of the control of schistosomiasis, lymphatic filariasis and soil-transmitted helminth infections may be the most promising approach for more cost-effective control of these parasitic diseases in developing countries. **(Author's abstract)**

Keywords: *Medicine, Schistosomiasis japonicum, Agusan del Sur, Philippines, Oncomelania hupensis quadrasi, Soil transmitted helminth infections*

Acta Medica Philippina, Volume No. 41 Issue No. 2, 9-14
(Filipiniana Analytics)
Fil(S) R97.4 A21 41/2 2007

0305

A second look on viescoureteral reflux among patients with recurrent urinary tract infection in private hospital

Carpio, Anne Marie L., Sioson, Lorenza, Bautista, Jr., Rudito, Reyes, Maria Sharon, Elises, Joel S., Gana, Jr., Telesforo E.

BACKGROUND: Vesicoureteral reflux is a condition in which urine regurgitates from the bladder back to the ureter and occurs in 1% of children. It is a major cause of renal failure and hypertension in children and young adults.

OBJECTIVES: To determine the clinical outcome of patients referred at Medical Center Manila for Voiding Cystourethrogaphy (VCUG) for the past 12 years.

DESIGN: Descriptive study

SETTING: Medical Center Manila

PARTICIPANTS: One hundred nineteen patients referred at Medical Center Manila for VCUG for the past 12 years

METHODS: Records of pediatric patients who underwent VCUG for the past 12 years were reviewed. Age at the time of procedure, sex and VCUG findings was collected.

RESULTS: Thirty patients have viescoureteral reflux (VUR) with equal occurence between the sexes. Majority was under 1 year of age. Unilateral reflux occurs more often than bilateral and most of the refluxing ureters were of Grade II.

CONCLUSION: Majority of patients who have VCUR were below 1 year oldwith no sexual predilection. Unilateral reflux was more often encountered. Majority of cases were at Grade II at the time of diagnosis, VCUG should be recommended for patients with urinary tract infection and follow-ups should be done for patients with VUR to assess possible resolution. **(Author's abstract)**

Keywords: *Medicine, Viescoureteral reflux, Urinary tract infection, Hypertension, Renal failure*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 10-12
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0306

A serial validation study of the proposed scoring measurements for risk levels in glaucoma in Bagong Nayon, II, Antipolo City

Dela Cruz, Sheryl Anne E., Dela Trinidad, Jemmy Regina F., Delos Santos, Mary Anne E., Diaz, Duane I., Diaz, Marvin R., Dimaano, Maritess M.

Methods: A serial study of the proposed scoring system for risk levels for glaucoma was conducted in Bagong Nayon II, Antipolo City for a duration of four months. The scoring system consisted of the following variables age, gender, last complete eye exam, family history of glaucoma, predisposing condition (e.g. diabetes mellitus, previous eye surgery, myopia, systemic hypertension), and symptoms (e.g. soreness/tiredness, burning/smarting/stinging. foreign body sensation, difficulty of seing in the dim light or daylight, blurring of vision, halos around light, tearing). The subjects were composed of male and female residents,

aged 35 years and above, not previously diagnosed with glaucoma. Forty-seven subjects, consisting of 24 cases and 23 controls, were interviewed using the questionnaire form and subjected to direct fundoscopy and octopus perimetry.

Results: Serial testing showed a sensitivity of 64.51%, specificity of 33.33%, positive predictive value of 0.67 and negative predictive value of 0.31.

Conclusion: The low sensitivity and specificity found in this study suggest that the proposed scoring system cannot accurately detect glaucomatous individuals and thereforeis not a good screening test. **(Author's abstract)**

Keywords: *Medicine, Glaucoma, Bagong Nayon, II, Antipolo City, Diabetes mellitus, Myopia, Hypertension*

UERMMMC Journal of Health Sciences, Volume No. 6 Issue No. 2, 27-32
(Filipiniana Analytics)
Fil(S) R97.4 U37 6/2 2003

0307

Strümpell-lorrain syndrome in three brothers

Tiangco, Anna Cecilia S.A., Ang-MuÃ±oz, Cynthia D.

Three brothers, ages 5, 19, and 24 years, from Tuguegarao, consulted because of walking difficulty due to stiffening of lower extremities which started at varying ages. Common findings were mild spasticity and weakness in both lower extremities consistent with Strümpell-Lorrain Syndrome. Individualized rehabilitation medicine interventions were provided to address different functional deficits, leading to improved outcomes. This case series aims to illustrate the importance of initiating early, comprehensive rehabilitation to maximize function and minimize complications. **(Author's abstract)**

Keywords: *Medicine, StrÃ¼mpell-lorrain syndrome, Hereditary spastic paraparesis, Familial spastic paraparesis, Rehabilitation*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 44/2 2010

0308

Total body irradiation dosimetry for cobalt-60 machine

Rodriguez, Lilian V., Lagarde, Charlie S., Sy Ortin, Teresa T., FPCR, Elesango, Maribelle G., de Castro, Ma. Normita C.

Radiation beam data for large fields at long distances are not readily derivable from published beam data for conventional treatment field sizes and distances. Constraints in radiotheraphy apparatus and room designs lead to variations in treatment set-up and protocol among centers carrying out Total Body Irradiation (TBI. In this study, dosimetric measurements were performed for TBI at treatment geometry using the Theratron 80 Cobalt-60 machine of the Makati Medical Center. Treatment simulation using an Alderson Rando phantom was made. LiF thermoluminiscent dosimeters (TLDs) were placed at different anatomical locations to verify calculated doses. Calculated and measured doses agree to within $\pm$ 2%. **(Author's abstract)**

Keywords: *Medicine, Total body irradiation (TBI), Theratron 80, Cobalt-60, Alderson Rando phantom, Lif thermoluminiscent dosimeters (TLDs)*

The Nucleus: Official Journal of the Radioisotope Society of the Philippines, Inc, Volume No. Issue No. , 17-22
(Filipiniana Analytics)
Fil(S) QC173 N88 v30 1992

0309

Trichomonas vaginalis induces apoptosis in human lung alveolar basal carcinoma epithelial cell line A549

Salvador, Daile Meek C., Jacinto, Sonia D., Rivera, Windell L.

Trichomonas vaginalis, a known inhabitant of the genitourinary tract has been identified in the respiratory tract of neonates and adults. The unusual presence of *T. vaginalis* in this site is associated with respiratory infections. However, the medical significance of this occurrence is unclear. In this study, the pathogenic potential of *T. vaginalis* in human lung alveolar basal carcinoma epithelial cell line A549 was investigated. It was shown that T. vaginalis can induce apoptosis in A549 cells as determined by TUNEL assay and transmission electron microscopy. After six hours of incubation with *T. vaginalis* there were about 20% TUNEL-positive A549 cells indicating apoptotic cells. Electron microscopic observations of infected A549 cells with trichomonads demonstrated apoptotic morphological features such as nuclear membrane disintegration, intense vacuolarization in the cytoplasm and chromatin condensation in the nucleus. Results from this study suggest the possible pathogenic effect of *T. vaginalis* to lung cells. To our knowledge, this is the first study to document the apoptotic potential of *T. vaginalis* in A549 cells. Continued researches are recommended to establish the clinical presentation of *T. vaginalis* in lung cells. **(Author's abstract)**

Keywords: *Medicine, Trichomonas vaginalis, A549 cells, Apoptosis, Host-parasite interactions, Human lung cells*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0310

Twin reversed – arterial perfusion sequence: the experience of a tertiary referral hospital in the Philippines with acardiac twinning

Silao, Joyceline Noemi I.

Twin reversed-arterial perfusion sequence is a rare complication of monochorionic pregnancies. It is characterized by the hemodynamic dependence of the recipient twin on a pump twin. The recipient twin exhibits lethal malformations. The pump twin's survival is threatened by congestive heart failure and prematurity. Mortality rate ranges from 50% to 75% if untreated. Mortality is reduced to 13.6% with surgical intervention. Five cases of twin reversed-arterial perfusion sequence were seen in the Philippine General Hospital, a university hospital and tertiary referral center. All cases had acardiac twins and were managed conservatively. The first three cases were previously reported. Two additional cases were encountered in 2007-2008 and are here presented. The first case was in a 41 year old G8P7 (7007) with diffuse toxic goiter and hypertension. The pregnancy was plagued with polyhydramnios and cardiac decompensatiom of the pump twin resulting in fetal death- in-utero. The second case was in a 37 year old G3P2 (2002) who had no medical co-morbidities. There were no risk factors and the outcome was a term livebirth. **(Author's abstract)**

Keywords: *Medicine, Acardiac twins, Pump twin, Twin reverse arterial perfusion sequence (TRAP) sequence, Chorangiopagus parasiticus (CAPP)*

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(Filipiniana Analytics)
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0311

Validation of the pictorial pediatric symptom checklist – Filipino version for the psychosocial screening of children in a low-income urban community

Canceko-Llego, Cindy D., Castillo-Carandang, Nina T., Reyes, Alexis L.

Rationale: The timely identification of children with psychosocial problems is very important in facilitating early intervention. Detection of these children in the community setting requires the development of an easy-to use screening tool that can be used by community health workers.

Objective: To develop a valid and reliable screening tool that can be easily used by community health workers for the detection of psychosocial problems in Filipino children. Specifically, 1) To develop a Filipino version of the Pictorial Pediatric Symptom Checklist (PPSC) for use by community health workers; and 2) To culturally validate the PPSC-Filipino version in a low-income urban community.

Methods: This study consisted of three phases:Phase 1 (Exploratory Study) consisted of focus group discussions and key informant interviews for content validation. Phase 2 9Questionnaire Development) involved refinement of the Filipino translation of the PPSC. In Phase 3 (Actual Survey), the PPSC was administered by health workers to 127 primary caregivers of children aged 4 to 7 years residing in a low-income community in Pandacan, Manila. Data gathered were subjected to reliability testing and factor analysis for construct validation. Chi-square analyses were done to determine the association of sociodemographic factors to overall PPSC results.

Results: Construct and content validity were confirmed. The Filipino PPSC showed high internal consistency (Cronbach's alpha 0.89). Factor analysis resulted in three new domains: 1) Attention & Externalizing Problems, 2) Internalizing Problems, and 3) School & Learning Problems. Among the 127 children screened, 24 (18.9%) were positive for psychosocial problems. Externalizing behaviors (fighting, rule-breaking, teasing) dominated among those who screened positive. The child's age and number of siblings were the factors significantly associated with the overall PPSC results.

Conclusions: The Pictorial Pediatric Symptom Checklist-Filipino Version is a valid and reliable tool in screening for psychosocial problems in children aged 4 to 7 years old residing in a low-income urban community. Administration by community setting is particularly relevant since many cases of psychosocial disorders remain undetected. **(Author's abstract)**

Keywords: *Medicine, Psychosocial problems, Behavioral symptoms, Community screening services, Validation study*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 43/4 2009

0312

Validity and reliability of selected outcome measures used in rehabilitation for anterior cruciate ligament reconstruction: a literature review

Warren, K. J. C., MHlthSc, PTRP, Chua, C. D. M., Tagala, A. A., Cadiz, B. O., Maglanque, II,

Objectives: The aim of this study is to conduct a literature review of available evidence on selected outcome measures commonly used during rehabilitation following Anterior Cruciate Ligament Repair (ACL-R) with emphasis on their validity and reliability.

Methodology: A comprehensive search for articles was performed through manual and electronic searches using predetermined keywords. Full text articles related to pre-identified outcome measures specifically, pain assessment scales, range of motion measurements, circumference measures, functional performance tests, and the Cincinnati Knee Rating System, were reviewed.

Results: A total of 20 articles were included in the review. The outcome measures selected for the study were found to be valid and yielded moderate to high reliability.

Conclusion and Recommendations: The outcome measures that were found to be valid and reliable were summarized into an evaluation form with a user's guide that outlines the testing procedures for use in the clinical setting. **(Author's abstract)**

Keywords: *Medicine, Outcome measures, Anterior Cruciate Ligament (ACL), Validity, Reliability*

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(Filipiniana Analytics)
Fil(S) RH930 P53 1/1 2006

0313

Value of post-therapy whole body scintigraphy in predicting the need for subsequent radioactive iodine therapy in patients with well-differentiated thyroid carcinoma

Obaldo, Jerry M., Ogbac, Ruben V.

Introduction: Patients with well-differentiated thyroid carcinoma (EDTC) may require more than one session of radioactive iodine therapy (RAIT). This study was conducted to determine if post-therapy whole body scintigraphy (PTWBS) can identify patients who will require repeat RAIT due to persistent disease.

Method: The records of patients with WDTC who were referred to the Philippine General Hospital for RAIT from 2005-2007 were reviewed in this retrospective cohort study. PTWBS results (number of remnants, area of remnants, and presence of metastasis) of patients who had repeat RAIT (based on laboratory and clinical evidence of persistent disease) were compared with those patients who did not have repeat RAIT. Multiple logostic regression anlysis was done.

Results: Forty-five of 99 patients in the study [45%, 95% Confidence Interval (CI): 35 – 55] had repeat RAIT. Thirty-six of 38 patients (95%) with metastases on PTWBS required repeat RAIT, while only 9 of 61 patients (15%) with no scan evidence of metastases required subsequent therapy. Controlling for age group (age≥57), the odds ratio was 102 (95% CI:20 – 507). Using the model to predict repeat RAIT, the sensitivity was 80 (95% CI: 68-92); specificity was 94 (95% CI: 85 – 99). Positive and negative predictive values were 95 and 85% respectively. The same results were obtained using metastases alone as a predictor. Twenty-six patients had extra-cervical metastases alone as a predictor. Twenty-six patients had extra-cervical metastases by PTWBS and all required repeat RAIT. The number and aggregate size of thyroid remnants by PTWBS, however, were not found to be predictive of the need for repeat therapy.

Conclusion: The presence of functioning metastases seen on PTWBS was highly predictive of the need for repeat RAIT. **(Author's abstract)**

Keywords: *Medicine, Radionuclide imaging, Thyroid carcinoma, Thyroid cancer, Radioactive iodine, Radioisotope therapy, Nuclear medicine*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 43/4 2009

0314

Vascularized proximal fibular epiphyseal transfer for shoulder reconstruction after tumor resection

Estrella, Emmanuel P., Lee, Ellen Y., Wang, Edward H.M.

We present a case of an 8-year-old girl with a high grade osteogenic sarcoma of the proximal humerus treated with wide resection and vascularized proximal fibular epiphyseal transfer. At 5 years after reconstruction, the patient is tumor free and had a Musculoskeletal Tumor Score of 26/30 or 86.7%. The functional outcomes in terms of shoulder range of motion and pain were good. Complications include transient peroneal nerve palsy and mild valgus instability of the knee. **(Author's abstract)**

Keywords: *Medicine, Fibula transfer, Epiphyseal transfer, Shoulder reconstruction, Osteosarcoma*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0315

Vertebral osteomyelitis with profound neurologic deficit: successful treatment with rhBMP-2 and titanium cage device

Sembrano, Jonathan N., Yson, Sharon C., Polly, Jr., David W.

The efficacy of bone morphogenetic proteins (BMP) in infection has not yet been established. Since fusion is a necessary aim in the treatment of vertebral osteomyelitis with spinal instability, BMP may be a helpful adjunct in the surgical treatment of these cases. We present a case of vertebral osteomyelitis associated with neurologic deficits, treated with decompression and fusion using recombinant human bone morphogenetic protein-2 (rhBMP-2) and titanium cage device. Eradication of infection, recovery of neurologic deficits, spinal stabilization and solid fusion were achieved and maintained at 5 years follow-up. **(Author's abstract)**

Keywords: *Medicine, Bone morphogenetic proteins, rhBMP-2, Titanium cage, Vertebral osteomyelitis*

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(Filipiniana Analytics)
Fil(S) R97.4 A21 46/2 2012

0316

Vitamin K prophylaxis: A century of uncertainty

Agrasada, Ma. Grace V.

The paper discusses previous studies made on the "haemorrhagic disease of the newborn (HDN)," a condition wherein the infant suffers bleeding often on the second or third day of life, due to Vitamin K deficiency. While much of the studies cited were conducted in the developed world: Britain, Australia and Japan, the paper raised the public health issues that may occur in the developing country setting. Three forms of Vitamin K (K1, K2 and K3), their characteristics and routes of administration were also mentioned. K1 is considered to be the most "accepted and available," among the three forms. The three means by which the Vitamin K can be administered are Orally, Intramuscularly (IM), or Intravenously (IV). One major challenge with the oral prophylaxis is the risk of low compliance, since it will take "three scheduled doses," to complete a cycle. The known risk for IM is "childhood cancer."

Keywords: *Medicine, Haemorrhagic disease of the newborn (HDN), Vitamin K, Intramuscularly (IM), Intravenously (IV)*

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 1-6
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

NUTRITION

0317

Iron absorption from adequate Filipinos meals

Trinidad, Trinidad P., Madriaga, Juanita R., Valdez, Divinagracia H., Cruz, Erlinda M., Mallillin, Aida C., Sison, Carmencita C., Kuizon, Miriam D.

Iron absorption from adequate Filipino meals representing the three major island groups of the Philippines (Luzon, Visayas, and Mindanao) was studied using double isotope extrinsic tag method. Mean iron absorption of the one-day meal for Metro Manila was 6.6 ± 1.26%, Central Visayas, 6.3 ± 1.15% and Southern Mindanao, 6.4 ± 1.19%. Comparison between meals (breakfast, lunch, dinner) for each region as well as one-day meal for the three regions showed no significant differences ($P > 0.01$). Correlation tests done between iron absorption and the following iron enhancers: ascorbic acid, amount of fish, meat or poultry; and inhibitors: phytic acid and tannic acid, did not give significant results. The overall average of 6.4 ± 1.20% may be used as the iron absorption level from an adequate Filipino meal. This value can be considered as one of the bases for arriving at recommended dietary allowances for iron among Filipinos instead of the 10% iron absorption assumed in 1976. **(Author's abstract)**

Keywords: *Nutrition, Iron absorption, Phytic acid, Tannic acid*

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(Filipiniana Analytics)
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0318

Micronutrient situation and strategies for ending hidden hunger in the Philippines

Barba, Corazon VC.

Based on the data from the national nutrition surveys conducted by the Food and Nutrition Research Institute of the Department of Science and Technology, Philippines, while there have been improvements in the nutritional status of the Filipinos, malnutrition continues to be an important public health concern, affecting the major proportion of the population, specifically the infants and preschool children, the pregnant and lactating mothers.

The results of the 1998 Fifth National Nutrition Survey affirmed continued persistence of protein-energy malnutrition (PEM). Using weight-for-age and height-for-age as indicators, and based on the NCHS standards, about 31.9% of 0-5 year old Filipino children are underweight and 32.0% are stunted. Among 6-10 year-old children, 30.2% and 40.9% are underweight and stunted, respectively.

Micronutrient malnutrition affects a greater proportion of the population. Iron deficiency anemia (IDA) had a prevalence rate of 30.6%. By biochemical tests, deficient and low serum vitamins A levels among 6 months to 5 years old is 38.0%. While iodine deficiency disorders (IDD) in the country is of mild severity based on the median UIE of 71 µg/L, by percent distribution, 35.8% of the 6-12 year-old children are under moderate and severe levels of IDD.

The food consumption pattern shows a general decrease from 1982 to 1993, and following this downtrend, intakes of energy and other nutrients also decreased. Although protein intake increased, this was found insignificant.

Cognizant of the problems, an integrated plan of action for nutrition was formulated making nutrition a priority agenda of the government. On-going initiatives and new strategies are in place as documented in the Philippine Plan of Action for Nutrition (PPAN), the country's blueprint on the medium-term plan on food nutrition with the goal of nutritional improvement in the country. Among the nutrition impact programs undertaken in the country are:

° Home, School and Community Food Production Program which aims to assure food security at the household and community levels

° Micronutrient Supplementation and Food Fortification Programs, a short and long term intervention designed to increase micronutrient intakes

° Food Assistance Program is a social safety net to supplement the nutrient intakes

° Credit Assistance for Livelihood Programs which supports the poverty alleviation program of the present government to provide employment opportunities and generate income for the economically disadvantage

° Nutrition Education Program aims to promote proper nutrition. **(Author's abstract)**

Keywords: *Nutrition, Iron deficiency anemia (IDA), Protein-energy malnutrition, Iodine deficiency disorders (IDD), Micronutrient malnutrition*

Philippine Journal of Nutrition, Volume No. 47 Issue No. 3-4, 3-10
(Filipiniana Analytics)
Fil(S) QP141 N935 47/3-4 2000

0319

Non-heme iron availability of usual and improved meals from selected regions in the Philippines

Valdez, Divinagracia H., Trinidad, Trinidad P., Madriaga, Juanita R., Cruz, Erlinda M., Sison, Carmencita C., Kuizon, Miriam D.

The availability of non-heme iron in 12 usual and 12 improved meals from four selected regions in the Philippines was determined using *in-vitro* radiochemical method. Geometric mean values of 5.8 and 6.4% non-heme iron availability were obtained from one-day usual meals and meals improved to correct nutritional deficiencies, respectively. Comparison between usual and improved meals (breakfast, lunch, dinner) for each region showed significant differences in non-heme iron availability for breakfast 9Central Luzon, P < .001 and Southern Tagalog, P < .05), lunch (Cagayan Valley, P <.01 and Central Luzon, P < .05) and dinner (Southern Tagalog, P <.001), but not for the Metro manila region. The mean values for non-heme iron availability from one-day meals (usual and improved) were comparable. However, the total non-heme iron available was higher in improved meals.

The availability of non-heme iron showed significant positive correlation with the amount of ascorbic acid content of both usual (r=0.51, P<.050 and improved (r=0.61, P <.05) meals, and a significant negative correlation with the tannic acid content of the improved meals (r = -0.52, P <.05). However, the correlation with phytic acid was not significant (r = 0.35, P > .05). **(Author's abstract)**

Keywords: *Nutrition, Non-heme iron, In vitro, Ascorbic acid, Tannic acid*

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(Filipiniana Analytics)
Fil(S) QC173 P55 v8 1991

PHYSICS

0320

^{137}Cs levels in fish and shellfish in the Filipino diet

Duran, Emerenciana B., de Vera, Cecilia M., Enriquez, Eliza B., Yulo-Nazarea, Ma. Teresa, Asada, Jr., Antonio A.

Among the artificially produced radionuclides, ^{137}Cs is considered the most significant contributor to radiation dose due to consumption of marine products. ^{137}Cs is present in the marine environment as a result of atmospheric nuclear weapons tests and nuclear accidents. ^{137}Cs was analyzed in predominant fish and shellfish species in the Filipino diet and in seawater collected from major fishing grounds. The mean activity concentration of ^{137}Cs in thirteen fish species which are commonly eaten by Filipinos was 0.53 ± 0.47 Bq kg^{-1} wet edible fraction (E.F.) . In molluscs, the mean activity concentration measured was 0.24 ± 0.20 Bq kg^{-1} wet E.F. A similar value of 0.23 ± 0.12 Bg kg^{-1} was observed in crustaceans. A mean activity concnetration of 4.76 ± 2.66 was observed in seawater which suggests approximate concentration factors of 100 for ^{137}Cs in fish and 40 for ^{137}Cs in shellfish. **(Author's abstract)**

Keywords: *Physics, Radionuclides, 137Cs, Radiation*

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(Filipiniana Analytics)
Fil(S) QC173 N88 v32 1996

0321

An assessment of the radiological impact of brachytherapy application in Metro Manila Hospitals

Palattao, Ma. Visitacion B., Venida, Luzviminda L., LoteriÃ±a, Roel A., Espiritu, Raquel T.

One of the most important uses of radioactive sources in medicine is the application of brachytherapy technology. Brachytherapy is a method of radiation theraphy where an encapsulated radioactive source delivers gamma or beta radiation into a tumor site. The paper describes different categories of brachytherapy applications involving manual insertion or afterloading and remote afterloading techniques. A list of five hospitals in Metro Manila practicing different techniques of brachytherapy are enumerated. Because of the widespread uses of radioactive sources in brachytherapy technology in medicine, inadequate control in its use had led to a number of incidents resulting to unnecessary exposure of radiation workers, patients and the general public. This study was initiated to determine the radiological hazards involved in brachytherapy applications. It presents contingency scenarios and their projected radiological consequences. **(Author's abstract)**

Keywords: *Physics, Brachytherapy application, Metro Manila Hospitals , Radiation theraphy, Radiological hazard*

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(Filipiniana Analytics)
Fil(S) QC173 N88 v32 1996

0322

An assessment of the radiological impact of the operation of selected industrial radiography in Luzon

LoteriÃ±a, Roel A., Espiritu, Raquel T., Palattao, Ma. Visitacion B.

The estimated whole body exposures of radiography workers during routine normal operations were expectedly below 50 mSv annual limit for radiation workers. The projected radiological consequences to radiography workers, technicians and members of the public during abnormal occurrences and accident conditions range from very low doses to doses exceeding the annual limit and half lethal dose depending on the scenario by which the individual is exposed. This study recommends measures to minimize unnecesary exposure of operating personnel to radiation and prevent untoward incidents in industrial radiography operations. **(Author's abstract)**

Keywords: *Physics, Radiography worker, Radiological impact, Luzon*

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(Filipiniana Analytics)
Fil(S) QC173 N88 v32 1996

0323

Carbon-14 determination in soil by dry combustion and liquid scintillation counting

CastaÃ±eda, Soledad S., Cruz, Cynthia C., Esguerra, Luz V., Santos, Flora L.

The developmental work on the determination of carbon-14 in soil is described. The method involves the dry combustion of soil samples at ca.700°C for 45 min with oxygen and nitrogen, both at a flow rate at 300 ml/min. the gaseous effluent was collected into a CO_2 trapping solution which was later radioassayed by LSC. A 100% combustion efficiency was obtained for two batches of scintillation cocktail. Approximately, 250 mg sample and a counting time of 30 min yielded lower limits of detection ranging from 0.5 to 0.7 Bq/g sample. **(Author's abstract)**

Keywords: *Physics, Carbon-14, Dry combustion, Liquid scintillation counting, Oxygen, Nitrogen*

Philippines Nuclear Journal: A publication of the Philippine Nuclear Research Institute, Volume No. Issue No. , 41-48
(Filipiniana Analytics)
Fil(S) QC173 P55 v7 1990

0324

Concentration factors for tritium in corn (*Zea mays* L.)

Garcia, Teofilo Y., Juan, Norma B.

The uptake, concentration factor and residence time of tritium in corn was studied. Tritium was applied by soil spray to corn plants grown in pots. Analysis was done using the freeze-drying, combustion and liquid scintillation counting techniques. Results showed that tritium was incorporated in the corn tissue in less than one hour. Mean concentration factors for tissue-free water tritium (TFWT) and tissue-bound tritium (TBT) in different portions of the plant (root, stem, leaf, and kernel) were less than unity. Residence times of TFWT were 8.0 days in root, 7.0 days in stem, 10.5 days in leaf, and 9.5 days in kernel. For TBT, residence times were 10.75 days in root, 13.75 days in stem, 15.0 days in leaf, and 11.0 days in kernel. **(Author's abstract)**

Keywords: *Physics, Tritium, Zea mays L., Freeze-drying, Combustion, Liquid scintillation*

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(Filipiniana Analytics)
Fil(S) QC173 N88 v30 1992

0325

Cytogenetic analysis of the mitotic and salivary gland chromosomes of *Dacus (Bactrocera) Dorsalis* hendel

Medina, III, Florencio I.S., Islam, Saidul, Gregorio, Juana S., Aguilar, Cristina P.

This paper constitutes a first attempt to study the mitotic metaphase chromosomes of *Dacus dorsalis*, Hendel. A photographic representation of mitotic metaphase chromosomes of the species and tips on preparing the mitotic chromosome spread from the brain (ganglin) are provided. A photographic representation of the salivary gland chromosomes and their preparation are also included. The model chromosome number of the species is 2n = 12, including an XY set. **(Author's abstract)**

Keywords: *Physics, Dacus dorsalis, Chromosome (polytene), Chromosome (mitotic), Salivary gland chromosomes*

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(Filipiniana Analytics)
Fil(S) QC173 P55 v7 1990

0326

Development and optimization of an *In Vitro* assay for radioprotectors

Deocaris, Custer C., Malay, Ali D.

An in vitro assay for the detection of radioprotectors was developed based on the standard MTT cytotoxicity assay. The assay was tested using C6 rat glioma cell cultures grown in microwell plates with the appropriate radioprotector and then subjected to gamma irradiation. Assay conditions were tested based on the following parameters: type of radioprotector (*l-cysteine*, Vitamin E, and Panax ginseng extract), concentration of radioprotector (0, 5, 10, and 50 µg ml^{-1}), radiation dose (0, 5, 10 and 50 Gy), and post-irradiation incubation period (24 and 42 h). Radioprotection was exhibited at high concentrations for all three radioprotectors. Optimal assay conditions are at 10 Gy radiation exposure and 42 h incubation period. A standard 30-day *in vivo* assay using mice was also performed for comparison with the *in vitro* assay. We propose that this novel technique could be applied to the simple and rapid screening of test substances for possible radioprotective activity. **(Author's abstract)**

Keywords: *Physics, In vitro assay, MTT cytotoxicity assay, C6 rat glioma cell cultures, l-cysteine, Vitamin E, Panax ginseng extract*

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(Filipiniana Analytics)
Fil(S) QC173 N88 v32 1996

0327

The distribution of precious metals in Agno and Bued rivers and relation to possible mine tails siltation

Santos, Jr., Gabriel P., Fernandez, Lourdes G., Ramos, Angelito F., Garcia, Nardo Q., Marcelo, Editha A., Castillo, Marilyn K., Petrache, Christina A.

Sluice box concentrate and river bank soil samples obtained from Agno and Bued rivers in Pangasinan province were collected and analyzed for precious metals and trace elements. These elements include gold, silver, copper, lead, zinc, cobalt, nickel, manganese and iron. The elements could be correlated to the ores mined in the areas that are drained by Agno and Bued rivers.

Computer statistical treatment was performed on the geochemical data. Some interesting highlights were noted. It was discovered that river bank soil concentrate samle collected in Agno and Bued rivers contain significant gold values. Gold content in Agno river bank soil concentrates ranged from 2.1 ppm to greater than 25 ppm in prospective areas. The corresponding gold values in Bued river ranged from 1 ppm to grater than 25 ppm in prospective localities. The prospective areas in Agno are San Roque, San Miguel, Tayug, Asingan, Sta. Maria, Rosales, Sto Tomas, Bautista, Bayambang and Urbiztondo. In Bued, the prospective localities are Camp. 1 San jacinto, Mangaldan and San Fabian.

Data were gathered by personal interview using a semi-structured interview schedule. There were 150 respondents from inhabitants living near Agno and Bued rivers. Most of the respondents were farmers (69%), gold panners (14%) and people with other occupations (17%). Ninety-two percent of the respondents were classified as living below the poverty level. The farmers are economically affected by the damage of their crops due to flooding of rivers. However, the gold panners recover more gold after each flooding probably because the newly deposited silt tends to contain better if not more gold values. About 57% of the respondents are not aware of the mineral wastes or tails brought about by the flood while only 33% of the interviewees reported that they are aware of river siltation due to mineral wastes. **(Author's abstract)**

Keywords: *Physics, Geochemical surveys, Agno river, Bued river, Gold, Silver, Copper, Lead, Zinc, Cobalt, Nickel, Manganese, Iron*

Philippines Nuclear Journal: A publication of the Philippine Nuclear Research Institute, Volume No. Issue No. , 81-88
(Filipiniana Analytics)
Fil(S) QC173 P55 v7 1990

0328

The effect of gamma irradiation on mimosine in liquid systems: preliminary studies

Alejandrino, A. L., Goze, C., Balboa, B.

Dilute solutions of mimosine (atmospheric conditions: a oxygen-free and b. oxygenated) in the liquid systems: I) water and II) 0.1 N HCI, were subjected to high dose levels of Co-60 gamma irradiation. At the dose range investigated (1.5-6 Mrads), mimosine degradation was found to increase with dose. The radiosensitivity of mimosine was of the order: mimosine in water (oxygenated) > mimosine in water (oxygen-free) > mimosine in 0.1 N HCI (oxygenated) > mimosine in 0.1N HCI (oxygen-free). **(Author's abstract)**

Keywords: *Physics, Gamma irradiation, Mimosine, Oxygen*

Philippines Nuclear Journal: A publication of the Philippine Atomic Energy Commision, Volume No. Issue No. , 305-313
(Filipiniana Analytics)
Fil(S) QC173 P55 4/1 1976

0329

Effect of radiation on some salicylates: i steady state studies

de la Paz, Lilia R.

The effect of solid phase irradiation of three salicylates are studied. A method of product analysis using TLC coupled with diffused reflectance spectroscopy was made for two of the salicylates. Values of G (-phenyl salicylate) = 2; G(-acetylsalicylic acid) = 1.2 and G(-salicylamide) = 0.50 were obtained. Irradiations in solution were carried out for salicylamide and the initial G(-M) values under four irradiation conditons were obtained. Results indicate that salicylamide is more susceptible to OH radical attack which leads to acidic oxidation products in the presence of air. Attack by the e^- aq or the H atom leads to basic product formation. Some observations and tests which may lead to the identification of the degradation products are made. Post irradiation effects are studied. Implications on radiation sterilization are discussed. **(Author's abstract)**

Keywords: *Physics, Salicylates, Radiation, Acetylsalicylic acid, Phenyl salicylate, Salicylamide*

Philippines Nuclear Journal: A publication of the Philippine Atomic Energy Commision, Volume No. 4 Issue No. 1, 292-304
(Filipiniana Analytics)
Fil(S) QC173 P55 4/1 1976

0330

Elemental composition of Philippine total diet samples

de Leon, Graceta C., Shiraishi, K., Kawamura, H., Igaraishi, Y., Palattao, Ma. Visitacion B., Azanon, Edwin M.

Total diet samples were analyzed for major elements (Na, K, Ca, Mg, P) and some minor/trace elements (FE, Zn, Mn, Al, Sr, Cu, Ba, Yt) using Inductively Coupled Plasma – Atomic Emission Spectrometry (ICP-AES). Samples analyzed were classified into sex and age groups. Results for some elements (Na, K, Mg, Zn, Cu, Mn) were compared with the values from Bataan dietary survey calculated using the Philippine Food Composition Table. Except for Na, analytical results were similar to calculatd values. Analytical results for Ca and Fe were also compared with the values from the Food and Nutirition Research Institute. In general,

values obtained in the study were lower than the FNRI values. Comparison of the analytical and calculated results with the Japanese and ICRP data showed that Philippine values were lower than foreign values. **(Author's abstract)**

Keywords: *Physics, Inductively coupled plasma, Atomic emission spectrometry, Philippine food composition table, Food and Nutrition Research Institute*

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(Filipiniana Analytics)
Fil(S) QC173 P55 v7 1990

0331

Establishment of a treatment and conditioning facility for low-level radioactive waste at the Philippine Nuclear Research Institute

Valdezco, E. M., Marcelo, E. A., Junio, J. B., dela Cruz, J. M.

The primary objective in the establishment of a treatment and conditioning facility for low-level radioactive waste at the Philippine Nuclear Research Institute is to demonstrate the safe management of these waste in view of the potential hazards to human health and the environment. Effective management of radioactive wastes arising from small nuclear applications considers such basic steps as waste collection, segragation, characterization, treatment, conditioning, transport and disposal. The role of treatment and conditioning of radioactive waste in the entire waste management process is quite essential because, as a result of these activities, the waste packages or the final waste form should be acceptable for the long term storage. Since there are a variety of radioactive waste generated, the requirements for treatment and conditioning will vary depending on the waste volume and characteristics including the nature and activity of the radionuclides, their chemical properties and physical form. Aqueous waste will undergo chemical precipitation and the resulting sludge will be conditioned by cementation while organic liquid waste will be absorbed in absorbent materials, e.g., sawdust inside a polyethylene bag placed inside a prelined 100 liter drum and overpacked with a formulated cement mixture. Solid compactible waste will be compacted in a 100 liter drum using the RAM Flat Compactor prior to storage disposal. Non-compactible solid waste including spent sealed sources will be conditioned by cementation in a prelined 200 liter drum and overpacked with a formulated cement mixture for long term storage and disposal. Radioactive waste after treatment are immobilized by cementation to convert it into a physically stable form with the primary objective of minimizing the risks of potential release of radioactive substances into the environment during handling and storage. **(Author's abstract)**

Keywords: *Physics, Philippine Nuclear Research Institute, Radioactive waste, Aqueous waste*

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(Filipiniana Analytics)
Fil(S) QC173 N88 v32 1996

0332

An estimation of whole-body doses due to routine operation of the first Philippine Research Reactor (PRR-1)

Palattao, Ma. Visitacion B., Azanon, Edwin M., dela Paz, Lilia R.

Atmospheric dispersion calculation of the routine releases of the TRIGA-converted Philippine Research Reactor (PRR-1) was carried out using the computer model developed by the United States Nuclear Regulatory Commission (USNRC). It calculates average relative effluent concentrations (X/Q) and average relative deposition values (D/Q) for twenty two (22) specific distances up to 80 km from the area of concern for each sixteen compass directions. This model is based on the theory that material released to the atmosphere will be normally distributed (Gaussiah) about the plume centerline.

Surface meteorological data based on a five-year monitoring period at the PAGASA Science Garden station proximate to the

site were utilized in the assessment.

From the result of X/Q values, annual whole body dose in mSv y^{-1} with respect to ^{41}Ar was evaluated. **(Author's abstract)**

Keywords: *Physics, Philippine Research Reactor (PRR-1), Argon-41, Radioactive gas*

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(Filipiniana Analytics)
Fil(S) QC173 N88 v27 1989

0333

External radiation measurements using thermoluminescent dosimeters

Palad, Lorna H., Duran, Emerenciana B., Gumasing, Leonardo G.

Thermoluminescent dosimeters were used as detectors to measure natural background radiation levels in 10 provinces throughout the Philippines. These dosimeters were deployed in densely populated areas. The average dose rate for outdoor and indoor exposures were 4.41 μR h^{-1} and 4.52μR h^{-1} respectively. External radiation measurements (outdoors) were also conducted in these 10 provinces using a Studsvik gammameter which gave an average outdoor exposure dose rate of 4.40 μR h^{-1}. **(Author's abstract)**

Keywords: *Physics, Thermoluminescence (TLD) systems, External radiation, Thermoluminescent dosimeters*

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0334

Fission track dating of zircons from Northern Palawan

Tabora, Estrellita U., Santos, Jr., Gabriel P., Suzuki, Masao

Fission track dating using the Direct Zeta Method is performed on zircons obtained panned stream sediments collected in northern Palawan. The zircons are taken in active streams draining the Oligocene granitic bodies and Carboniferous-Lower Paleozoic phyllitic rocks. The fission track dating reveals that the zircons are all Miocene in age. Since the zircons are derived from much older rocks it is apparent that track annealing or erasure has probably occurred. The major geologic event that could have possibly brought about the re-setting of the fission track clock is the collision between the rifted microcontinent, partly presented by northern Palawan and the southwestern Philippine arc. Northern Palawan is thought to be a piece of the Asian continent that was detached in mid-Oligocene which eventually collided with the Philippine island are during the Miocene. **(Author's abstract)**

Keywords: *Physics, Northern Palawan , Zircons, Oligocene granitic bodies*

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0335

Gamma irradiation of selected spices

De Guzman, Zenaida M., Casyao, Jean M., Tolentino, Mitos M., Ignacio, Luzviminda M.

This study was done to evaluate the efficacy of gamma radiation in the reduction of microorganisms and to determine the keeping quality of commercial spices, namely, black and white pepper, onion and garlic powder, nutmeg and coriander. The spices were supplied by the food industries and were irradiated at varying doses of 0, 3, 6 & 9 kGy. Microbiological, physico-chemical and sensory evaluations were done. The exposure of spices to a dose of 6 kGy reduced the microbial load to as much as 3 log cycles for total plate counts and 2-3 log cycles for total mold and yeast counts. The moisture content of irradiated and non-irradiated spices ranged from 6.0 to 10.0%, respectively. Irradiation dose of up to 9.0 kGy did not cause detectable change in color and flavor of the samples. Microbial reduction observed in irradiated black and white pepper was maintained during a storage period of 6 months. **(Author's abstract)**

Keywords: *Physics, Microbiological, Physico-chemical, Gamma radiation*

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0336

Geochemical exploration for nuclear and industrial minerals in Western Tarlac

Reyes, Rolando Y., Ramos, Angelito F., Magsambol, Wilfred N., Fernandez, Lourdes G., Marcelo, Editha A., Almoneda, Rosalida V., Castillo, Marilyn K.

As part of the continuing project of the Philippine Nuclear Research Institute, Department of Science and Technology in prospecting for nuclear and industrial minerals, a reconnaissance geochemical survey was conducted in Western Tarlac covering an area of about 3,800 sq km. The survey entailed the systematic collection of 381 stream water, stream sediments and heavy mineral pan concentrate samples, and the measurement of radioactivity in over 127 stations. The average geochemical sampling density was about 1 sample per 10-25 sq km. All solid samples were analyzed for U, Au, Ag, Ce, Pb, Zn, Mn, Co, Ni, Fe and Cr. Water samples were analyzed for uranium. In all, more than 2,500 chemical determination were made.

Results of the survey were not very encouraging as far as potential areas for uranium are concerned. Only a week anomalous area was delineated in Santa Juliana. Very low values of uranium and radiometric readings were obtained in the western part covering almost half of the survey area and underlain by Cretaceous basic to ultrabasic rocks. Future exploration work in this type of geological environment in other parts of the country may not be warranted.

The real potential of Western Tarlac is in the other elements, gold particular. An extensive area was delineated in the central part for gold. A Cu-Zn-Mn-Fe-Co Ag anomaly was found south of Balogbalog indicating a polymetallic hydrothermal type of mineralization. The mineralized zone in Bigbiga was outlined, and the association Cu-Zn-Mn-Fe-Co was clearly established.

The presentation and interpretation of geochemical field exploration and analytical data were greatly improved with the use of computer-generated color-coded geochemical symbol mapping technique. **(Author's abstract)**

Keywords: *Physics, Geochemical exploration, Western Tarlac, Gold, Uranium*

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0337

Granular mixing studies with $^{69}Zn^{m}$

Lumba, Linda G., Cabalfin, Estelita G.

The use of $^{69}Zn^{m}$ as tracer in evaluating the characteristics of a mixing process was demonstrated. The objectives of the tracer study were to determine the optimum mixing time, to test the homogeneity of the product and to detect any demixing at specific points in the process. Five grams of irradiated ZnO (~5m Ci $^{69}Zn^{m}$)was used for each 2-ton-batch mixture. Five mixing times were tested and samples were taken at 3 sampling points. The results obtained using 3 statistical procedures in determining mixing parameters are compared. **(Author's abstract)**

Keywords: *Physics, 69Znm , Granular mixing, Homogeneity*

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0338

Gs-protein: a tyrosinase enzyme from orietal fruit fly, Bactrocera philippinensis

Yulo-Nazarea, Ma. Teresa, Nato, Jr., Alejandro Q.

The presence of a biochemical marker for irreversible radiation injury in insect pest was identified in pupae of irradiated larvae of *Bactrocera philippinensis*. A radiation sensitive marker protein (designated Gs-protein) for radiation injury in Oriental fruit fly, *B. philippinensis*, was detected in the SDS-PAGE profile of two-day old pupae and adult insect stage. Gs-protein is not observed in larvae and eggs. An apparent molecular weight of 109 kDa was calculated. A tyrosinase enzyme activity was observed in the soluble fraction of pupal total homogenate and SDS-PAGE-isolated Gs-protein; however, no tyrosinase activity was measured in irradiated sample. Initial studies on TXRF spectral analysis seem to indicate that Gs-protein is a copper-containing enzyme. The presence of highly absorbing chromophore/s in the visible range at 364 nm maximum absorbance in both irradiated and unirradiated samples may indicate that a certain type of tyrosinase activity (other than melanin formation) may be present and be responsible for color formation in insects. From the results of the studies, the apparent loss of Gs-protein in irradiated larvae is the likely result of loss of melanization capability in irradiated larvae which is linked to the absence of a certain type of tyrosinase activity. The data presented seems to establish Gs-protein as a tyrosinase enzyme which could be used as a biomarker for gamma-irradiation induced deactivation of pupal development and as a convenient indicator of the effectiveness of gamma radiation as a quarantine treatment. **(Author's abstract)**

Keywords: *Physics, Bactrocera philippinensis, Biochemical marker, Tyrosinase enzyme, Gs-protein, Copper*

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0339

Inherent and non-inherent source of error in film badge dosimetry

Valdezco, Eulinia M., Marasigan, Corazon J.

This paper describes the various studies conducted at the Philippine Atomic Energy Commission to test the performance and accuracy of the film badge as a personnel monitoring device and to determine the magnitude of the random errors and variations in the film badge measurements of radiation exposures. Inherent and non-inherent sources of error such as latent image fading, angular dependence, energy dependence, effect of heat treatment, variations of developing time and developer temperature, and absorption of beta radiations by the film wrapper were investigated and found to contribute significantly to the compound errors in film badge dosimetry. Recommendations to improve the techniques in order to minimize these errors are also discussed. The results obtained in this work is intended to establish more accurate and precise methods of personnel monitoring and should help

in the understanding and control of these various sources of error in order to eliminate some doubts as to the adequacy of the film badge as a routine personnel dosimeter. **(Author's abstract)**

Keywords: *Physics, Radiation, Film badge dosimetry, Film wrapper, Effect of heat treatment*

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0340

Instrumental neutron activation analysis of geological materials from Northern Palawan and Marinduque Island, Philippines

Castillo, Marilyn K., Santos, Jr., Gabriel P., Ramos, Angelito F., Teherani, Davoud Karimian

An instrumental neutron activation analysis of geological materials comprising of heavy mineral panned concentrates and surface soil samples taken from northern Palawan and Marinduque Island, Philippines was conducted. This work was carried out primarily to determine the distribution of uranium, thorium, rare earths and other trace metals in the Philippine environment in connection with the nationwide geochemical exploration program and the IAEA technical co-operation project of gamma ray spectrometric survey in the country. Moreover, the geochemical data obtained will form part of the national database for nuclear resource assessment, mineral exploration and environmental studies. The utilization of the instrumental neutron activation analysis technique in the multielemental determination of geological materials has been very useful in mineral exploration, environmental studies and other related researches. The sensitivity of this technique has been very effective not only in the determination of the major elements but for the trace metals as well. In this study, about 96 geological samples were analyzed for 15 elements after the spectral analysis. In all, 810 elemental determinations were completed. In the northern Palawan district, the areas with high radioactivity were disclosed by the relatively high concentrations of thorium and, to a lesser extent, uranium. Moreover, areas with possible potential for gold was delineated as well as for the rare earth metals. In Marinduque Island, the distribution of the elements are generally sporadic which indicate various lithological sources and a diverse geology. **(Author's abstract)**

Keywords: *Physics, Uranium, Thorium, Rare earths, Northern Palawan, Marinduque Island*

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0341

Loss and recovery of an ^{192}Ir gamma radiography exposure device

Borras, Alan M., Yoshisaki, Magno B.

A radiography exposure device containing 88.8 GBq (2.4 Ci) of ^{192}Ir is inadvertently left in a taxi cab which has sped off before the equipment could be unloaded. The joint effort between the licensee and Philippine Nuclear Research Institute (PNRI) utilizing the tri-media in searching for the missing device resulted in its recovery 32 days later. The regulatory actions taken by the PNRI during and after the accident are discussed. **(Author's abstract)**

Keywords: *Physics, 192Ir gamma radiography exposure device, Radiography, Philippine Nuclear Research Institute*

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0342

Marine radioactivity and its health implications

Duran, Emerenciana B., de Vera, Cecilia M., Enriquez, Eliza B.

Polonium-210 and Cesium-137 are the two most significant radionuclides in terms of radiological risks. Ingestion of these radionuclides via marine species (fish, shellfish) has been considered to produce the major critical pathway for exposure of the local population. In terms of concentration, ^{210}Po is the most highly accumulated natural alpha emitter. ^{137}Cs, on the other hand, is an anthropogenic radionuclide produced by nuclear weapons testing and nuclear accidents. Commonly-eaten species of fish and shellfish collected from different locations were analyzed by alpha spectrometry for ^{210}Po and gamma spectrometry for ^{137}Cs. Surface seawater was also collected from major fishing grounds to determine the concentration factors of these radionuclides in the food species considered. **(Author's abstract)**

Keywords: *Physics, Polonium-210, Cesium-137, 137Cs, Radionuclide*

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0343

Natural radioactivity measurement at the proposed nuclear power plant site

Cojuangco, Josefina G., Salomon, Angeles pH.

Natural radioactivity measurement in the Philippines aims to establish baseline radioactivity levels in the environment of items essential to man. In this article are presented the results of the environmental surveillance conducted in Bagac, Bataan from 1973 to 1974. Analyses were made on air particulates, sea and fresh water, grass, and soil samples for gross beta-gamma activities. Results obtained showed activity levels below the maximum permissible concentration recommended by the International Committee on Radiation Protection (ICRP). **(Author's abstract)**

Keywords: *Physics, Natural radioactivity, Air particulates, Sea water, Fresh water, Grass, Soil*

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0344

Notes on saltwater intrusion and trace element distribution in metro manila groundwaters

Santos, Jr., Gabriel, Ramos, Angelito F., Fernandez, Lourdes G., Almoneda, Rosalina V., Garcia. Teofilo Y., Cruz, Cynthia C., Petrache, Christina A., Andal, Teresita T., Alcantara, Ernesto

Preliminary analyses of water for uranium and other trace elements from deepwells operated by the Metropolitan Waterworks and Sewerage System (MWSS) in Metro Manila were performed. Uranium, which ranged from 0.2 ppb to 6 pbb, was correlated with saltwater intrusion. Values $\geq$ 0.8 ppb for uranium were considered indicative of saline water intrusion in the aquifers. Saline water intrusions in Malabon, Navotas, Parañaque, Las Piñas, Bacoor, Imus, Kawit, Pasig, Antipolo, San Mateo, Taguig, Cainta, Taytay, Alabang and Muntinlupa were noted. Most of these areas were also identified by MWSS as being affected by saltwater

intrusion. Tritium values ranged from 0 (below detection limits) to 44 tritium units. Except for one well in Muntinlupa, all the values obtained were below the lower limit of detection of 30.83 T.U. Mercury contents in six well locations had values above the maximum limit set by the National Standards for Drinking Water. Four wells exceeded the permissible level for manganese while two wells had iron concentrations greater than the National Standards. Other trace element concentrations such as Cr, Pb, Zn, Co and Ni either did not exceed their permissible levels or were not included in the National Standards. **(Author's abstract)**

Keywords: *Physics, Uranium, Saltwater intrusion, Mercury*

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0345

Preparation of magntic particles for TSH-IRMA

de Jesus, Elizabeth M., Borras, Ma. Teresa

The magnetic particles (SCIPAC M174) were activated by rotation with 1', 1-carbonyldiimidazole (CDI) at room temperature for one hour. Then the activated magnetic particles were coated overnight at room temperature with anti-TSH by rotation. A serial dilution of anti-TSH at 1:1, 1:2, 1:4 and 1:8 was done and assayed using the high and zero concentrations of the ligand to determine the optimum concnetration for binding. Results showed that the optimum dilution at 1:2 gave the maximum binding of anti-TSH to the magnetic particles. The performance of the PNRI coated magnetic particles in an assay was tested by doing parallel assay with an NIH (National Institute of Health, Bangkok, Thailand) TSH-IRMA magnetic kit. Parallel curves were obtained showing that the tracer and the coated magnetic particles are immunologically reactive and, hence, satisfactorily prepared. **(Author's abstract)**

Keywords: *Physics, SCIPAC M174, Anti-TSH, Magnetic particles, 1-carbonyldiimidazole*

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0346

Primordial radionuclides in soil and their contributions to absorbed dose rate in air

Moriones, Cecilia R., Duran, Emerenciana B., dela Cruz, Fe M.

The predominant primordial radionuclides in soil which give rise to terrestrial radiation (external irradiation) were analyzed by gamma spectrometry. ^{40}K has the highest average activity mass concentration, i.e., 212 Bq kg^{-1}. ^{238}U and ^{232}Th concentrations are much lower and are only 14 and 16 Bq kg^{-1} respectively. Based on conversion factors given in the UNSCEAR Report (1988), the absorbed dose rates in air at one meter above the ground surface per unit activity mass concentration of primordial radionuclides were calculated. The average per caput absorbed dose rate in air received by Filipinos due to terrestrial radiation is 23 nGy h^{-1}. The relative contribution of ^{232}Th series to the total absorbed dose rate is highest, followed closely by ^{40}K. The contribution of ^{238}U series is only about one-half that of the ^{232}Th series. Based on the results obtained, the terrestrial component of the average per caput exposure dose rate due to natural radiation sources is 2.64 μR h^{-1} or roughly 3 μR h^{-1}. This leads to an annual average effective dose equivalent of 202 μSv. **(Author's abstract)**

Keywords: *Physics, Radionuclide , Primordial radionuclides, Coversion factors*

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0347

Reconnaissance geochemical exploration for uranium in Northern Palawan, Philippines

Reyes, Rolando Y., Santos, Jr., Gabriel P., Magsambol, Wilfred N., Ramos, Angelito F.

The search for uranium in the country dates back to 1953. To date, about 45% of the country has been covered using a systematic geochemical exploration method, at the reconnaissance level with some delineated prospective areas followed up by either or both semi-detailed and detailed surveys. Currently, a two-year reconnaissancegeochemical survey for nuclear and rare earth minerals is being conducted in northern Palawan covering an area of about 5,000 sq km. So far, about 2,500 sq km have been covered with an average sampling density of about one sample per 5-15 sq km. Preliminary analytical results outlined two areas, namely El Nido and Erawan, with high uranium values in the heavy mineral panned concnetrate samples. The El Nido area may be an important target for further exploration work for uranium. The presence of acidic intrusive rocks and sedimentary formations such as sandstone and shale in the area may suggest a favorable geological environment for uranium mineralization. The high uranium values found in Erawan area which is characterized by the Caramay Schist intruded by the Kapoas Intrusive may be due to uranium taht is tied up with the accessory minerals allanite and monazite. **(Author's abstract)**

Keywords: *Physics, Uranium, Geochemical exploration, Northern Palawan, Philippines , Reconnaissance*

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0348

Report on the mineralogical and geochemical characterization of heavy minerals from Northern Palawan, Philippines

Santos, Jr., Gabriel P.

A mineralogical and geochemical study on the panned heavy mineral samples was conducted in order to understand the distribution of radioactive and rare earth elements (REE) in northern Palawan. Samples collected from the uranium geochemical anomaly in San Vicente containing radioactive elements and REE are characterized by abundant medium to coarse-grained euhedral brown-reddish allanite and fine-grained subhedral yellow monazites. Gray and black fine to medium-grained nodular monazites with numerous minute inclusions of quarts and mica are also present outside the anomaly area. The geochemical anomaly area is underlain by Tertiary granodiorite and Undifferentiated Carboniferous phyllite-schists. The nodular monazites are found south of the anomaly area in a stream draining the latter rock.

The sample collected from other localities contain mainly ilmenite as the major mineral and/or associated with significant zircon, mica (biotite-muscovite) and anatase. Minor amounts of rutile, andalusite and sphene, among others occur in all the samples.

Scanniong electron microscopy (SEM) showed that there were two types of surface textures on allanite sand grains: pitted (cavities) with fractures and smooth surface. Electron probe x-ray microanalysis (EPMA) was carried out on some allanite, yellow and gray monazites, ilmenite, zircon, sphene and rutile grains to analyze their compositions. EPMA Wide Dispersive Scanning (WDS) mappings of allanite and the yellow monazite grains revealed low uranium and moderate thorium distributions, respectively, while the gray monazite was low in both of these elements. Chemical zoning of the REE in the gray nodular monazite was noted. The light REE (La and Ce) tended to be higher in the rims while the median REE (Nd, Sm and Pr) showed slight to pronounced concentration in the core.

Semi-quantitative x-ray flourescence (XRF) analysis indicated that the allanite-minazite bearing samples from the geochemical anomaly area contained Th(0.76 -1.15%), La(2.77 — 4.69%), Ce (5.00-7.66%), Y (0.03-0.08%), Ti (0.29-7.89%) and Zr (0.10-050%). Uranium contents ranged from 10 ppm to 190 ppm. It was therefore evident that most of the radioactivity in the mineral pair was due to Th.

XRD examinations of the heavy minerals extracted from three fresh granitic rock samples obtained from the anomaly and other samples areas showed biotite-muscovite as the most abundant mineral assenblage with possible minor ilmenite and chlorite. No allanite and yellow monazite minerals were observed in the granitic rocks in the surveyed areas. This suggested that the granites were not probably the source rocks of the sediments bearing allanite and yellow monazite. The admixture of highly pitted (cavities) and fairly smooth-surface allanite grains in the beach sand samples may provide some clues to the sediment source rocks.

Considering the close spatial relationship between the allanite-yellow monazite and gray nodular monazite, it is suggested that the nodular monazites were recrystallized in-situ (authigenic) from available allanite and yellow monazite. The gray monazite was probably formed under favorable regional low grade metamorphism of marine clay in reducing environment (presence of organic materials) and available allanite and yellow monazite at or near the clay formation.

It is suggested that on the basis of the well-documented close association of gray nodular monazite to Lower Paleozoic rocks in Britain, France and Belgium, the Palawan nodular monazite may have a similar age. The discovery of gray monazite could extend the age of the oldest rocks (Carboniferous) in the Philippines to Ordovician-Cambrian (500 million years). **(Author's abstract)**

Keywords: *Physics, Scanning electron microscopic (SEM), Electron probe x-ray microanalysis (EPMA), Wide dispersive scanning (WDS), Rare earth elements (REE)*

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0349

Scattered radiation and mathematical method in quantitative XRF analysis using a CD-109 spectrometer

Saligan, Pablo P., Calix, Virginia S.

A mathematical method for quantitative XRF which compensates the effect of the low atomic number elements has been developed. The scattered radiation was used to determine the primary absorption. The secondary absorptions were calculated by extrapolation and iteration. The method was tested using synthetic standards and IAEA reference materials and was found to give very satisfactory results. **(Author's abstract)**

Keywords: *Physics, XRF analysis, Scattered radiation, Primary absorptions, CD-109 spectrometer*

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0350

Sterilization of oriental fruit fly by gamma irradiation and its effect on competitiveness

Manoto, E. C., Bautista, R. C.

The pupal stage of the Oriental fruit fly, *Dacus dorsalis*, was irradiated with 5, 7, or 9 krad of Co-60 gamma rays at one or two days before adult eclosion. A dose of 5 krad was better than the higher doses of 7 or 9 krad since the higher dosages increased percentage male sterility only slightly from 99.8% at 5 krad to 100% at 7 krad but considerably reduced male competitiveness from 70% at 5 krad to 57% at 9 krad. The lowest dose of 5 krad was adequate to prevent the female fruit flies from laying any

egg. Irradiation at any of the dose levels did not affect the number of adults that emerged nor the longevity of the fruit flies up to 38 days after adult eclosion. **(Author's abstract)**

Keywords: *Physics, Gamma irradiation, Dacus dorsalis, Sterilization, Oriental fruit fly*

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0351

Survey of indoor radon using activated charcoal canister

Parami, Vangeline K.

The aim of this study is to survey indoor radon using activated charcoal canister. The survey was done in selected buildings at the University of Surrey and selected dwellings in the United Kingdom (UK).

The results of the survey showed that concentration of radon in homes was on average higher than that in buildings of the University of Surrey, UK. It was also observed that among the houses, the levels of concentration differed and that high concentration of radon was not confined to houses built on granite or uranium-containing soil. A house in Guildford, UK was found to have relatively higher concentration of radon. The source of radon was the bricks used in constructing the house and was enhanced by rendering the house energy efficient, especially during winter. The radon concentration in this house could exceed the action level.

Furthermore, it was shown that within a house, the level of radon varied from room to room, and also at different locations within a room.

Exposed charcoal canisters can be reused after releasing the absorbed radon by heating the canisters for several hours. **(Author's abstract)**

Keywords: *Physics, Charcoal canister, Uranium, Granite*

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0352

Total-reflection x-ray fluorescence spectrometry: theory, instrumentation and applications

Africa, Lorena B., Calix, Virginia S.

According to the reflection-refraction phenomenon, if a collimated x-ray beam impinges onto the surface of a plane smooth and polished reflector at an angle less than a certain critical angle , total reflection of the incident beam will occur. From this phenomenon, an analytical tool known as Total-Reflection X-ray Fluorescence (TXRF) was developed. In this technique, characteristics x-rays samples resulting from the bombardment with the primary, as well as with the totally reflected primary x-rays, is observed by strategically positioned Si(Li) detector. TXRF spectrometry, as an analytical tool for trace element analysis, is a relatively new technique. It is a special variant of the conventional energy-dispersive x-ray fluorescence spectrometry whose sensitivity is better than X-ray Fluorescence (XRF) by 2 to 3 orders of magnitude (Prange, 1989). As a technique for elemental analyses its important features are: (1) multielement capability ; (2) ease in quantification because of internal standardization; (3) simple sample preparation; (4) very small amount of sample required; and (5) rapidity of analysis. A topical review of TXRF spectrometry is presented here as well as results of trace element analyses of various types of samples. Furthermore, the application of the technique for surface analyses and depth profiling of layered structures are also discussed. **(Author's abstract)**

Keywords: *Physics, X-ray, Reflection, Refraction*

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0353

Tritium measurement in environmental water using electrolytic enrichment technique

Garcia, Teofilo Y.

This paper describes the equipment and techniques used in tritium laboratory at the Philippine Nuclear Research Institute for the determination of low-level activities of tritium in water samples. Samples are enriched by electrolysis in sixteen glass cells connected in series. A calibrated ampere-hour meter in series with a precision shunt measures the weight of water electrolyzed and a preset counter is used to shut off the current when 20 g of electrolyte remains in the cell. After distillation the enriched samples are counted in polyethylene vials using emulsion liquid scintillation techniques. Tritium enrichment of about 26 times and an enrichment factor of about 0.86 are obtained. **(Author's abstract)**

Keywords: *Physics, Tritium, Ampere-hour meter, Electrolyte*

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0354

Uranium distribution in oceanic waters east of the Philippines

Santos, Jr., Gabriel P., Marcelo, Editha A., Almoneda, Rosalina V., Petrache, Christina A.

Oceanic water samples obtained at full depth in 3 stations along latitude 10°N east of Mindanao during the trans-Pacific hydrographic cruise #89-3 of R/V *Moana Wave* were analyzed for uranium. Samples were taken at 24 position at each station. From surface to nearly 5,000 dbars pressure near the ocean floor, the uranium concentration ranged from 7.56 nmol/kg to 16.18 nmol/kg (1.80 ppb to 3.85 ppb). The uranium values taken near Mindanao 8°0.0'N, 128°0.20'E (Station 10) is slightly lower than those obtained from 9°29.22'N, 151°40.31'E (Station 55) and 9°29.30'N, 171°19.90'E (Station 82) which were located eastward far out in the ocean. **(Author's abstract)**

Keywords: *Physics, Uranium, Moana wave, Oceanic waters*

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0355

Validation of jacs computer code system using criticality data from experiments performed with neutron flux traps containing voids

Petrache, Christina A., Okuno, Hiroshi, Komuro, Yuichi

A benchmark test for the JACS computer code system (MGCL-B-1V, MGCL-J3, MAIL3.0 and MULTI-KENO) has been performed on a set of criticality experiments designed to measure the reactivity effect of voiding in neutron flux trap regions. This is one of a series of benchmark tests which have been undertaken to examine the capability of JAERI's nuclear critically safety evaluation JACS code system.

Ten experiments have been calculated and the effective multiplication factor using MGCL-B-IV has a mean of 0.9947 ± 0.0025 while that with the MGCL-J3 has a mean of 0.9893 ± 0.0024. **(Author's abstract)**

Keywords: *Physics, JACS computer code system, Neutron flux traps, JAERI's nuclear critically safety evaluation*

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SCIENCE AND TECHNOLOGY

0356

Antibacterial activity of knitted cotton fabrics dyed with natural dyes

LeaÃ±o, Jr., Julius L., Malabanan, Jenice P., Cabansag, Jeannie Lynn J.

Scoured and bleached knitted cotton were pre-mordanted with either copper sulfate ($CuSO_4.5H_2O$) or alum ($KAISO_4.\ 12H_2O$) solution. Same cotton fabrics were dyed with the crude aqueous extracts from fresh *Coleus blumei* (mayana) leaves, *Swietenia macrophylla* King (mahogany) barks, young *Cocos nucifera* (coconut) husks, fresh *Terminalia catappa* (Indian almond) leaves, *Bixa orellana* (annatto) seeds and *Tamarindus indica* (tamarind) bark. These were extracted using technologies in dye extraction previously established by the Philippine Textile Research Institute (PTRI), while the indigo powder used was obtained from *Indigofera tinctoria* (indigo) leaves using another PTRI-developed technology. All the dyed fabrics were washed throughly then air-dried.

The anti-bacterial activities of the fabrics were evaluated using AATCC Test Method 147-2004 (Parallel Streak Method) using *Klebsiella pneumoniae* and *Staphylococcus aureus*. Results indicated that all the dyed fabrics showed activity against the two bacteria. Further, AATCC Test method 100-2004 using *S. aureus* revealed reduction of bacterial counts between 69.69%-99.99% confirming anti-bacterial property and the bio-functional activity of naturally-dye knitted cotton fabrics. **(Author's abstract)**

Keywords: *Science and technology, Copper sulfate, Alum, AATCC Test Method 147-2004 (Parallel Streak Method), Klebsiella pneumoniae, Staphylococcus aurues*

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(Filipiniana Analytics)
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0357

Color quality and colorfastness of textiles dyed using young *Cocos nucifera* (coconut) husk with copper sulfate-alum mordant system

LeaÃ±o, Jr., Julius L.

Crude aqueous extract of young coconut (Cocos nucifera) husk was used to dye fabrics made of *Musa Textilis* (Abaca), knitted cotton, *Ananas comocus* (pineapple), pineapple-silk, fine (21D) silk and coarse (360D) silk. Colorimetric evaluation revealed that generally alum lightens the color, while $CuSO_4$ tends to darken it. The use of $CuSO_4$/alum mordant system revealed the almost equal influence of each mordant in the resulting *L* values except in the case of fine silk and *M. tectilis* fabrics where

the darkening effect of $CuSO_4$ predominated. Incremental changes caused by varying the mordants were observed in the corresponding *a* and *b* values. Higher color strength, *K/S* values were obtained on fabrics using alum mordant compared to pure $CuSO_4$ or their combination. Further, colorfastness to laundering (AATCC 61-2003) ratings are in the range of 3-4, although predominantly, the laudered samples all turned darker and qualifying the observed change not due to fading but to darkening. The corresponding staining ratings were in the range of 3.5-4.5 using multi-fiber No. 1. The colorfastness to perspiration (AATCC 15-2002) ratings were in the range of 3.5-4.5 with observed yellowing. The staining ratings were in the range of 3-4.5, but ratings of 2 were mostly on cotton mordanted with $CuSO_4$. All the other ratings of the dyed fabrics comply with the minimum staining ratings specified by Oeko Tex 100. The use of $CuSO_4$/alum mordant system further diversified the colorway of *C. nucifera* as it generally maintained the performance of the dye fabrics compared when using either 5% $CuSO_4$ or 5% alum mordants. **(Author's abstract)**

Keywords: *Science and technology, Cocos nucifera, CuSO4, Musa textilis, Ananas comosus*

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(Filipiniana Analytics)
Fil(S) TS1300 S42 v.13 2013

0358

Colorimetry and colorfastness properties of textiles dyed with indigo and top-dyed with other natural dyes

CariÃ±o, Argentina T., Fenoy, Rudy C., Andrade, Cristina H.

The utilization of indigo for the development of a color gamut proves its versatility for a wide range of textile dyeing applications. In this study, indigo was used as a base dye source for the development of a color gamut through its combination with natural dyes such as *Syzygium cumini* (duhat) barks, *Tamarindus indica* (sampalok) barks, *Cocos nucifera* (buko) husks, *Caesalpinia sappan* (sibukao) wood, *Bixa orellana* (annatto) seeds, *Colleus blumei* (mayana) leaves, and *Curcuma longga* (yellow ginger) rhizomes. Evaluation of the different dye combinations resulted to 16 optimized and verified top-dyeing combinations based on crude extracts of *C. nucifera* (buko), *T. indica* (sampalok), *C. blumei* (mayana), and *C. longga* (yellow ginger). These combinations were found suitable for applications on cotton, piña-seda, and silk. Colorimetric analysis also revealed the effect of various shades of indigo dye and mordant systems on the resulting color of the top-dyed textile materials. Finally, colorfastness to laundering and perspiration of the top-dyed textile materials passed the standard value in terms of color change and staining. **(Author's abstract)**

Keywords: *Science and technology, Syzygium cumini (duhat) barks, Tamarindus indica (sampalok) barks, Cocos nucifera (buko) husks, Caesalpinia sappan (sibukao) wood, Bixa orellana (annatto) seeds, Colleus blumei (mayana) leaves, Curcuma longga (yellow ginger) rhizomes*

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(Filipiniana Analytics)
Fil(S) TS1300 S42 v.11 2011

0359

Commercial activated carbon as sequestering agent of copper (II) in buko (*Cocos nucifera*) dye effluent

CariÃ±o, Argentina T.

An economical and effective technology on treating *buko* (*Cocos nucifera*) dye effluents was developed using commercially available activated carbon produced from reactivated granular coal with a mesh size of 12x40. The activated carbon served as an effective adsorbent to remove and/or reduce the copper (II) content in *buko* dye effluents obtained from various textile materials. At 5% activated carbon, the copper (II) was effectively removed from the effluents thereby complying with the *Department of*

Environment and Natural Resources Administrative Order (DENR AO) 2008 on Water Quality Guidelines and General Effluent Standards stated setting a maximum of 0.02 ppm of copper in the effluents. The pH was correspondingly adjusted to the required standard of 6.5 to 9. The developed treatment method, however, was not suitable in decolorizing the *buko* dye effluents due to the nature of the colored compounds present in it. The developed technology was found to be effective in terms of material cost, high-adaptability, and biodegradability. **(Author's abstract)**

Keywords: *Science and technology, Cocos nucifera, Activated carbon, Copper*

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(Filipiniana Analytics)
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0360

Comparative evaluation of 25-m skein and 80-m skein length in yarn shrinkage determination

Jurado, Rowena Caridad C., Pico, Mirasol D.

The American Society for Testing and Materials (ASTM) D 2259 is the standard test method for yarn shrinkage. A 25-m skein length was compared to the standard 80-m skein for yarn shrinkage by the boiling water exposure using different types of yarn to save on time in sampling preparation and to lessen the tension weight used which is strenuous to the testing personnel.

The Student's t-test for paired data was applied for the evaluation of the length. Results showed that the two skein lengths were not significantly different. Therefore, a 25-m can be used as a replacement for the 80-m skein length. **(Author's abstract)**

Keywords: *Science and technology, American Society for Testing and Materials (ASTM), Yarn shrinkage, Student's t-test*

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(Filipiniana Analytics)
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0361

Controlled-release of citronella and lavender oils on monochlorotriazinyl-ß-cyclodextrin-grafted naturally-dyed cotton

CariÃ±o, Argentina T., Gomez, Gilbert V.

A method of creating a controlled-release system (CRS) for cotton fabrics with fragrance-release properties through the grafting of monochlorotriazinyl-ß-cyclodextrin (MCT-ß-CD), which also served as the host molecule for the organic oils. Infusion of citronella and lavender oils to the MCT-ß-CD-grafted cotton fabrics were separately conducted by pad-dry-cure method. Kjeldahl analysis of the grafted MCT-ß-CD revealed 0.03% maximum nitrogen. Different natural dyes also affected the grafting of MCT-ß-CD onto the fabrics as seen from the varying percentage of nitrogen values obtained from the Kjeldahl analysis. Amount of oils infused in the cotton fabric was also analyzed using gas chromatography via headspace sampling to quantify the amount of the volatilized oils from the fabric. Results showed that MCT-ß-CD-grafted cotton fabrics can hold a maximum of $4.5x10^{-3}$mg oil per gram of fabric after infusion with separate ethanolic solutions of both citronella and lavender at 16% (vol/vol) concentrations. Further, the developed functionalized cotton fabrics were able to retain the scents for six days in ambient conditions. **(Author's abstract)**

Keywords: *Science and technology, Controlled-release system (CRS), Citronella, Lavender*

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(Filipiniana Analytics)

Fil(S) TS1300 S42 v.11 2011

0362

Correlation of the single fiber breaking tenacity and elongation of polyester fibers at 25 and 10 millimeters gauge lengths

Rafols, Rocelia A., Mallari, Ma. Yehsa G.

Polyester fiber is one of the most common raw materials used in the textile industry. Breaking tenacity and elongation are the important properties of fibers which have direct effect on yarn strength and elongation. These properties of man-made fibers like polyester, can be determined through the single fiber method using different equipment and different gauge lengths. In this study, the Instron Universal testing Machine 5566 was used. Specimens for the samples were prepared and tested using 25 mm and 10 mm gauge lengths. It was found that the breaking tenacity has a strong evidence of positive correlation while the elongation has no relationship at all between the two gauge lengths. In cases of disputes arising from differences in reported breaking tenacity test results when the two gauge lengths were used, this study can be helpful in the resolution. (**Author's abstract**)

Keywords: *Science and technology, Polyester fiber, Instron Universal Testing Machine 5566, 25 mm gauge, 10 mm gauge*

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(Filipiniana Analytics)
Fil(S) TS1300 S42 v.9 2009

0363

Curcuminoid contents of water extracted-spray dried and acid extracted-air dried yellow ginger (*Curcuma longa* L.) Dye powders

Belmonte, Christopher J.

Yellow ginger (*Curcuma longa* L.) is a good source of orange-yellow color pigment that consists of a mixture of curcuminoids, namely, curcumin, demethoxycurcumin, and bisdemethoxycurcumin. This study aims to evaluate the curcuminoids in the yellow ginger dye powder produced using the Philippine Textile Research Institute's (PTRI) developed powder production methods, namely; the water extraction-spray drying and acid extraction-air drying. The dye powders were subjected to thin-layer chromatography (TLC) and ultraviolet-visible (UV-Vis) spectroscopy and compared with a curcuminoid standard. The chromatogram of the powder produced by the water extraction-spray drying method revealed one spot, which was assumed as bisdemethoxycurcumin, while the acid extraction-air drying method showed the presence of the three pigments identical to the standard. The calibration graph using UV-Vis spectophotometer revealed that the water extracted-spray dried powder has 0.6% curcuminoids while the acid extracted-air dried has 16% curcuminoids. Results obtained indicated the positive advantage of the latter method over the former procedure. **(Author's abstract)**

Keywords: *Science and technology, Yellow ginger (Curcuma longga L.), Zingeberaceae, Thin-layer chromatography (TLC), Ultraviolet-visible*

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(Filipiniana Analytics)
Fil(S) TS1300 S42 3/2 2003

0364

Development of laboratory method for the simultaneous determination of gross alpha and gross beta activities in water by liquid scintillation counting

Sucgang, Raymond J., Pabroa, Preciosa Corazon B., Mendoza, Norman DS., CastaÃ±eda, Soledad S.

The Philippine National Standards for Drinking Water (PNSDW) includes the determination of the radiological quality of drinking water to ensure that water is safe from contamination due to fallout, or suspected sources of radiological impurities. The standard limits are: 0.1 Bq/L for gross alpha counts and 1.0 Bq/L for gross beta counts. A liquid scintillation (LSA) based method that requires smaller sample quantities, less sample preparation time and operator intervention, and produces adequate minimum detection levels for local drinking water guidelines has been developed. It involves the enrichment of the sample 10 times by evaporation and counting for two hours, the alpha and beta emissions simultaneously by pulse shape analysis using the Guardian 1414 liquid scintillation counter. The method overcomes the self-attenuation problems typical of high dissolved solid waters and gas flow proportional counting that was previously used. Additionally, the need to evaporate large volumes of water, quantitatively transfer residues to counting planchets and developing operator skills in producing homogeneous and evenly distributed samples are eliminated. Operator intervention is also minimized during sample preparation and counting. This resulted in the reduction of analysis time to 1/5 and analysis cost to 1/3 from that using the former procedure. The detection limits: 0.03 -0.06 Bq/L for alpha and 0.2-0.5 Bq/L for beta, are sufficiently low for the required regulatory limits. Detection limits of $\leq$0.05 Bq/L for gross alpha and $\leq$0.3 Bq/L for gross beta were achieved for a total of two hours counting per sample. **(Author's abstract)**

Keywords: *Science and technology, Radiological testing, Water, Liquid scintillation, Gross alpha, Beta*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0365

Dyeing and fastness properties of textiles dyed with *C. blumei* (*Mayana*) leaf extract

Malabanan, Jenice P.

The dye extracted from *C. blumei* (mayana) is a potential source of natural colorant for textiles. The dye was extracted through aqueous extraction process by boiling the unsteeped *C. blumei* leaves for 30 minutes to achieve optimum dye release. The collected dye extracts gave yellow green to green shades when applied to cotton, abaca, pineapple-silk fabrics and silk yarns. Mordanting with $CuSO_4$ revealed better affinity of the dye on cotton, silk and abaca while alum mordant is better for pineapple-silk fabrics. This new method of obtaining green shade from one dye source significantly showed better colorfastness to laundering and colorfastness to light ratings compared with the old method which utilized indigo and yellow ginger dye sources. These colorfastness properties then signified that the *C. blumei* leaf extract has high potential as a dye source and further, the new method of employing it is more suitable for textile dyeing. **(Author's abstract)**

Keywords: *Science and technology, C. blumei (mayana), Cotton fabric, Abaca fabric, Pineapple-silk fabric, Silk yarns, CuSO4*

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(Filipiniana Analytics)
Fil(S) TS1300 S42 v.9 2009

0366

Dyeing handwoven pineapple-silk (*Ananas comosus-Bombyx mori*) and abaca (*Musa textilis*) fabrics with aqueous extracts of young coconut husks (*Cocos nucifera*)

LeaÃ±o, Jr., Julius L.

The textile dye potential of young coconut (*Cocos nucifera*) husks was investigated and was found to impart reddish brown and light pinkish brown shades on piña-seda (*Ananas comosus-Bombyx mori*) and abaca (Musa textilis) fabrics. The crude aqueous extract is reddish brown in color with varied shades obtained on the two materials by simply varying the choice of mordant. Darker shades were obtained from copper sulfate mordanted materials while lighter shades were obtained from the alum-mordanted samples. Although pH is not critical in modifying the color of the extract and the shades it produces, addition of acid was found to be detrimental to the colorfastness to laundering (CFL) color change ratings. Better CFL (color change) results were generally obtained from less concentrated dye extract but staining ratings were all very satisfactory. Ferrous sulfate succeeded in deepening the shade of the extracts but it led to a dramatic decline in color change although superior CF to rubbing were noted from the dried samples but low with wet samples. **(Author's abstract)**

Keywords: *Science and technology, Pineapple-silk (Ananas comosus-Bombyx mori) fabrics, Abaca (Musa textilis) fabric, Young coconut husk*

PTRI Samay Bulletin, Volume No. Issue No. , 7-14
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.9 2009

0367

Ecological footprint of the National Capital Region households: bridging the gap between nutrition and environment

Serafico, Michael E., Espinoza, Marilen M., Perlas, Leah A., Tanchoco, Celeste C.

The impact/influence of environmental conditions on the nutritional status of the National Capital Region (NCR) households in the Philippines was studied. Ecological Footprint (EF), an indicator that measures how much nature is used to produce resources and to absorb wastes by means of existing technologies and thereby translates it in terms of land area, was utilized to assess each household's consumption pattern. A questionnaire was prepared to obtain the data needed to utilize the EF worksheet developed by Wackernagel and Rees. Body Mass Index (BMI) was used to assess the nutritional status of the household members. Data on weight and height of each household member were taken from the 7th National Nutrition Survey (NNS) conducted by the Food and Nutrition Research Institute (FNRI) in 2008. The calculated EF of the NCR was 4.6666 global hectares per person (gha/person). Quezon City topped the list with 1.2048 gha/person while the only city living within the sustainable limits of its boundaries was Mandaluyong City with 0.4143 gha/person. The highest consumption category contributing to the total EF of all cities was the food category while pasture and arable lands topped the land-use components. About 60% of the participants lived within the city's resources and 70% had normal BMI. A significant correlation was recognized between the nutritional status of the population studied and the environment in terms of EF. Household size was found to be a factor for both EF and nutritional status. **(Author's abstract)**

Keywords: *Science and technology, Ecological footprint, Environment, Nutrition, Sustainability*

Philippine Journal of Science, Volume No. 141 Issue No. 1, 67-75
(Filipiniana Analytics)
Fil(S) Q1 P55 141/1 2012

0368

Effect of exposure and refrigeration duration on bivoltine silkworm eggs hatchability

Basaen, Adelfa M., Kim, Kye-Myeong, Boedts, Bruno, Delos Reyes, Rosemarie

The relationship of exposure and cold storage duration of silkworm eggs was studied to determine its effect on the hatchability. Two bivoltine silkworm hybrids, PTRI SW 3 and PTRI SW 4, produced locally under semi-temperate conditions were tested by subjecting these under seven different exposure durations of 25°C and four refrigeration or cold storage periods of 31 days, 50 days, 60 days and 70 days at 5°C – 7°C.

The results revealed that three days of exposure at 25°C gave the highest hatching percentage. On the other hand, the highest hatchability for PTRI SW3 was attained with cold storage of 70 days while PTRI SW 4 required 90 days. The effect of the combination of exposure and refrigeration periods proved that newly laid silkworm eggs exposed for longer period must undergo longer refrigeration to break the diapause to give higher hatchability. **(Author's abstract)**

Keywords: *Science and technology, Morus alba L., Bombyx mori L., Bivoltine silkworm eggs, Hibernating silkworm eggs*

PTRI Samay Bulletin, Volume No. 3 Issue No. 2, 11-17
(Filipiniana Analytics)
Fil(S) TS1300 S42 3/2 2003

0369

The effect of relative humidity to fabric weight

Rafols, Rocelia A.

The study is conducted to determine the effect of relative humidity (RH) to the mass or weight of woven fabrics made of pure cotton, polyester/cotton, and polyester/cotton/piña. The fabric weight or mass was measured at 60%, 65%, and 70% RH at the PTRI Testing Laboratory in accordance with ISO 3801. Results revealed that there is no significant difference on the obtained fabric weights at different relative humidities. **(Author's abstract)**

Keywords: *Science and technology, Relative humidity, Fabric weight, Pure cotton, Polyester/cotton, Polyester/cotton/piÃ±a*

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(Filipiniana Analytics)
Fil(S) TS1300 S42 v.8 2008

0370

Effect of type of washing machine and temperature on the dimensional change of woven cotton fabrics

Rafols, Rocelia A., Jurado, Rowena Caridad C.

Pure cotton woven fabrics were subjected to one cycle of washing using top loading and front loading type washing machines at temperatures 30°C and 40°C. Since the two types of washing machines have different operation principles, the detergent, water, load and drying temperature were kept constant for all specimens to investigate the effect of the type of washing machine and temperature on the dimensional change of fabrics.

The t-test was used for the four sets of comparisons and it was found that the type of washing machine and temperature have no effect on the dimensional change of heavy weight plain woven pure cotton fabric while the light weight fabric is affected by the type of washing machine and not by the change in temperature. The dimensional change of the medium weight fabric is affected by the use of different types of washing machines and temperatures. **(Author's abstract)**

Keywords: *Science and technology, Pure cotton woven fabrics, Drying temperature, T-test, Detergent, Washing machine temperature*

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(Filipiniana Analytics)
Fil(S) TS1300 S42 v.9 2009

0371

Effective alkaline solution for silkworm egg glue removal

Inumpa, Arnold M., Espiritu, Zoraida R., Bayeng, Fermin O., Bacuso, Paul M.

A study aimed to determine locally available alkaline solutions for silkworm egg glue removal was conducted. The study tested sodium hypochlorite (NaOCl), calcium hypochlorite ($Ca(OCI)_2$) and potassium hydroxide (KOH) in ten concentration levels, from 1,000 to 10,000 ppm. The test eggs were soaked in the respective solutions for 10 minutes, washed, acid treated and incubated to hatch for assessment.

On the basis of percentage hatchability, percentage brushed worms and dead eggs, the study revealed that NaOCI, $Ca(OCI)_2$ and KOH at 5,000 ppm can be safely used to dissipate silkworm egg glue. **(Author's abstract)**

Keywords: *Science and technology, Sodium hypochlorite (NaOCI), Calcium hypochlorite (Ca(OCI)2), Potassium hydroxide (KOH), Silkworm egg glue removal*

PTRI Samay Bulletin, Volume No. Issue No. , 16-23
(Filipiniana Analytics)
Fil(S) TS1300 S42 v5 2005

0372

Egg laying performance of cold stored Chinese (C102) female silkworm (*Bombyx mori*) moth

Bayeng, Fermin O., Inumpa, Arnold M., Espiritu, Zoraida R., Bacuso, Paul M.

The effect of cold storage duration of Chinese, C102, female moth on egg laying performance was studied. The moths were stored at 24, 48, 72, 96, 120 and 144 hours before they were mated with Japanese, J102, male moths. Results revealed that Chinese, C102, female moths cold stored at 5°C from 24 to 96 hours yielded the most number of eggs fertilized and laid, and that extended duration of 120 to 144 hours produced the least number of eggs fertilized and laid and yielded the most number of unlaid eggs, unfertilized eggs and dead eggs. Thus, it is recommended that if non-synchronization occurs, Chinese, C102, female moths may be stored at 5°C for 24 to 96 hours while awaiting for male moths for copulation. **(Author's abstract)**

Keywords: *Science and technology, Cold stored chinese (C102), Bombyx mori, Unlaid eggs, Unfertilized eggs, Dead eggs*

PTRI Samay Bulletin, Volume No. Issue No. , 1-5
(Filipiniana Analytics)
Fil(S) TS1300 S42 v5 2005

0373

Ethnic designs utilizing multi-harness handlooms for the weeving industry in Central Cordillera Ethno Groups

Hayin, Jovita A., Listano, Henry R., Garlitos, Josefa L., Lim, Michael P., Llorico, Cora P., Rico, May S.

The possibility of executing existing weave design from various ethnic groups in multi-harness handlooms, such as four-harness upright loom, countermarch handloom, and dobby loom available at the Philippine textile Research Institute (PTRI), was

explored. Utmost consideration on replicability, quality, and efficiency of production and flexibility was made on the seven collected ethnic designs which were produced either in the back strap or two-harness handlooms by the Central Cordillera ethno groups located in Kalinga, Ifugao, Abra, and Sagada.

All seven designs were executed using polyester and cotton threads in the multi-harness handlooms with some limitations on one-double-designed fabric from Kalinga. **(Author's abstract)**

Keywords: *Science and technology, Four-harness upright loom, Countermarch handloom, Dobby loom, Polyester threads, Cotton threads*

PTRI Samay Bulletin, Volume No. Issue No. , 12-17
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.11 2011

0374

Extraction and characterization of achuete (*Bixa orellana*) dye powder and its application to cotton and silk

LeaÃ±o, Jr., Julius L.

Dyes from achuete seeds were extracted using ethanol at different liquor ratios (LR) and agitation time. The powders obtained were oven-dried at 60°C and were characterized using UV-Vis spectrophotometry and FT-IR spectroscopy. The λ_{max} of the aqueous alkaline dye solution is 451nm and is stable to prolonged heating. The FT-IR spectrum suggests the presence of bixin and norbixin pigments in the powder. Adsorption curves (isotherms) reveal rapid dye absorption during the first 30 minutes and slows down after 60 minutes for all the mordanted fabrics. Different concentrations of the aqueous alkaline dye powder solution were applied to alum and copper sulfate mordanted cotton and silk materials under varied dyeing time. Color yield was found dependent on the mordant used whereas the colorfastness (CF) to laundering was not affected by the dyeing time. CF to laundering rating is 3.5 for cotton and 4.0 for silk. **(Author's abstract)**

Keywords: *Science and technology, Achuete (Bixa orellana), Cotton, Silk, Natural dying*

PTRI Samay Bulletin, Volume No. Issue No. , 9-17
(Filipiniana Analytics)
Fil(S) TS1300 S42 v7 2007

0375

Extraction and dye application of crude and powdered indigo (Indigofera tinctoria) from Ilijan, Bago City, Negros Occidental: an R&D an technology transfer experience

LeaÃ±o, Jr., Julius L., Cabansag, Jeannie Lynn J., Fenoy, Rudy C.

Through a memorandum of agreement between the Philippine Textile Research Institute and the Non-Timber Forest Products – Task force (NTFP-TF), a seminar-workshop on the production of indigo cake and the application of crude indigo extract on abaca and piña fabrics was conducted on 25-26 August 2009. Members of the Ilijan Sustainable Farmers Association of Brgy. Ilijan, Bago City, Negros Occidental benefited from the training. The participants expressed their appreciation on natural dyeing and its economic impact on their livelihood. The indigo plant abundant in the place was also evaluated. Promising results were obtained as regards color quality using spectrophotometer and colorfastness performance using AATCC Method 15-2007 (colorfastness to perspiration) and AATCC Method 61-2007 (colorfastness to laundering). **(Author's abstract)**

Keywords: *Science and technology, AATCC Method 61-2007 (colorfastness to laundering), Crude indigo extract, Non-timber forest product - task force (NTFP-TF), Ilijan, Bago City, Negros Occidental, AATCC Method 15-2007 (colorfastness to perspiration)*

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(Filipiniana Analytics)
Fil(S) TS1300 S42 v.10 2010

0376

Extraction, characterization, and application of native chitosan from crab (Portunus pelagicus) shells as biomordant and anti-microbial finish for naturally-dyed textiles

Uson, Rachael A., Fenoy, Rudy C.

Chitosan is a high-molecular-weight linear polycationic heteropolysaccharride, comprising copolymers of ß-1,4-linked D-glucosamine and *N*-acetyl-D-glucosamine. In this study, chitin was extracted from crab (*Portunus pelagicus*) shells by demineralization and deproteinization, and then converted to chitosan through deacetylation. The produced chitosan and standard commercially-available chitosan from Sigma-Aldrich were compared by UV-Vis spectrophotometer and Fourier Transform Infrared Spectroscopy (FTIR). The spectra revaled the same profile and confirmed that the native chitosan was successfully extracted from crab shells. Treatment parameters such as pH, steeping time, temperature and percent chitosan loading were optimized using standard chitosan for application onto silk (*Bombyx mori*) yarns, abaca (*Musa textilis*), cotton (*Gossypium spp.*), and pineapple-silk (*Ananas comosus-Bombyx mori*) fabrics. The optimized parameters were applied to said materials using the native chitosan and then dyed with aqueous talisay (*Terminalia catappa*) leaf extracts using established dyeing procedures. Knitted cotton fabrics were applied with chitosan through pad-dry-cure approach using a laboratory-scale padding mangle. The antimicrobial activity of dyed, chitosan-treated samples, native and standard, was evaluated for activity against Staphylococcus aureus using AATCC Test Method 100-2004. Results showed the comparable antimicrobial activity of the native and standard chitosan as shown in the assays. Physical properties including colorfastness to perspiration and laundering using AATCC Test Methods 61 and 15, respectively, were conducted and revealed ratings ranging from 3.5 to 4.5 in the gray scale. The colorimetric properties assessed using the CIE *Lab* color space with illuminant D65 at 10° standard observer were also noted. The added functionality of chitosan applied using a straightforward approach enables the development of functional and anti-microbial all-natural Philippine textiles. **(Author's abstract)**

Keywords: *Science and technology, Portunus pelagicus, Fourier Transform Infrared Spectroscopy (FTIR), AATCC Test Method 100-2004, Bombyx mori, Gossypium spp., Musa textilis, Terminalia cattapa*

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(Filipiniana Analytics)
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0377

Hatchability and cocoon characteristics of triple-cross F1 silkworm hybrids

Pia, Gerrylou Sweet M., Ompoy, Serenita S.

This study was conducted to evaluate the cocoon characteristics of eight newly developed triple-cross F1 hybrids. Three rearing trials were conducted and the hatching percentage, number of cocoons per 500 grams, cocoon shell percentage, and filament length of each hybrid were determined. The values obtained were statistically analyzed and were also compared to the Philippine Textile Research Institute (PTRI) standard set for silkworm hybrids.

Five triple-cross hybrids passed the Philippine Textile Research Institute-Technology Center, Misamis Oriental (PTRI-TC, M.O.) standard for good hatching percentage, namely: PTRI SW-300, PTRI SW-301, PTRI SW-304, PTRI-SW-306 and PTRI SW-307. As to the number of cocoons per 500 grams, only PTRI SW-301 passed the PTRI standard. For cocoon shell percentage, all hybrids, except hybrids PTRI SW-300 and PTRI SW-301, passed the PTRI standard. However , all eight did not meet the standard for filament length. Results showed no significant differences among the eight triple-cross hybrids in terms of hatching percentage, number of cocoons per 500 grams, cocoon shell percentage and filament length properties.

Although there may be no remarkable or superior qualities observed among the eight new hybrids that would compensate for the longer breeding process required to produce them, the aim to develop new triple-cross hybrids and determine the economic characteristics for future references were accomplished. Continued crossbreeding activities are therefore recommended for other silkworm parent lines to develop better and promising silkworm hybrids. **(Author's abstract)**

Keywords: *Science and technology, Cocoon, Triple-cross F1 silkworm hybrids, Cocoon shell*

PTRI Samay Bulletin, Volume No. Issue No. , 1-8
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.8 2008

0378

HPLC elution programs for carcinogenic amines from azo dyes

Reconose, Marina V., Lopez, Daisy C.

Neat methanol (MeOH) and MeOH:H_2O (7:3) have been reported as suitable eluants for quick screening by high performance liquid chromatography of the eight carcinogenic amines from azo dyes. This paper covers 11 standard amines eluted with neat MeOH, MeOH:H_2O (7:3, 6:4), acetonitrile (CH_3Cn), and buffer solution using isocratic and gradient techniques. Results showed that for the 11 amines considered (a) isocratic elution with MeOH:H_2O [7:3] is the most suitable eluant for quick screening, (b) the less hazardous MeOH/Buf [15/80] is suitable for preliminary identification of amines that overlap at MeOH:H_2O [7:3], (c) CH_3CN/Buf [28/28/60/60]t55 is the best elution program, and (d) the toxic CH_3CN should be used only when Amn13 and Amn22 are suspected to be present. **(Author's abstract)**

Keywords: *Science and technology, Neat methanol (MeOH), Carcinogenic amines, Azo dyes*

PTRI Samay Bulletin, Volume No. Issue No. , 32-39
(Filipiniana Analytics)
Fil(S) TS1300 S42 v5 2005

0379

Hybrid vigor of double cross *Bombyx mori* silkworms

Lopez, Cheryl G., Ompoy, Serenita S., Salon, Michael Vincent E., Liguan, Ronnie M.

A study was conducted to assess the hybrid vigor of double cross silkworm hybrids namely PTRI SW 2000, 2001, 2002, and 2003. These hybrids came from crossbreeding silkworm inbred parents of Japanese and Chinese races. The study showed that when compared to their parental origins, the improvement of the double cross hybrids was significantly better in terms of larval weight, cocoon size, cocoon weight, and shell weight, filament length, filament weight, and filament size. Moreover, the hybrids satisfactory met the PTRI requirements for these economic parameters. Among the four, PTRI SW 2001 performed best. **(Author's abstract)**

Keywords: *Science and technology, Bombyx mori, Hybridization, Hybrid vigor of double cross*

PTRI Samay Bulletin, Volume No. Issue No. , 1-6
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.12 2012

0380

Larval and cocoon quality of four Mindanao silkworm (Bombyx mori) F1 hybrids

Lopez, Cheryl G., Ompoy, Serenita S.

The performance of four Mindanao silkworm F_1 hybrids namely PTRI SW 101, 102, 103, and 104 was evaluated in terms of larval characteristics and cocoon quality. The hybrids were found to exhibit similar egg qualities and larval characteristics and performed within the standard in terms of average single cocoon weight, average cocoon yields, and average cocoon shell weight.

The visual inspection of cocoon classification, aided by the combined results of single weight, shell ratio, and live pupal percentage showed that about 57.13% of the actual dried cocoons of Mindanao F_1 hybrids reeled were graded as Class A. Moreover, based on mechanical testing and the international standard classification, the hybrids got the highest reelability mark of 5A grade, indicating their good performance in the reeling process. when cocoon filament length mark was considered, however, all the hybrid cocoons received a final grade of Class C.

A two-sample t-test comparison showed that all the four Mindanao F_1 hybrids have significantly heavier cocoon weight and longer filament lengths than their parental origins. **(Author's abstract)**

Keywords: *Science and technology, Silkworm F1 hybrids, Cocoon, Bombyx mori*

PTRI Samay Bulletin, Volume No. Issue No. , 1-11
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.11 2011

0381

Manually operated miniaturized carding and fiber opener

Pechera, Ronald S., De Leon, Marites , Mangalindan, Nora B.

The invention relates to a simplified manually operated laboratory carding machine which can perform multiple tasks, such as fiber opening and cleaning, at the same time.

The machine consists of four wooden cylindrical drums with metal card clothing each concentrically aligned by shaftings to perform carding/cleaning and opening actions on the fibers being fed. The carding motion of the drum cards is synchronized through the chain and sprocket assembly and relayed by a metal/wood hand crank. The development and adoption of the machine, coupled with an available hand spinning machine can provide significant impetus to the handicrafts and hand weaving industry of the country. **(Author's abstract)**

Keywords: *Science and technology, Miniaturized carding and fiber opener, Water hyacinth, Saluyot*

PTRI Samay Bulletin, Volume No. Issue No. , 23-28
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.12 2012

0382

Mechano-physical properties of enzyme-treated *Musa textilis* (abaca) fibers

Cabansag, Jeannie Lynn J., LeaÃ±o, Jr., Julius L.

Treatment of knotted abaca (*Musa textilis*) fibers with enzymes affording the substrate specific removal of noncellulosic impurities such as pectin, fats, waxes, lignin, and xylans was studied and compared with the conventional alkaline method of scouring.

M. textilis fibers were treated with commercially available pectinase, cellulase, protease, and xylanase at varying pH,

temperature, surfactant and enzyme concentrations, and treatment duration. Physico-mechanical properties of treated fibers were evaluated in terms of % weight loss, whiteness, and tensile strength and compared with alkaline scoured fibers. Whiteness index was assessed using the CIE *L*a*b** data expressing color in tri-stimuli values. Results showed that the efficiency of enzyme treatment on the fibers were comparable with the mechanical properties of alkaline treated fibers and exhibited better tensile strength. The use of enzymes in pre-treating *M. textilis* fibers offers a greener alternative to the conventional alkaline pre-treatment process. **(Author's abstract)**

Keywords: *Science and technology, Musa textilis, Pectinase, Cellulase, Protease, Xylanase*

PTRI Samay Bulletin, Volume No. Issue No. , 49-54
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.13 2013

0383

Natural dyes technology intervention to the *T'nalak* weavers of Lake Sebu, South Cotabato

LeaÃ±o, Jr., Julius L.

The traditional dyeing practices on the tinalak of the T'boli weavers in Lake Sebu, South Cotabato was assessed to suit the proposed intervention. The evaluation revealed the low productivity and lack of systematic dyeing procedure which often compromised the quality of the dyed materials. In addition to the still existent natural dyeing practices, the use of natural dyes was introduced. Having recognized it, the Philippine Textile Research Institute introduced a technology, which sought to instill a more systematic, standard and scientific approach in dyeing abaca fibers and is akin to an age old tradition in natural dyeing. Fiber pre-treatment was introduced to clean and render a whiter appearance of the fibers prior to dyeing. Some of the local dye sources used include tungog (roots of Morinda citrifolia), yellow ginger (rhizomes of Curcuma longga), and the native kinalum (leaves of Diospyrus sp.). The use of sibukao (wood of Ceasalpinnia sappan), talisay (leaves of Terminalia cattapa), annatto (seeds of Bixa orellana) and mahogany (Switeenia macrophylla King) was also introduced to obtain the much-desired red, black and orange and brown colors. Standardizing techniques of the local dye sources were likewise pursued.

The assimilation of the PTRI technology in natural dyeing was found to have increased the overall quality, and productivity and likewise improved the aesthetic appeal of the tinalak. These findings ascertained the successful intervention of PTRI in sharing the systematic process of natural dyeing in the T'boli weavers. **(Author's abstract)**

Keywords: *Science and technology, T'boli weavers, Traditional dying, Natural dying, Tungog (roots of morinda citrifolia), Yellow ginger (rhizomes of curcuma longga), Native kinalum (leaves of diospyrus sp.), Sibukao (wood of ceasalpinnia sappan), Talisay (leaves of terminalia cattapa), Annatto (seeds of bixa orellana), Mahogany (switeenia macrophylla king)*

PTRI Samay Bulletin, Volume No. Issue No. , 9-15
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.8 2008

0384

Performance of J102 and C102 parent silkworm races under La Trinidad, Benguet conditions

Inumpa, Arnold M., Espiritu, Zoraida R., Bayeng, Fermin O., Bacuso, Paul M.

The study assessed the survival and egg laying performance of two silkworm parents, J102 and C102 on a trimestral (mar-June-November) regular egg production cycle of the Phlippine Textile Research Institute Technology Center La Trinidad, Benguet from 2002 to 2006. The 1998 data were utilized as control. It employed five parameters - pupation percentage, mortality, fecudity, percentage of fertilized eggs and hatching percentage of eggs to describe the performance of the two silkworm parent races. The study concluded on the bases of the five parameters employed that the two silkworm parents are still performing well

on its 24th generation and recommended that these can still be used for commercial silkworm egg production until replacement strains are. **(Author's abstract)**

Keywords: *Science and technology, J102, C102, Silkworm races, Silkworm egg production*

PTRI Samay Bulletin, Volume No. Issue No. , 21-26
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.8 2008

0385

Performance wear test evaluation of two PTRI-developed indigenous fiber-based fabrics

Mangalindan, Nora B.

The performance of two indigenous fiber based fabrics from cotton/polyester/pineapple and cotton/polyester/kenaf blends developed by the Philippine Textile Research Institute (PTRI) was evaluated through actual wear test. Eighty female and 20 male respondents strictly followed the instructions in the conduct of the performance test for six wearings. A survey questionnaire was distributed to record observations specifically on the fabrics' handle expressed in terms of softness, smoothness, comfort and itchiness as well as colorfastness of the dyed fabric, strength and fabric weight. The fabrics' properties were also tested using the established methods of test for textiles.

Respondents' ratings and observations revealed that both indigenous fiber based fabrics have promising textile potentials although the fabric handle properties of the resulting fabrics, particularly the kenaf based, still need improvement. Laboratory test results also showed that the fabrics are considerably strong but quite inferior in terms of handle properties. Clearly, there is still a need to improve the fabric finishing technology to minimize their harsh feel and impart the necessary "body" to the fabric. **(Author's abstract)**

Keywords: *Science and technology, Cotton, Polyester, Pineapple, Kenaf*

PTRI Samay Bulletin, Volume No. 3 Issue No. 2, 30-39
(Filipiniana Analytics)
Fil(S) TS1300 S42 3/2 2003

0386

Practical applications and experiences on S&T services

Alvarez, Virmila B.

The paper articulated the various science and technology (S&T) services and interventions of the Philippine Textile Research Institute (PTRI) and highlighted the impact and practical applications for the Small and Medium Enterprises (SMEs)

The PTRI's experiences along this field have addressed the SMEs common problems and could serve as lessons learned to avoid its recurrence. Other SMEs in various regions could relate and find solutions to similar problems and experiences encountered. Recommendations for successful S&T services and interventions were also discussed toward empowering the SMEs. **(Author's abstract)**

Keywords: *Science and technology, Small and medium enterprises (SMEs), Handicraft industry, Textile based cottage*

PTRI Samay Bulletin, Volume No. 3 Issue No. 2, 1-10
(Filipiniana Analytics)
Fil(S) TS1300 S42 3/2 2003

0387

Pre-treatment studies of sweet sorghum non-grain biomass for bioethanol processing

Agrupis, Shirley C., Vadlani, Praveen

Lignocellulosic biomass like the residual non-food biomass from agricultural sector is a potential alternative feedstock for bioethanol. However, the complex cross linking of cellulose, hemicellulose, and lignin make the biomass recalcitrant to hydrolysis for further processing to bioethanol and other products. Hence, pre-treatment is essential as this converts lignocellulosic biomass from its native form. In this study, combination of thermo-chemical was evaluated. The objective was to establish the most appropriate process for sweet sorghum bagasse, which will serve as basis for optimization for other agricultural residues. The thermo-chemical pretreatments were Soda, Kraft, and Organoslov with predetermined amounts of chemical catalysts. They were carried out at constant temperature (170°C), liquid to biomass ratio (10:1), residence time at treatment temperature (60 min), and cooling down (60mins). Hydrothermal process was performed using the same conditions without chemical catalyst. Fiber yield (%) after pretreatment was in a decreasing order from Organoslov (58.75%)> Kraft (51.25)> Soda (38.28) >Water (25.63%). Sugar yields after acid hydrolysis of the pretreated biomass was highest in Soda (30.22%) and Kraft (29.29%) processes. Organoslov was at 15.37% and hydrothermal at 22.77%, respectively. Sugar degradation was at different extents ranging from 8.29-53%. Also, delignification was effected by the pretreatment protocols and was best observed in Kraft process at 70.72%, Soda at 62.49%; Organoslov at 27%, and hydrothermal at 16.64%. High powered microscopy provided clear degradation of the biomass. Soda and Kraft processes gave the best result while hydrothermal process in combination with biological treatment showed promising result for further investigation. **(Author's abstract)**

Keywords: *Science and technology, Biofuel, Lignocellulosic biomass, Feedstock, Pre-treatment, Thermo-chemical*

Transactions of the National Academy of Science and Technology, Volume No. 34 Issue No. 1, page 139
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0388

Properties of S_2 grade fiber from twelve commercial abaca varieties

Hagad, Stela Marie C.

The study was undertaken on S_2 grade fiber from twelve commercial abaca varieties obtained from the Fiber Industry Development Authority that were subjected to the Philippine Textile Research Institute's (PTRI) established pretreatment process for abaca intended for textile processing. It aimed to assess the influence of varietal differences and the differences among the fiber sections on the gum content, tensile strength and fineness of the treated fibers that were divided into top, middle and bottom sections.

Results on the treated fibers revealed that there are significant differences in all fiber properties considered among the three sections within the same variety and across abaca varieties. Maguino variety showed parity in the residual gum and fineness properties for all its fiber sections. Itolaus variety, on the other hand, yielded the finest fiber. Statistical analysis revealed that for all their fiber sections, Maguindanao Black and Bongolanon varieties, have comparable fiber fineness. The varieties that can be grouped together to give a narrow range of variability in fineness are Bongolanon, Maguindanao Black and Inosa; Tinawagang Puti and Itolaus; Linawaan and Laylay varieties. **(Author's abstract)**

Keywords: *Science and technology, Abaca varieties, S2 grade fiber, Musa textilis, Manila Hemp*

PTRI Samay Bulletin, Volume No. Issue No. , 6-15
(Filipiniana Analytics)
Fil(S) TS1300 S42 v5 2005

0389

PTRI intervention on the natural dyeing practices of the Higaonon hinabol weavers of Mintapod, Impasug-ong, Bukidnon

LeaÃ±o, Jr., Julius L.

The traditional dyeing practices on the hinabol of the Higaonon weavers in Impasug-ong, Bukidnon was assessed to suit the proposed intervention. The evaluation revealed the low productivity and lack of systematic dyeing procedure which often compromised the quality of the dyed materials. PTRI introduced a technology, which sought to install a more systematic, standard and scientific approach in dyeing abaca fibers. Fiber pre-treatment using hydrogen peroxide, akali and sodium silicate was introduced to clean and render a whiter appearance of the fibers prior to dyeing. Some of the local dye sources used include tungog (roots of Morinda citrifolia) yellow ginger (rhizomes of Curcuma longga), and the native lila (vine) and ilalama (wood). The use of Sibukao (wood of Ceasalpinnia sappan) was also introduced as a dyeing option to obtain the much desired red color while Talisay (leaves of Terminalia catappa) was used to produce the desired black color. Standardizing techniques of the local dye sources were likewise pursued.

The assimilation of the PTRI technology in natural dyeing was found to have increased the over all quality, and productivity and likewise improved the aesthetic appeal of the hinabol. These findings ascertained the successful intervention of PTRI in sharing the systematic process of natural dyeing in the Higaonon weavers. **(Author's abstract)**

Keywords: *Science and technology, Natural dying, Traditional dying, Tungog (roots of morinda citrifolia), Yellow ginger (rhizomes of curcuma longga), Native lila (vine), Ilalama (wood), Sibukao (wood of ceasalpinnia sappan), Talisay (leaves of terminalia cattapa)*

PTRI Samay Bulletin, Volume No. Issue No. , 26-33
(Filipiniana Analytics)
Fil(S) TS1300 S42 v7 2007

0390

PTRI natural dye application technology for the upgrading of ivatan handicrafts industry in Batanes

Pagkalinawan, Jenice O.

The handicraft industry in Batanes pertaining to the production of souvenir woven products plays an important role in the emerging eco-tourism and cultural tourism programs of the province. Evaluation of the produced crafts revealed a need for improvement with regards to the design, packaging and visual appeal of the products. PTRI's established natural dye extraction and application technologies using yellow ginger (Curcuma longga), talisay (Terminalia cattapa), young coconut (Cocos nucifera) and kogon (Imperata cylindrical) were introduced to the Ivatan handicraft producers through lecture and hands-on training/workshop using their emdemic fibers pandan, vayasuvas, and voyavoy. The experience created knowledge and know-how on new skills that could improve the quality and aesthetic value of their products. Likewise, the scouring and bleaching processes for fibers significantly benefited the fiber producers in maintaining good quality fibers. The intervention provided a more in-depth and efficient method for fiber processing and dyeing to strengthen the marketability of Batanes crafts hence, establishing a more globally competitive industry and at the same time supporting the promotion of eco-tourism in the province **(Author's abstract)**

Keywords: *Science and technology, Yellow ginger (Curcuma longga), Talisay (Terminalia cattapa), Young coconut (Cocos nucifera), Kogon (Imperata cylindrical, Pandan, Vayasuvas, Voyavoy, Batanes*

PTRI Samay Bulletin, Volume No. Issue No. , 31-35
(Filipiniana Analytics)

0391

Rejuvenation of old and unproductive mulberry trees through ground-level pruning

Toring, Pepito M., De Guzman, Zenaida I., Basaen, Adelfa M.

The effect of ground-level pruning in the rejuvenation of old and unproductive mulberry trees was evaluated at the mulberry field of the Philippine Textile Research Institute-Technology Center (PTRI-TC), La Trinidad, Benguet from May 1998 to 2001.

Ground-level pruning was found to be an easier and cheaper method than totally uprooting and replanting a mulberry. Ground-level pruning was completed in just 5 man days to rehabilitate the 800 old mulberry trees. Activities on the preparation of planting materials, land preparation, transplanting and the maintenance of a nursery were eliminated. Consequently, labor cost was decreased to P750.00. Harvest time was substantially shortened and reduced to about 6 months. **(Author's abstract)**

Keywords: *Science and technology, Mulberry (Morus alba), Rejuvenation, La Trinidad, Benguet*

PTRI Samay Bulletin, Volume No. 3 Issue No. 2, 40-44
(Filipiniana Analytics)
Fil(S) TS1300 S42 3/2 2003

0392

Sampling techniques for fabric weight determination of woven fabrics

Jurado, Rowena Caridad C.

Two sampling techniques for fabric weight determination were compared using light, medium, and heavy weight woven fabrics. The first technique using a pneumatic sample cutter is accurate, easy and fast to use but very expensive. The second technique using a template as a guide for the specimen size is a crude method, tedious and time-consuming but very cheap and affordable.

The sampling was done in pairs. Results showed the two techniques were not significantly different, which means that both techniques could be used. Therefore, the use of a simple template as a replacement for a pneumatic sample cutter would be beneficial for testing laboratories that could not afford the exorbitant price of a pneumatic sample cutter. **(Author's abstract)**

Keywords: *Science and technology, Fabric weight determination, Woven fabrics, Pneumatic sample cutter*

PTRI Samay Bulletin, Volume No. 3 Issue No. 2, 23-29
(Filipiniana Analytics)
Fil(S) TS1300 S42 3/2 2003

0393

Sericulture technology center Misamis Oriental through the years

Lopez, Cheryl G.

Sericulture, the growing of silkworms into cocoons, is an ancient activity that can be traced 5,000 years back in China. Its economic importance and fame of its silk products paved the way for its global spread. After a thousand years, it reached the

northern areas of the Philippines. When the Philippine Textile Research Institute (PTRI) received the technology and facilities of sericulture, it established two sericulture stations in Benguet and Misamis Oriental which, over a period of time, were strengthened as a silkworm breeding and multiplication center, shortly called Technology Center (TC). Particularly, Misamis Oriental TC has 58 parent breeds in its silkworm germplasm which came in mostly as hybrids and improved through years of acclimatization, segregation, characterization, and purification. The TC's widely distributed four Mindanao hybrids came from the crosses of four improved Mindanao parent lines. In effect, these local hybrids phenomenally solved the increasing silkworm egg needs for cocoon growers in Mindanao that resulted to the escalation of cocoon production. The various trances of technical and financial assistance from foreign and local agencies significantly contributed in the full development of the TC. After more than 30 years, PTRI's focus on sericulture support shifted to Misamis Oriental TC after the defunct of Benguet TC. Prepared for, yet, another transition of management of the TC from PTRI to DOST-10, it keeps itself ready for future pursuits of development. **(Author's abstract)**

Keywords: *Science and technology, Silkworms, Cocoon, Misamis Oriental*

PTRI Samay Bulletin, Volume No. Issue No. , 29-36
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.12 2012

0394

Simple and effective UV-assisted synthesis of silver nanoparticles in polymethacrylic acid

Manalang, Evangeline Flor P., Cabansag, Jeannie Lynn J.

A simple, inexpensive, and intrinsically non-toxic method of preparing silver nanoparticles via UV-induced reduction of silver ions using polymethacrylic acid (PMA) is reported. Parameters such as source of radiation, concentrations of $AgNO_3$ and PMA and duration of irradiation were optimized to establish a technique of synthesizing silver nanoparticles with minimized aggregation. The radiation source, mechanical action, reactant concentration, and irradiation time have significant effect on the preparation of Ag NPs; and they can be varied to control its size, shape and distribution. Results revealed that 10:1 millimolar ratio of $AgNO_3$ and PMA and 1 h UV irradiation using 8 W UV C lamp with continuous stirring are the optimized condition for the preparation of Ag NPs. Using the optimized parameters, characteristic SPR band at 430 nm wavelength was observed via UV-Vis spectroscopic technique. This confirmed the effective conversion of Ag^+ to Ag^0 and the formation of spherical ag NPs with minimized agglomeration. This method has great potential for scaled-up production of Ag NPs for various industrial applications. **(Author's abstract)**

Keywords: *Science and technology, Polymethacrylic acid, AgNO3, Nanoparticles, Radiation*

PTRI Samay Bulletin, Volume No. Issue No. , 9-22
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.13 2013

0395

Status and prospects of the sericulture industry in the Philippines: PTRI perspective

Casero, Roberto O., Basaen, Adelfa M., Mangalindan, Nora B.

The sericulture industry in the Philippines was reviewed with emphasis on the status and prospects of the industry. The paper presented the major accomplishments of PTRI and its significant contributions in the development of sericulture in the Philippines The government support to the industry was also highlighted, focusing on the role of the Department of Science and Technology (DOST) and the Philippine Textile Research Institute (PTRI) which is one of the government agencies mandated to conduct research and development projects for sericulture, render technical services and provide training program. The paper also reflected the investment opportunities and competitive advantage of the industry, its strengths, and constraints. **(Author's abstract)**

Keywords: *Science and technology, Sericulture industry, Silk fabric, Silkworms, Cocoon*

PTRI Samay Bulletin, Volume No. Issue No. , 37-50
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.12 2012

0396

Treatment of industrial wastewater by chemical coagulation[1]

Martonito, Roselle L., Tumlos, Elvira T.

The use of guar gum, alum, and ferric chloride as well as their combinations was investigated to treat synthetic and textile industry wastewater. The treatments involved the addition of different concentrations of guar gum and varying ratios of guar gum:alum and guar gum:ferric chloride. The speed and duration of stirring as well as the setting time of the coagulation process were constant in all treatments. Coagulants were added to the synthetic wastewater to assess their effectivity in reducing turbidity, total suspended solids (TSS), and chemical oxygen demand (COD), as well as in maintaining the pH to meet the prescribed regulatory effluent standards of the Department of Environment and Natural Resources (DENR).

Results showed that the two best combinations were T1 (50:50 guar:alum) and T4 (80:20 guar:alum). T1 reduced turbidity and TSS by 74.4% and 92.4%, respectively. T4 reduced turbidity by 84.2% and TSS by 83.3%. The COD level increased and the wastewater became more acidic after both treatments.

Using T1 and T4 to treat the textile wastewater, the former was found to be more effective. Turbidity and TSS were reduced by 77.7% and 60.0% with T1, but only by 63.1% and 40% with T4. COD increased while the pH slightly decreased. After two hours of aeration, COD level was reduced but not to the level within the regulatory standards. Except for COD, all the parameters were within the prescribed regulatory effluent standards. **(Author's abstract)**

Keywords: *Chemical coagulation1, Total suspended solids (TSS), Chemical oxygen demand (COD), Science and technology, Guar gum, Alum, Ferric chloride*

PTRI Samay Bulletin, Volume No. Issue No. , 24-31
(Filipiniana Analytics)
Fil(S) TS1300 S42 v5 2005

0397

Utilizing spectral reflectance and vegetation indices of *Bougainvilleae spectabilis* in monitoring particulate air pollution in Metro Manila

Olpenda, Alex S., Paringit, Enrico C.

This research aims to examine the potential of multispectral remote sensing in assessing particulate air pollution at a wider scale and with relative ease wherein plant responses were utilized as indicators of air quality. Major results shows that materials exposed to a polluted area would likely decrease its reflectance mainly from visible to near infrared regions. Vegetation indices such as Ratio Vegetation Index (RVI), Normalized Difference Vegetation Index (NDVI) and Difference Vegetation Index (DVI) including Red Edge Parameter (REP) were utilized to assess potted bougainvillea plants exposed at different pollution level. Further, a spectral mixture analysis (SMA) was made to simulate the effects of exhaust pipe soot to the spectral characteristics of a bougainvillea leaf. The generated data was later used in creating a model thru Partial Least Squares (PLS) regression which produced a 0.91 coefficient of determination. The SMA-based PLS-ran model was then applied to *in situ* measured reflectance of the exposed specimen. Findings reveal an apparent association between the estimated soot content and the Total Suspended Particles (TSP). The same estimation model was also applied to multispectral high-resolution WorldView-2 imageries in producing an interpolated detailed air quality map which shows the spatial extent and concentration of suspended particulate matter. The clearest and least hazed image showed the most reasonable representation of particulate air pollution. The majority of

main roads and intersections have high TSP concentration while lower level of pollution can be seen on rivers, cemetery, parks and mostly of residential areas which all suggests a valid scenario. However, some portion of vegetated areas seem to be unrealistic and does not represent TSP level as anticipated due probably to factors such as atmospheric conditions, canopy biophysical attributes, illumination conditions, soil reflectance as well as viewing geometry. **(Author's abstract)**

Keywords: *Science and technology, Air pollution, TSP, Vegetation index, Worldview-2*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 34/1 2012

0398

Water hyacinth (Eichhornia crassipes) for yarn manufacture

Marin, Eduardo M., De Leon, Marites S., Mangalindan, Nora B.

This study explored the potential of water hyacinth (Eichhornia crassipes) as a source of fiber for yarn manufacture. Extraction of the fibers from fresh stalks of water hyacinth using a fiber decorticating machine yielded 1.7% dry fiber. The decorticated water hyacinth fiber contained 58.8% gum with tensile strength of 8.07 kgf-m/g and fineness of 68.8 denier.

Various treatments were employed to convert the fiber into its spinnable form. Results showed that the yarn from the combined woolenization-degumming treatment exhibited fewer breakages and higher yarn realization with acceptable technical properties. **(Author's abstract)**

Keywords: *Science and technology, Water hyacinth, Woolenization-degumming treatment, Fiber decorticating machine*

PTRI Samay Bulletin, Volume No. Issue No. , 46-54
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.11 2011

SOCIAL SCIENCES

0399

The American protestant missionaries in the "conquest" and "pacification" of the Philippines: a historiographic essay

Jomao-as, Regan P.

This historiographic paper attempts to survey various texts dealing with the American Protestant missionaries in the Philippines towards the end of the 19th century until the early part of the 20th century. It includes an examination of mostly secondary materials written by Filipino and non-Filipino scholars, to see how they view the religion with respect to the colonial project of the United States. In this essay, the term "Christianity" is not understood as a singular or homogeneous concept given that most of the "Christians" in the Philippines belong to two major variants of the religion namely Roman Catholicism and Protestantism.

In general, the essay tries to locate the category of religion in the context of America's colonial enterprise in the Philippines. More specifically, it attempts to look into the role of the Protestant missionaries in the "conquest" and "pacification" of the Philippine Islands and the Filipinos. Not intended as a celebration of the benefits brought by these missionaries, this paper views the religion as a tool, whether willingly or unwillingly, of the colonial project of the US to "pacify" the Filipinos and shape them according to Western values. Some writers assert that "Christianity" was mainly responsible for "civilizing" the natives, saving their souls, and bringing unity to the Islands. On the other hand, others contend that 'Christianity" was used as an instrument for imposing the sovereignty of the colonial masters and molding the native according to the ways and norms of the west.

It is hoped that this paper provides some needed awareness of the issues and debates on Protestant missions in the Philippines and encourage further study of the subject. **(Author's abstract)**

Keywords: *Social sciences, Philippines, Protestantism, Protestant mission, American colonialism or Imperialism, Orientalism, Civilizing mission*

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0400

China as a factor in American policy toward southeast Asia: a review from the nineteenth century to the George W. Bush administration

Clymer, Kenton

This article analyzes the China factor in American relations with Southeast Asia from the 19th century up to the George W. Bush administration. The first important connection between China and Southeast Asia in American eyes came with the Spanish American War and the consequent annexation of the Philippines. The Philippines gave the Americans better access to the fabled China market. With the success of Mao's revolution in China, the United States and China were enemies, and, in the Cold War context, American policy in Southeast Asia was to prevent Chinese gains in the region. When American relations with China warmed in the 1970s, there was a confluence of interests, particularly in the Indochina region. With the end of the Cold War and the surging Chinese economy, as well as successful Chinese diplomacy in Southeast Asia, there has been much debate in the United States about whether China's growing influence in Southeast Asia should be viewed as alarming. This article argues that there is no need for the United States to be unduly alarmed, provided sensible diplomacy is employed by all sides. **(Author's abstract)**

Keywords: *Social sciences, China, China market, The Philippines, Communism, Containment, South China Sea, Vietnam war, Charm offensive*

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0401

Communication and related factors influencing solid waste management practices of households in the Science City of Muñoz, Nueva Ecija

Vera Cruz, MC. M., Paderes, A. S.

This study determined the socio-communication and psychological factors influencing the solid waste management (SWM) practices of households in selected communities of the Science City of Muñoz. The respondents were 372 households who were interviewed.

Correlation analysis showed that educational attainment, occupation, and monthly family income could predict solid waste management practices. Exposure to SWM information and programs, communication approaches using informal contact, small group meeting, seminar-workshop, billboard, poster, brochure/leaflet, film/video were highly significant and positively related to household SWM practices. Home visit was also highly significant although negatively related to household SWM practices. Perceptions of households on SWM indicated that those who fully understood SWM were more convinced about its advantages and have fully practiced SWM.

Multiple regression analysis showed that sex and occupation of the respondent. individual approach particularly home visit and informal contact, and mass approach using billboard and poster significantly influenced the solid waste management practices of the households.

Household problems on SWM included lack or limited information and know how on SWM particularly on sorting, recycling and composting. Garbage collection is not regular in the communities studied. **(Author's abstract)**

Keywords: *Social sciences, Solid waste management (SWM), Psychological factors, Correlation analysis, Communities*

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(Filipiniana Analytics)
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0402

Counselor-client working alliance: its relationship to session impact and counseling effectiveness

Suba, E.S., ClemeÃ±a, R.M.S.

This study investigated the working alliance between counselor and their clients during individual career counseling. It determined the relationship of working alliance to the session impact (micro outcome) and overall counseling effectiveness (macro outcome).

The subjects of the study were 20 first year college students who were undecided on what course to pursue and had a low career maturity level. Five counselors conducted career counseling and each met four clients in three sessions which lasted for 40-50 minutes. Immediately after each session, participants filled up the Working Alliance Inventory and Session Evaluation Questionnaire. Counseling effectiveness was assessed by the Career Exploration Inventory and Goal Attainment Scale.

Results showed that the quality of working alliance between counselor and client is generally defined by bond for counselors and task for clients. Across sessions differences were found in the participants' ratings of working alliance and session impact. However, associations of ratings were found only for depth of sessions. Sessions by session correlations between working alliance and session impact showed significant results, with counselors' rating showing greater association and the middle stage of counseling reflecting highest association for both groups. The effectiveness of counseling was reflected in the significant increase in career maturity levels and high degree of goal attainment of clients at posttest.

Findings underscored the relevance of counselor-client working alliance as viable indices of therapeutic changes that occur within sessions over the course of treatment. Likewise, evidence was shown on the reciprocal relationship between working alliance and session impact and the influence on the former on counseling effectiveness. **(Author's abstract)**

Keywords: *Social sciences, Working alliance to the session impact (micro outcome), Overall counseling effectiveness (macro outcome), Working alliance inventory, Session evaluation questionnaire*

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0403

Integrating science and local knowledge for climate change impacts and vulnerability assessments

Pulhin, Juan M., Cruz, Rex Victor O., Tapia, Marical A., Peras, Rose Jane J., Cantre, Chandyllane G.

This project aims to build the capacity of concerned stakeholders in the province of Albay in assessing the impacts of and their vulnerability to climate change and sea-level rise with the use of a computer modeling system and complemented by the local knowledge of the people. It serves as a pilot site in the Philippines for the assessment of climate change impacts and vulnerability using SimCLIM, a modeling system for examining the effects of climate variability and change over time and space. Case studies in upland and coastal communities, using household survey, participatory rural appraisal techniques, among others, were conducted to demonstrate the assessment. The upland communities were highly exposed to typhoons and El Niño, while the coastal communities were affected by floods and storm surges during typhoons. Adaptation strategies were mostly spontaneous and meant to bear the losses from the impacts. Meanwhile, future climate change and sea-level rise scenarios generated through SimCLIM, using ensembles and SRES (Special Report on Emission Scenarios) A1FI set at high sensitivity, presented a 4-5°C increase in temperature and about 10% increase in precipitation in 2100 in the *barangays* where the upland communities are located, and 1.3-meter sea level rise in the same year in the eastern coast of Albay, where lies the coastal communities. Combining both computer-based modeling system and participatory approaches in the conduct of assessment proved useful, particularly in developing adaptation strategies, as the former demonstrated the 'forward-looking' aspect of climate change while the latter put into context the vulnerability of the group assessed taking into account the non-climatic factors. The approach also familiarized the local communities and other stakeholders with the concepts of climate change. **(Author's abstract)**

Keywords: *Social sciences, Climate change, Sea-level rise, SimCLIM, Vulnerability, Local knowledge*

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0404

Learning styles of engineering technology students and their conceptual understanding on the particulate nature of matter

Marasigan, Elizabeth, Elazegui, Erwin P.

This research study investigated the learning styles of engineering technology students and explored their understanding on the particulate nature of matter. The sample consisted of 40 engineering technology students enrolled in General Chemistry. The study was a descriptive research-causal comparative and design to accomodate both qualitative and quantitative analysis. Qualitative method was used to analyze the inputs of the students in the Visual Conceptual Questionnaire (VCQ). Quantitative method was used in describing the profile of the students learning styles and determined the relationship on the conceptual understanding of the particulate nature of matter. Results showed that out of 40 students, 12 students (30%) were accommodators, 5 students (12.5%) were assimilators, 9 students (22.5%) were convergers and 14 students (35%) were divergers. The students level of understanding is most likely incline towards partial understanding. This suggests that students answers to VCQ on the particulate nature of matter showed partial misconception but indicating some degree of relevance towards the concept. Considering the result of the One- Way ANOVA Test, there is no significant difference between the scores of student on their learning styles. This further connotes that the learning styles of student does not affect their conceptual understanding in the nature of matter. Results of the study also implies that chemistry teachers should also focus on the microscopic level aside from macroscopic level in teaching the nature of matter since it is fundamental in learning the concept of matter. **(Author's abstract)**

Keywords: *Social sciences, Learning styles, Conceptual understanding, Visual conceptual questionnaire, Misconception, Particulate nature of matter*

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0405

The link between extreme poverty and young dependents in the Philippines: evidence from household surveys

Mapa, Dennis S., Albis, Manuel F., Lucagbo, Michael C.

The high level of extreme poverty or those experiencing hunger in the country is the most pressing issue that needs to be addressed by our policymakers. Official government statistics and data from self-rated hunger surveys show an increasing trend in hunger incidence among households. On the one hand, data from the National Statistical Coordination Board (NSCB) show that the percentage of households experiencing hunger almost remained the same from 8.2 percent in 2003 (equivalent to 1.36 million households) to 7.9 percent in 2009 (1.45 million households). On the other hand, the Social Weather Stations (SWS) quarterly surveys on hunger incidence show an increasing trend in the percentage of families that experienced hunger, reaching 21.5 percent (about 4.3 million households) in the 3rd Quarter of 2011, the highest since December 2009. This study looks at the determinants of extreme poverty among households using the data from the Family Income and Expenditures Survey (FIES) by applying the concept of regression discontinuity design to distinguish the characteristics of "extremely poor" (subsistence poor) from "poor" households. Using a *logit* model on the pooled FIES data in 2003, 2006 and 2009, the results show that presence of a young dependent in the household increases the probability that the household will be *extremely poor* by about 4 percentage points, controlling for other factors. Other variables that influence the probability of the household being *extremely poor* are the education of the household head and percentage of cash transfer from abroad. Moreover, regional characteristics such as varying food prices and underemployment rate explain a lot about the probability of the household being *extremely poor*. The study shows that we cannot ignore the evidence linking population growth and poverty. Development policies aimed at addressing poverty incidence in the country must include measures that will manage the country's bourgeoning population. **(Author's abstract)**

Keywords: *Social sciences, Extreme poverty, Regression discontinuity design, Young dependents, Logit model, Population management*

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0406

Self-concept of child laborers in San Jose City public market

Acoba, E.F., Balanag, R.M., Dagdag, J.C., Divina, G.C., Vega, M.O.

This descriptive study was done primarily to determine the relationship between the socio-demographic characteristics, family factors, and self-concept of child laborers in San Jose City Public Market. Questionnaires and interview technique were used for data gathering.

Fifty-five child laborers were interviewed to determine their socio-demographic characteristics and family. Likewise, other factors such as reasons for working and enjoyment in their work were identified.

The study showed that the child laborers have high self-concept. Among the components of self-concept, the children have the highest mean in self-esteem but lowest in locus of control. However, the study also showed that some of the child laborers have low self-concept.

The child laborers were characterized in terms of their socio-demographic characteristics and family factors using frequency counts, percentages and means. The relationship of the socio-demographic characteristics, family factors and other factors with self-concept was determined using Pearson-Product Moment Correlation and Cross Tabulation.

Findings showed significant relationship between the socio-demographic characteristics of the child laborers and self-concept. Specifically, education, status in the job and ambition were significantly associated with the child laborer's self-concept.

among the family factors, mother's occupation was found significantly correlated with the child laborer's self-concept. Other factors such as reasons why they work and enjoyment in their work were found to have significant correlation with the child laborers' self-concepts. **(Author's abstract)**

Keywords: *Social sciences, Socio-demographic characteristics, Family , Child laborer*

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0407

Youth involvement in environmental management in selected barangays of San Jose City

Bumanlag, G.C.E., Datuin, A, Subido, Y.R., Vilar, J.A., Lupdag, A.D.

This study was conducted to determine youth involvement in environmental management in six barangays of San Jose City. It specifically aimed to determine the respondents' socio-demographic characteristics such as age , sex, religion, educational attainment, family income and organizational affiliation. It also aimed to find out the association of the respondents' socio-demographic characteristics and their perceptions on the effectiveness of environmental policies. Finally, association of the youth's perception on the effectiveness of environmental policies and fund sources was determined.

Results showed that the youth's socio-demographic characteristics had significant relationship with the different program components of project implementation. Locale was negatively but highly associated with human resources and funding, although positively associated with planning and evaluation.

Both age and sex were associated with planning but the association of sex with planning was inverse as more females were involved in the planning stage. Also, the youth from the lower family income group were more involved in monitoring and evaluation than the youth in the higher income group. **(Author's abstract)**

Keywords: *Social sciences, Educational attainment, Family income, socio-demographic characteristics*

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VETERINARY MEDICINE

0408

An experimental study on the efficacy and safety of short-segment intracolonic bypass tubes in dogs

Roxas, Manuel Francisco, Natividad, Gabriel

The study aims to “determine the safety and efficacy of an inexpensive and readily-available short-segment, intracolonic bypass latex tube in colonic anastomosis.” This research was done in an attempt to have a locally available “intracolonic tube,” something that is as efficient and as safe as the Coloshield patented by Ravo in 1988. The Ravo Coloshield is a tube which aids in preventing anastomotic leakage. The two-part experimental test was carried out involving a total of 30 mongrel dogs, as subjects of this study. In contrast to Ravo’s coloshields, however, which proved to be effective in healing and preventing leakage in colonal anastomosis, the locally devised intracolonic bypass latex tubes did not exhibit neither significantly “harmful” nor “beneficial” effects.

Keywords: *intracolonic bypass tubes, intracolonic, Veterinary medicine, Ravoâ€™s coloshields*

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