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PHARMACOLOGY

# Comparison of the Efficacy of Dried and Fresh *Sechium edule* (Chayote) Fruit Extract in Lowering Serum Uric Acid Levels in Pyrazinamide-induced Borderline Hyperuricemic Rabbits

Abanilla, P. J., Abellera, A. J., Adalin, V., Agujetas, W. H., Alve, K. J., Alvizo, R. K., Amilasan, K. F., Amilil, H., Amolo, F., and Andang M.

#### **COLLEGE OF MEDICINE | 2014**

This compared the efficacy of dried chayote fruit extract and fresh chayote fruit extract in lowering serum uric acid levels in pyrazinamideinduced borderline hyperuricemic rabbits. Thirty-one female rabbits were used, 16 rabbits were used to determine the approximate effective dose, and 15 rabbits were used for bioassay with allopurinol. The rabbits were acclimatized for two weeks. Pyrazinamide was used to induce hyperuricemia. Serum uric acid levels were determined before and after induction of pyrazinamide. Fresh extracts were obtained through the use of a juice extractor. Shredded chayote was dried in an oven at 60°C. The dried extract was obtained by the infusion method. The rabbits were given their corresponding treatments, and the serum uric levels were measured afterward. Results show that the average baseline for the rabbit's uric acid is 60.23 µmol/dl. The approximate effective dose for fresh and dry Chayote fruit extract was 3981.07 mg/mL and 15848.93mg/mL, respectively. Data revealed that fresh Chayote fruit extract can reduce the serum uric level by 44%, dried Chayote fruit extract can reduce the serum uric acid by 35% while allopurinol can reduce it by 40%. Statistical analysis showed that fresh and dried Chayote fruit extract have the same effectivity as allopurinol. However, the effectivity of dried Chayote fruit extract is not comparable with the fresh Chayote fruit extract. Both Chayote fruit extracts have the same effectivity as allopurinol and can, therefore, be considered as an alternative to treating hyperuricemia.

Keyword: comparison, dried and fresh chayote, allopurinol, hyperuricemia

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### Acute Oral Toxicity in Mice and Mutagenicity Testing of Calabash (*Crescentia cujete*) Fruit Ethanolic Extract

Rangga, K. M., Barrios, K. A., Belarmino, L., Buma-at, L. J., Caballes, C., Cadena, D. R., Calma, C., Candia, S., Capacite, I. F., Carreon, L. A., Castro, K. R., and Ching, F.

#### **COLLEGE OF MEDICINE | 2014**

Calabash (Crescentia cujete Linn.), also known as the "Miracle Fruit", has been used for treatment of cough, asthma, hypertension, and diabetes mellitus. Despite reported curative properties, studies on toxicity and mutagenic properties of this plant remained insufficient. Thus, this study utilized a randomized controlled experimental research design to determine the toxic and mutagenic properties of the chemical constituents of a prepared Crescentia cujete (calabash) fruit ethanolic extract on female albino mice. Five mice were designated as the treatment group and given 2000 mg/kg of the ethanolic extract, and five other mice were designated as control group. Both groups were observed for 14 days for changes in external physical appearance, clinical signs, unprovoked behaviors, behavioral changes in response to external stimuli, body weight, and related changes, and clinical parameters. Pathologic profiles including gross necropsy and histopathologic examination of the liver and kidney, of all study subjects within 14 days postmortem was also done. Results showed that there were insignificant changes in physical appearance, behavior, response to external stimuli, and clinical manifestations of all the study animals. Histopathologic results showed that there were congestion and ballooning degeneration for both treatment and control groups, suggesting the presence of a confounding variable. There was an insignificant difference in the size of the liver and both kidneys between control and experiment group. Results for mutagenicity testing showed that there was also an insignificant difference between the treatment and background plates, indicating that the extract is not mutagenic to S. typhimurium T A 98.

# **Keywords:** Calabash, mutagenicity testing, histopathology, albino mice

# Antibacterial Activity of the Ethanol leaf Extract of Calabash (*Crescentia Cujete*) to Multi-Resistant Strains

Fernandez, O. K., Flores, L. A., Fong, L. H., Fulguerinas, K., Gacayan, I., Gavira, N., Gevera, M. A. P., Glang, M. A. P., Gonzalez, H. K. D., and Gubal, I. J.

#### **COLLEGE OF MEDICINE | 2014**

Diabetes mellitus (DM) is a metabolic disorder caused either by the destruction of the beta cells in the islets of Langerhans, deficiency of insulin secretion, or insulin resistance. The high cost and adverse effects of chemical drugs used for treatment of DM in search for a natural alternative. Calabash (Crescentia cujete), colloquially known as the Miracle Fruit, is packed with iridoids, known to induce insulin secretion in the beta cells of the pancreas. This study then evaluated the Approximate Effective Dose, Effective Dose 90, and Bioassay of ethanolic extract of calabash on the blood glucose level of alloxan-induced hyperglycemic rabbits. Forty nine female rabbits, weighing between 1.2 to 2.0 kg, were induced with alloxan monohydrate intravenously. A single dose of calabash, based on the body weight and dose level, were administered by oral gavage. Fasting blood glucose levels were determined before treatment, and every hour after treatment for four hours. The positive control used in the bioassav was Glibenclamide. Concentrations between 158.5 and 631 mg/kg of calabash extract is the AED. It was noted also that increasing dose of calabash ethanolic extract also increased the blood glucose levels of the rabbits. Probit analysis yielded a result of 5.931 mg/kg as the ED90. For the bioassay, the dosages that yielded the first and last positive results from the ED experiment were included. Bioassay results showed that only the positive control had a significant reduction in the blood glucose levels after treatment.

**Keywords:** Antibacterial activity, calabash, ethanol leaf extract, fasting blood sugar

Davao Medical School Foundation, Inc.

# Approximate Effective Concentration of Makahiya (*Mimosa pudica*) Leaves in Dedoction and Ethanol Extract as A Depilatory Agent on Mice

Pineda, E. M., Dela Cruz, A. M., Dales, P. Denura, L. G., Dipaling, K. A., Duarte, R., Dulla, C. D., Dy, D. J., Elevazo, J., Escovilla, C. D., Espiritu, A. F., and Estacion, E.

#### **COLLEGE OF MEDICINE | 2014**

Depilatory creams have been used as one of the established methods for hair removal. As an alternative for creams which are mainly composed of inorganic compounds, researchers explored the potential of a natural extract for its depilatory effect. This study established the approximate effective concentration of the makahiya plant (Mimosa pudica) in decoction and ethanol extract to remove hair. The depilatory action of the extracts was tested on 21 healthy, three-month, albino mice using an experimental study design with cross-over analysis. Percent depilation for each cream with decoction and ethanol extracts were calculated. The approximate effective concentration of Mimosa pudica ethanol extract and decoction was 2% and 4%, respectively. These were the concentrations at which at least 10% hair reduction was recorded. Overall, approximately 52% of the concentrations achieved more than 10% hair reduction after 20 minutes. On the other hand, only 33% of the concentrations achieved more than 10% hair reduction after 15 minutes. Thus, the significant duration during where more than 10% hair reduction for the extracts was at 20 minutes. There was a significant difference between the positive control, ethanol extract and decoction. However, results suggested that action of ethanol extract and decoction do not differ significantly. Based on the results of the study, makahiya (Mimosa pudica) does have a depilatory action.

#### **Keywords:** *Makahiya, dedoction, ethanol extract, appropriate effective concentration*

# Effect of *Sechium edule* (Chayote) Ethanolic Fruit Extract on Serum Uric Acid and Blood Urea Nitrogren Levels in Pyrazinamide-induced Hyperuricemic Female Albino Rats

Ong, D. S., Panares, B., Paracha, K. C., Parreñas, J. T., Pasaylo, R. R., Pavino, A. R., Pendatun, D. N. IV, Pepino, C., Porras, V., Prudencio, M., and Palamadathil, S.

#### **COLLEGE OF MEDICINE | 2014**

Recent studies revealed that consuming Sechium edule, more commonly known as the Chayote, have several health benefits including reduction of serum uric acid. This study determined the approximate effective dose of Sechium edule ethanolic fruit extract and its bioassay in lowering serum uric acid levels in pyrazinamide induced hyperuricemic female albino rats. The study also determined the effect of Sechium edule in blood urea nitrogen of test animals. Rotary Evaporator was used to obtain an ethanolic fruit extract. The study utilized the experimental test design in determining the approximate effective dose and bioassay for serum uric acid. The serum uric acid levels of the rats before pyrazinamide-induction and after administration of the Sechium edule ethanolic fruit extract on the rats were compared. Approximate effective dose was between 39.8 to 158.48 mg/kg. An arbitrarily selected dose of 630.95 mg/kg was used for the bioassay. Results showed that Sechium edule ethanolic fruit extract was comparable to the positive control in lowering the serum uric acid levels of hyperuricemic mice. Sechium edule also has a significant effect in lowering blood urea nitrogen of the test subjects.

**Keywords:** *Chayote, uric acid, blood urea nitrogen, hyperuricemia, albino rats, approximate effective dose* 

Davao Medical School Foundation, Inc.

# Efficacy of Ekswater (*Mikania cordata*) Ethanolic Leaf Extract against Methicilin-Susceptible *Staphylococcus aureus* (MSSA) and Methicilin-Resistant *Staphylococcus aureus* (MRSA) ATCC Strains and Clinical Isolates

Enobio, C. M. T., Sepulbeda, M., Socito, K., Solier, M. G. D. S. M., Soria, J., Sorongon, J. H., Sosa, S. K., Sosiping, R. A., Suguran, J., Sukarno, S. A., and Taclibon, C.

#### **COLLEGE OF MEDICINE | 2014**

Ethanolic extract of eskwater (Mikania cordata) fresh leaves was investigated for its efficacy against Methicillin-susceptible Staphylococcus aureus (MSSA) and Methicillin-resistant Staphylococcus aureus (MRSA) clinical isolates and ATCC strains. Antimicrobial activity of the extract was determined using the agar-well diffusion test. Positive controls used were Clindamycin 2 mcg/ml and Vancomycin 2 mcg/ml. The Minimum Inhibitory Concentration (MIC) and Minimum Bacteriocidal Concentration (MBC) of the extract was also determined. Phytochemical screening of the extract revealed presence of saponins and tannins. MIC of the extract for MSSA clinical isolates is 20 mg/ml, and 80 mg/ml for the ATCC strain. For MRSA, MIC was 160 mg/mlfor both clinical isolates and ATCC strain. MBC was observed at 320 mg/ml but only for MRSA ATCC strain. The positive controls for both MSSA and MRSA clinical isolates and ATCC strains showed a bigger average zones of inhibition compared to the extract. However, the extract was active against MSSA clinical isolates and ATCC strains (zones of inhibition of 16.67 mm and 18.33 mm) and partially active to MRSA clinical isolates and ATCC strain (ZOI of 10.11 mm and 11.44 mm). Statistical analysis results compared the effect of Mikania cordata leaf extract with Clindamycin and Vancomycin on ATCC strain MSSA (0.023) and MRSA (0.023), and the clinical isolates of MSSA (0.020) and MRSA (0.024) showed significant. Also, there was a significant difference between the effects of Mikania cordata ethanolic leaf extract against Clindamycin and Vancomycin on the four test organisms. Ethanolic leaf extract of the plant may have the potential as an antimicrobial agent.

#### **Keywords:** *ethanolic leaf extract, ekswater, methicillin, MSSA, MRSA*

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# Phytochemical Screening, Functional Group Identification and Structure Elucidation of Calabash (*Crescentia cujete*) Alcoholic Extract

Miranda, I. L., Montenegro, R. J., Montilla, K. A., Paalan, N. D., Naraval, R. H., Olivares, N. J., Osorio, A. M., Pableo, J. D., Paclibar, S., Padilla, B., and Pagarigan, B. M.

#### **COLLEGE OF MEDICINE | 2014**

Herbal decoctions are perceived to bring beneficial effects despite absence of proven therapeutic claims. This places consumers at risk as toxicity of such decoctions is not established. This study phytochemically screened the ethanolic extract of Calabash (Crescentia cujete) and determined its chemical properties including chemical name, chemical formula, molecular weight, probable chemical structure of molecules isolated from its alcoholic extract, and identified specific chemicals which may have therapeutic potential. Phytochemical screening detected presence of alkaloid, saponin, tannin, and flavonoid. Fourier Transform Infrared Radiation identified the following functional groups: alcohol, aldehyde, alkene, amine, amide, carboxylic acid, ether, ester, and ketone. Thin layer chromatography vielded retention factor of 0.22 for alkaloid in n-butanol acetic acid water and 0.045, and 0.549 for saponin in chloroform acetone and chloroform ethyl acetate solvents, respectively. Gas chromatography and mass spectrometry elucidated Propane 1,1,3-triehoxy as a significant constituent for saponin and Propane 1,1,3-triethoxy, 2Furancarboxaldehyde, 5-(hydroxymethyl) and Xanthosine as major constituents for alkaloids. Twenty-two compounds were isolated from saponin, whereas 44 were isolated from alkaloid. Potential usages of each compound were laid into details to site the probable use of Calabash.

**Keywords:** *phytochemical screening, ethanolic extract, calabash, chemicals, alkaloid, saponin* 

Davao Medical School Foundation, Inc.

# Reproductive Toxicity of Calabash (*Crescentia cujete*) Fruits Dedoction on Sprague Dawley Albino Rats (*Rattus norvegicus*)

Rombaoa, R. M., Madridejos, S., Mamalintaw, J. R., Mamburan, K., Manguiob, L. A., Marasigan, M., Margallo, M., Matunog, M., Medrano, E. F., Mindanao, J. C., and Monday, J. M.

#### **COLLEGE OF MEDICINE | 2014**

Traditional herbal plants formed part of alleviation of illnesses even in early centuries. Demand and popularity of herbal medicine have significantly increased in the recent years. One such herbal plant is Calabash, also known as "miracle fruit", and has been marketed in various locales in the Philippines. This study determined the toxicity of calabash on the reproductive system of Sprague-Dawley rats. Utilizing an experimental research design, 40 healthy, adult male and nulliparous female rats divided into ten pairs each for the treatment and control groups were orally given a computed effective dose (ED90) of 13.744 mg/kg of calabash fruit decoction before and after the rats were subjected to mating. Results showed insignificant difference in mortality of test subjects and their offspring in both control and treatment groups. Gross and histological examination of both male and female reproductive systems revealed insignificant abnormal morphology for both groups. Spermatogenesis, testicular weight, sperm concentration and morphology, ovary, and uterine tube weight also showed insignificant difference between the female control and treatment group. An ED90 of 13.5 mg/kg of calabash fruit decoction has no reproductive toxicity based on gross examination, testicular, epididymal, ovarian structure, and spermatogenesis.

#### **Keywords:** *Reproductive toxicity, calabash, Sprague dawley albino rats*

# Reproductive Toxictiy of Tawa-tawa (Euphorbia Hirta) Dedoction on Male Albino Rats (Rattus spp.)

Olalo, M., Chio, N. A., Chua, J. W., Clapis, L. L., Copia, C. M., Cosare, J. A., Cru, A. M., Culaste, G., Cunanan, J. R., Datukon, R. R., De Leon, A., and De Manuel, A. N.

#### **COLLEGE OF MEDICINE | 2014**

This study determined the reproductive toxicity of Tawa-tawa leaf decoction on male albino rats. Twenty adult male albino rats aged 20 weeks were used to evaluate effects of the decoction on the sperm count, sperm morphology and the histopathologic changes of the testes, vas deferens, and epididymis in terms of Leydig cell proliferation, Sertoli cell hyperplasia and congestion of vessels. The research adopted an experimental study design. Weight and length were measured pretreatment, every week for four weeks. After four weeks of administration of Tawa-Tawa, results showed that there was a significant increase in the weight and length of rats from the treatment group compared to the control. Histopathologic changes revealed insignificant difference in terms of Leydig cell proliferation with normal spermatogenesis, Sertoli cell hyperplasia with the decrease in the number of spermatids, and congestion of vessels. Histopathologic results of the epididymis and vas deferens from the control and test groups were all normal. Sperm morphology also showed insignificant difference. No definite reproductive toxicity with oral administration of Tawa-tawa for 28 days can be deduced from the current data. The significant decrease in sperm count of the treatment group compared to the control also needs further studies.

**Keywords:** *reproductive toxicity, calabash, Sprague dawley albino rats* 

### Effect of Chayote (*Sechium edule*) Fruit Juice on the Serum Uric Acid Level of Asymptomatic Hyperuricemic Adults

Lao, T. J., Laurel, R. J., Lee, K. K., Lequillo, J., Leyva, E. L., Limlengco, G. N., Lorenzo, B. M. F., Lu, R. K., Macarimbang, N., Madjani, O., and Nolasco, A. E.

#### **COLLEGE OF MEDICINE | 2014**

The study determined the effect of chayote (Sechium edule) fruit juice on serum uric acid levels of asymptomatic hyperuricemic adults of Barangay 19-B, Davao City. An open clinical trial research design was employed with a simple random sampling method. Moreover, allocation concealment was applied to prevent selection bias and to prevent researchers from influencing which participants assigned to a given intervention group. Inclusion criteria included male adults, ages between 30 and 50 years old and with serum uric acid level above 7.2 mg/dL. Thirty-six participants were included in the study: 18 for the experimental group, treated with Chayote fruit juice, and 18 for the control group treated with diet modification. The dose of the chayote fruit juice was 1000 mg/kg. Treatments for both groups were simultaneous and lasted for 30 days. Baseline and post-treatment serum uric acid levels were taken as outcome parameters. Results showed that Chayote (Sechium edule) fruit juice and diet modification are effective in lowering serum uric acid level (4.73% and 9.12%). Also, it showed that diet modification yielded more significant result compared to Chayote (Sechium edule) fruit juice, thus making the diet modification a more effective treatment. To lower the uric acid level among asymptomatic hyperuricemic adults, there should be diet modification or drinking chayote fruit juice.

# **Keywords:** Chayote, uric acid, asymptomatic hyperuricemic adults

# Wound Healing Activity of Gotu Kola (*Centella asiatica*) Formulated Cream in Acute Superfacial Wounds Among Adult Volunteers

Bernaldez, A. B., Aquino, M. A., Repollo, A. M., Toledo, C., Versoza, A., Villarosa, H., Yap, J., Yap-Lidasan, M., Yu, J. I., and Yuga, M. G.

#### **COLLEGE OF MEDICINE | 2015**

A double blind randomized controlled trial was used to evaluate the wound healing activity of Centella asiatica (Gotu Kola) in acute superficial wounds among human volunteers. It determined the age and sex profile of the adult volunteers, determined the baseline and post treatment characteristics through percent difference of the acute superficial wounds based on the parameters found in BWAT, compared the baseline and post treatment wound characteristics using the three treatment arms namely: Centella asiatica, Silver sulfadiazine and NSS, and determined if there was a significant difference among the wound healing activity of the treatment arms. Bates-Jensen Wound Assessment Tool was utilized to determine the wound healing activity of the Centella asiatica cream, Silver sulfadiazine cream and NSS. Results showed a significant difference among the percent reduction in BWAT for each of the three creams. It also showed that an improvement in the median score across the pre and post treatment is highly significant. Furthermore, it showed Centella asiatica cream percent reduction in BWAT insignificantly different when compared to the results of the other treatments. Percent reduction of Silver Sulfadiazine in BWAT also showed a significant difference when compared with NSS. Data of this study suggested that formulated Centella asiatica cream was comparable to Silver Sulfadiazine as standard treatment modality to acute superficial wound.

# **Keywords:** Gotu kola, wound healing, Silver sulfadiazine, adult volunteers

### 2% *Hibiscus rosa-sinensis Linn*. Leaf Extract Topical Solution as Hair Growth Agent for Males with Pattern Baldness in Davao City

Culas, A. G., Banga, R. N., Bataga, J. I., Beltran, J. P., Berguia, B. M., Bodikey, P. J., Bonotano, E., Braga, M. B., Bragat, S., and Brasileño, L. D.

#### **COLLEGE OF MEDICINE | 2015**

Hair loss can be a problem for many people. *Hibiscus rosa-sinensis* Linn. can act as an alternative for the treatment of male pattern baldness. Using a randomized, double-blind control trial testing, 36 male respondents were assigned into two groups: one given Minoxidil, and the other group receiving *Hibiscus rosa-sinensis* Linn. The study lasted for six weeks, and hair shaft length, and hair bulb length were measured. There was insignificant difference between *Hibiscus rosa-sinensis* Linn. topical solution and Minoxidil in terms of its effect on the hair shaft length and hair bulb length. On the contrary, there was a significant difference in the bulb width. The hair growing effects of *Hibiscus rosa-sinensis* Linn. was comparable to the effects of Minoxidil in terms of hair length and hair bulb length.

**Keywords:** *Hibiscus Rosa sinensis linn, hair growth agent, pattern baldness* 

# Acute Toxicity Testing of Commercially Available *Garcinia camboguia* Capsule on *Mus musculus*

Shri Reshma, M. P., Shanthi, R., Pachaiyappan, E. E., Prbakaran, J. G., Kalaimohan, R. K., Karthikeyan, M., Mutheeswari, M., Kamatchi, R. A., Stanley, J. J., Jagadeesan, J., Medasani, R., Deepu, J., Anuja, G., Indra, N., and Dakingking, R. A.

#### **COLLEGE OF MEDICINE | 2015**

This research performed acute toxicity testing of *Garcinia camboguia* on *Mus musculus*. It specifically determined the effect of *G. camboguia* among the *M.musculus* based on the OECD guidelines of different dosage groups 300 mg/kg, 2000 mg/kg, and 5000 mg/kg. The significant effect of body weight changes and acute toxicity were measured based on the different dosage groups. The study was conducted at the Animal House in Davao Medical School Foundation, Inc., Davao City. The researchers aimed to determine the effect of *G. camboguia*. Results revealed a significant effect of *G. camboguia* on body weight loss of *M. musculus* in all the three doses 300 mg/kg, 2000 mg/kg, and 5000 mg/kg. For acute toxicity, *G. camboguia* showed no effect on *Mus musculus* in 300 mg/kg, 2000 mg/kg doses, and less effect in the dose of 5000 mg/kg.

Keywords: Garcinia camboguia, mus musculus, acute toxicity testing

Davao Medical School Foundation, Inc.

# Assessment of Lead and Cadmium Levels in Meat Products

Dela Cruz, A. B., Brillantes, M., Bulacan, K. M., Caballes, J. R., Calma, C. J., Caoagdan, G. K., Cariño, K. A., Carlos, S., Dagondon, R. L., and Dakingking, R. A.

#### **COLLEGE OF MEDICINE | 2015**

Heavy metals such as cadmium and chromium may be present in meat products. Presence of these heavy metals to meat products may cause harm to people since these are part of their everyday diet. This study provided descriptive information and measure of lead and cadmium levels found in meat products (*tocino*, *longganisa*, and *tapa*) obtained from and sold in wet markets of Davao City. Simple random sampling was done. Atomic Absorption Spectrophotometry determined heavy metal levels. None of the meat samples contained detectable levels of lead. Results for cadmium levels in the meat samples did not exceed the standard limit of cadmium allowable for food (0.02 ppm) based on the criteria set by the International Standards for Heavy Metals in Food. Also, it showed insignificant difference in the levels of cadmium in the different meat samples. Generally, these meat products were safe for consumption; however, even with low levels of cadmium, the risk of bioaccumulation was still possible with chronic ingestion.

#### Keywords: lead, cadmium, meat products

# Cadmium and Chromium Levels of Mango (*Mangifera india Linn*), Banana (*Musa acuminata*), and Pineapple (*Ananas comosus*) in Selected Public Markets in Davao City

Ong, R. J., Oropesa, L., Paguirigan, N., Palmera, C. R., Pamplona, B. F., Parba, F., J. I., Parenas, Parreno, F. L., Penales, R. A., Pilay, G., and Go, M. A.

#### **COLLEGE OF MEDICINE | 2015**

Levels of cadmium and chromium in consumed fruits in select public markets in Davao City were determined in this study. Fruits to be studied were collected from selected fruit stands from major public market of each Congressional District in Davao City. Three species of fruits weighing 200 grams each were used in this study: Banana (Musa acuminata), Mango (Mangifera indica Linn.) and pineapple (Ananas comosus). Fruits were placed in clean plastic container and sent to Davao Analytical Laboratories, Inc. for analysis. Atomic absorption spectrophotometry was used for heavy metal determination and recorded in parts per million (ppm). There were no detectable levels of both cadmium and chromium in fresh samples of pineapple (Ananas comosus), Mango (Mangifera indica Linn.) and Banana (Musa acuminata). Factors including non-exposure of the fruits to heavy metals by implementing laws such as Ecological Solid Waste Management Act and method of post-harvest fruit handling (washing the fruits) might have played a role as to why there were undetectable traces of heavy metals in the samples. Thus, as of the moment we can safely say that these tested fruits from the select public markers can be safely consumed but constant monitoring of trace elements in fleshy fruits needs to be continued.

Keywords: Cadmium, chromium, mango, banana, pineapple, public markets, Davao City

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### Cadmium in Milk Fish (*Chanoschanos*) Cultivated in Salt Water Fish Cages in Sta. Maria, Davao Occidental

Coquilla, J. R. S., Ang, V., Aquino, M. L., Arciage, D. L., Armada, E. K., Atubag, C. J., Azuel, S. R. K., Azuro, E., Bagaforo, F. E., and Baiting A.

#### **COLLEGE OF MEDICINE | 2015**

A descriptive study was conducted to determine Cadmium levels in the meat of milkfish grown in seawater fish cages in Sta. Maria, Davao Occidental. Five sampling sites selected that served as sources for the milkfish tested for cadmium content. One kg of fish meat per sampling site was taken, with each fish weighing between 200 to 500 grams. Three trials were done per sample. This was done based on the requirement set by the Davao Analytical Laboratory, where the heavy metal analysis was conducted. The AOAC Official Method of Cadmium analysis, Atomic Absorption Spectrophotometry after Dry Ashing, was used by the laboratory. Results showed that Cd levels were not detectable by the method used, which had a minimum detectable limit of 0.001 mg/kg-1. Comparing the results with the standards set by US EPA and FDA, and EC, Cd levels in the milkfish tissue sample was lower than the internationally accepted levels of Cd. In conclusion, the milkfish cultivated in the seawater fish cages sampled were safe for consumption as far as Cd level was concerned.

Keywords: Cadmium, milkfish, fish cages

### Determination of Lead Content of Raw and Cooked Chicken (*Gallus gallus*) Meat in Davao

Dy, K. M., Dauz, S. M., Delicana, I. F., Digal, J., Dumdum, D. J., Edillon, M. R., Escudero, C. A., Esteves, J. Y., Estrera, J., and Fabian, M. N.

#### **COLLEGE OF MEDICINE | 2015**

Heavy metals, such as lead, are naturally present in the environment. The Food and Drug Administration (FDA) of the Philippines has established regulatory limits for lead levels in food. Lead exposure over the set limit may lead to bioaccumulation that results in toxicities such as neurologic damage, delayed cognitive performance, decreased postnatal growth, severe cardiovascular, decreased kidney function, and fertility problems. A detailed analytical research design was employed to determine the lead content of raw and cooked chicken meat; with the cooked chicken meat categorized further into grilled, fried, and roasted chicken samples sold by business establishments in Davao City. Five samples were procured for each group. The raw and cooked chicken meat samples was selected randomly. With the use of Atomic Absorption Spectrophotometry (AAS), results revealed that all raw and cooked chicken meat samples contained less than 0.1 ppm levels of lead, which was the minimum detectable limit of the AAS machine. As all samples were less than 0.1 ppm, they were within the allowable limits (with the maximum lead limit of a 0.5 ppm set by Codex Standard). These results signified that the different methods of cooking (fried, grilled, and roasted) did not increase the amount of lead contamination in chicken breast meat, and chicken meat cooked by these methods were safe for consumption.

Keywords: Lead, raw and cooked chicken, AAS

Davao Medical School Foundation, Inc.

### Evaluation of Antibacterial Activity of Calabash (*Crescentia cujete*) Ethanol Fruit Extract And Decoction

Evangelista, J. M., Luy, T., Magat, M., Maglana, C., Malubay, L. W., Mama-O, J., Martinez, E., Martinez, R., Mencidor, R., and Ombao R.

#### **COLLEGE OF MEDICINE | 2015**

Antibiotic resistance is a big concern these days. Such major concern calls for identification of new antimicrobial agents. This study determined the antibacterial activity of calabash ethanol fruit extract and fruit decoction against various microbiota. The ethanol fruit extract and fruit decoction of the common calabash tree (*Crescentia cujete*) were tested against pure cultures of *Pseudomonas aeruginosa, Escherichia coli*, and *Klebsiella pneumoniae* by measuring the zones of inhibition (ZOI). Ceftriaxone or tetracycline were used as positive controls. A mean of six mm ZOI was obtained for both fruit decoction and ethanol fruit extract against all test organisms. Results revealed insignificant difference between treatments but significantly smaller zones of inhibition seen in decoction and ethanol fruit was not observed to be sufficient as an alternative for current drugs of choice against the tested bacterial species. Future studies, however, may explore antibacterial potential of the plant's other organs.

Keywords: calabash, ethanol fruit extract, antibacterial activity

# Evaluation of Mutagenic Potential of *Centella asiatica* (Gotu Kola)

Guiterrez, A. G., Polog, J., Ponce, A. J., Porras, B., Prudencio, T. L., Quijote, K. L., Reyes, B. L., Reyes, J. A., Ripdos, J. H., Roscom, J. D., and Ruyeras, M. B.

#### **COLLEGE OF MEDICINE | 2015**

Centella asiatica or Gotu Kola is utilized because of its perceived curative properties. Various foreign studies however show contradicting findings of its mutagenic potential. Thus, the safety of its use prompted an evaluation of the mutagenic potential of fresh ethanol extract of C. asiatica, without S9 enzymes and with S9 enzymes, on Salmonella typhimurium TA 100. C. asiatica was incubated with S. typhimurium TA 100. Two set-ups were done: without and with S9 enzymes. Post-five-day incubation color change from purple to yellow, or turbidity indicated a mutation occurred. Results showed without and with S9, C. asiatica had strong mutagenic potential in one and all three trials respectively. Also, it showed that without S9, C. asiatica has a 50% to 50% chance of inducing mutagenicity in S. typhimurium TA 100; with S9, C. asiatica was consistent in inducing mutagenicity in S. typhimurium TA 100. Substances mutagenic in bacteria may be mutagenic in humans. However, not all substances mutagenic in laboratory animals were automatically mutagenic in humans. Hence, bacterial strain assays were necessary for preliminary studies. This study showed that C. asiatica fresh ethanol extract was potentially mutagenic with S9 Enzymes. However, more bacterial studies were required to validate these findings.

Keywords: Heavy metals, malunggay, juice extract

Davao Medical School Foundation, Inc.

# Mutagenicity Testing of Makahiya (*Mimosa pudica*) Decoction And Fresh Ethanolic Extract

Susttino, F., Sunga, T. M., Supan, J. J., Tagami, A., Tapa, S. A., Tay, R. A., Tio, J., Torres, M. L., Tubog, M. A., Untalan, N. F., and Urbano, R. A.

#### **COLLEGE OF MEDICINE | 2015**

This study evaluated the mutagenicity of Makahiya (Mimosa pudica) decoction and fresh ethanolic extract using Muta-ChromoplateTM kit, determined and interpreted by the number of wells with color change per plate of Salmonella typhimurium TA100 strain. A descriptive design was used. All parts of Makahiya plant was used for decoction, and were incorporated into 96 wells, each containing a colony of Salmonella typhimurium TA100 strain with two set-ups, with and without S9. A visible post-incubation color change (purple to yellow) in a well would indicate mutation. The number of positive wells for treatment plates was scored against the number of positive wells in the background plate. For each treatment plate, the statistical significance was determined using the Fluctuation table provided by the kit. Results showed that both decoction and fresh ethanolic extract are potentially mutagenic with and without S9 enzyme. There was a more significant increase in the number of revertant colonies in both the decoction and fresh ethanolic extract with S9 enzyme. Though both preparations are significantly mutagenic, decoction showed less mutagenic activity than fresh ethanolic extract basing on the number of revertant plates in which decoction showed only marginal results. Overall, its safety as a medicinal plant cannot be supported in this study. Further studies on toxicity and mutagenicity need to be made to validate the results of the study.

Keywords: makahiya, ethanolic extract, mimosa pudica
## **Evaluation of Heavy Metal in the Decoction and Fresh Ethanolic Extract of Calabash** (*Crescentia Cujete Linn.*)

Elino, M. M., Herreo, K. A., Ikeda, N. S., Isaguirre, N. P., Jinon, P. H., Jucom, K. J., Julhan, R., Laganson, J. R., Laure, K. J., and Ledesma, Z. P.

#### **COLLEGE OF MEDICINE | 2015**

Calabash is one of the plants known to possess healing properties. Some countries are currently utilizing calabash fruit as remedy for different ailments. The levels however of heavy meals it may possibly contain were not directly explored. This study determined the level in ppm (parts per million) of heavy metals in miracle fruit or Calabash in different preparations: decoction and fresh ethanolic extract. Lead, cadmium, and mercury content of decoction and fresh ethanolic extract of Calabash pulp from Brgy. Langub, Maa, Davao City was determined. Five trials were performed. Results showed that levels of Lead and Cadmium of the two extracts were undetected (<0.02 ppm for Lead and <0.001 ppm for Cadmium). On the other hand, a trace amount of Mercury, 0.042 ppm was determined in the decoction sample but was undetected in the ethanolic extract. All results were far below the standard allowable limit set by the FDA. Both calabash decoction and ethanolic extract were relatively safe as Lead, Cadmium, and Mercury contamination was concerned. However, more studies were needed to establish the safety of Calabash as a medicinal plant.

Keywords: calabash, decoction, fresh, heavy metal

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Davao Medical School Foundation, Inc.

## Determination of Heavy Metals in Fresh Juice Extract of Malunggay (*Moringa oleifera*) Growing in Two Environmentally Different Sites

Saavedra, I., Sacatani, M., Salvador, K. G., Sebellino, H. D., Serrano, A. D., Sia Su, J. C., Sinarimbo, R., Solano, B. S., Suarez, S. L., Sumaoy, J., and Sardinia, A.

#### **COLLEGE OF MEDICINE | 2015**

Plants have their natural ability to absorb and store toxic metals from the soil. Ingestion of plants contaminated with high doses of heavy metals can be dangerous to the consumer's health. This study determined level of heavy metals in Malunggay fresh juice extract sourced from two sites differ environmentally. Descriptive and inferential statistics were used to compare the heavy metal contents of Malunggay between dumpsite and non-dumpsite area and to determine if there was a significant difference when compared to the threshold effect limit set by US Environmental Protection Agency (EPA) and Environmental Management Bureau (EMB). Mercury was substantially present in Malunggay plant with mean concentrations of 38.63 ppb (non-dumpsite area) and 43.03 ppb (dumpsite area), while Cadmium and Lead were not detected in both areas. Mercury concentrations on both sites have insignificant difference and were found to be lower as compared to the Threshold effect limit (TEL) of 170 ppb, which may not have an adverse effect on human. However, Mercury has an estimated mean soil residence of at least 1000 years. Past and current releases remain environmental hazards unless remediated. Careful monitoring must be done to ensure that the said heavy metal will not further accumulate and reach its TEL value.

Keywords: heavy metals, malunggay, juice extract

## Lead Accumulation in Different Parts of Tawa-Tawa (*Euphorbia hirta*)

Caya, A. L., Abad, Y., Aban, L. M., Abpi, M. M., Abundo, M. F., Acevedo, B. J., Aquirre, A. B., Alih , S., Ancheta, A. D., and Ancheta, L. A. V.

#### **COLLEGE OF MEDICINE | 2015**

Amidst the advancement of technologies in health care delivery, traditional herbal plants are still utilized by many consumers. With the industrialization of the country, it poses higher risk of polluting these herbal plants for consumption. This study determined the lead accumulation capacity of *Euphorbia hirta* (Tawa-Tawa) roots, and shoots, in its decoction form after 21 days of the experiment. The study employed a randomized complete block design. There were 12 samples each of roots, shoots, and soil that were collected from three replicates of both control and experimental groups for determination of lead content. The sample used was in decocted form and tested through Atomic Absorption Spectrophotometry. Decoction of Tawa- tawa roots and shoots were relatively safe as far as lead soil contamination was concerned. However, further studies were required to establish the safety of this plant as a medicinal plant.

Keywords: lead, tawa-tawa, euphorbia hirta

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Davao Medical School Foundation, Inc.

## Lead And Cadium Content Of Rice (*Oryza* sativa) Grain Variants in Davao City Disrict

Ty, G., Valdopiera, G. I., Venus, C. A., Villacorta, J., Yambao, C., Yap, J. K., Yeo, E. A., Yu Ekey, M. G., Yuson, L., Pagayao, L. M., and Boiser, A. L.

#### **COLLEGE OF MEDICINE | 2015**

This study determined the presence of Lead and Cadmium in rice varieties commercially available in a Davao City, it being one of Filipino's staple food. This study utilized a descriptive, cross-sectional, quantitative research study design. Atomic Absorption Spectrophotometry was used to assess Lead and Cadmium levels. Top five most consumed rice varieties were determined through a survey with the use of questionnaire. Assessment of heavy metal exposure among adults and children were done through calculations of the specified Daily Intake of Metals (DIM) and Health Risk Index. Results showed that lead values of the top five rice varieties were below the maximum allowable level of 0.5 ppm. Cadmium, on the other hand, showed an increased level (> 0.1 ppm): highest of which had been found in the Masipag variety, the lowest from V160 variety. Also, it revealed insignificant difference among the cadmium levels in the different rice varieties. Also, the toxicity level absorbed by daily intake of rice was below the tolerable doses provided by WHO confirmed by calculating the Health Risk Index for both 70 kg adults and 24kg (average) children. Thus, the five varieties of rice most commonly consumed and commercially available in a Davao City district were safe for human consumption. Recommendations included further tests of more rice varieties from different agricultural lands and study on other heavy metals found on rice as well as its health risks.

Keywords: Oryza sativa, rice, lead, cadmium

## Mutagenicity Testing of Fresh Fruit Decoction of Calabash (*Crescentia cujete*)

Ang, K., Das, A., Davis, J. J., Go, E. S., Jacob, T., Joshua, C. A., Balakrishnan, J., Muthi, J., Thayaneethy, N., Torres, B., and Rivera, R. S.

#### **COLLEGE OF MEDICINE | 2015**

Plants are widely used by many to treat various ailments. However, safety remains a concern, as adverse effects of many currently utilized folk herbal plantsis not yet established. This study determined the mutagenicity of fresh fruit decoction of Calabash (Crescentia cujete), extracted from its pulp, using Muta-Chrome Plate kit. The test strains in the kit were handled carefully, and aseptic technique was employed throughout the assay procedure. The test made use of mutant strain of Salmonella typhimurium, carrying mutation or mutations in the operon coding for histidine biosynthesis. Three trials were performed with the plant extract at three different concentrations. All yellow, partially yellow and turbid wells were scored as positive. All purple wells were scored negative. The blank plate and the positive control plate were observed if the wells were all purple and vellow, respectively, indicating the absence of possible contamination. All three trials at three concentrations yielded similar results. When compared to the background plate, taken at a value of 47, all three trials were well below the value and hence, non-mutagenic. Results suggested that fresh fruit decoction of C. cujetewas not mutagenic to the T100 bacterial strains of the Muta-Chrome plate kit.

**Keywords:** Crescentia cujete, calabash, mutagenicity testing, fruit

Davao Medical School Foundation, Inc.

## Effect of Chromium Picolinate on 24 hours Uringe Output of *Mus musculus*

Subbiah, R. S., Prabhakaran, C. S., Rajasingh, B. E., Peterjohn, J. G., Suresh, B. R. T., Tamilmani, A. K., Sukumaran, R. R., Simon, K. N., Shaji, E., Shiny, S., Ravi, S., Singla, P., and Thomas, A.

#### **COLLEGE OF MEDICINE | 2015**

The dietary supplement industry is a dynamic one. Scientific research on the associations between supplements and health is accumulating rapidly. A dietary supplement is a product taken by mouth that contains a "dietary ingredient" intended to supplement the diet. Today, one of the widely available over the counter dietary supplement is chromium picolinate. Kidney disease is often cited as an adverse effect of chromium, yet there is no sufficient research or data to confirm this with absolute certainty. This research focused on the effect of chromium picolinate on the kidneys by determining the urine output. The study utilized a randomized, consoled experimental research design. Mus musculus were used as subjects. They were randomly allocated into three groups. Each group was allocated to five mice. Group A served as the control, Group B as the treatment group with the recommended dose, and Group C as the treatment group with a high dose. Results revealed that high dose chromium picolinate significantly reduced the urine output of *M. musculus*, but there was insignificant effect of the recommended dose of chromium picolinate. Hence, high dose chromium picolinate may adversely affect kidney function and may not be safe for human consumption.

Keywords: Chromium picolinate, urine, mus musculus, diet supplement industry

## Effect of Weight Loss Food Supplement on the Level of Alanine Transaminase Enzying in Rabbits (*Lepus curpaeums*)

Chiyezhath, J. R., Chelladurai, S. A., Athisayaraj, P. S., Das, S., Devanesan, A. D. M. B., Gayathri, B., Varma, B. G., Uthra, A., Annuth, C., Babu, G. G., Aswin, A. S., Harsita, D., and Seema, A. K.

#### **COLLEGE OF MEDICINE | 2015**

In recent years, there has been a tremendous increase in the consumption of food supplements to enhance one's physical appearance, both to reduce and increase weight. The food supplements claimed to reduce weight has a bulk of the market share, these are in fact drugs or combinations that are commercially available and not medically prescribed and do not undergo the strict medical and clinical trials, and the toxicity profiles are not documented. These products may or may not have acute and chronic toxicity. In this study, the researchers determined the acute hepatic toxicity of Herbalife over a two-week long study conducted on Lepus curpaeums (rabbits). The rabbits were divided into three groups, and were given normal saline, recommended dose of Herbalife, and doubled the recommended dose of Herbalife, respectively. After two weeks, blood was extracted, and serum ALT levels were determined. The first, second and third group had a mean serum ALT of 1.4538, 0.554, 1.886, respectively. This was analyzed and found to be insignificant. Thus, Herbalife does not have any acute toxic effect on the level of rabbits as seen by the results of the study.

Keywords: Lepus curpaeums, rabbits, weight loss, food supplement

Davao Medical School Foundation, Inc.

## Acute Oral Toxicty and Approximate Effective Dose of Durian (*Durian ziberthinus*) Husk Extract on the Blood Glucose Levels of Alloxan-induced Hyperglycemic New Zealand Rabbits (*Oryctolagus cuniculus L*.)

Calixijian, A. M., Caminero, H., Cania, M., Castano, C. C., Collado, M., Colot, E. J., Cordero, T. F., Dalen, J. M., Dano, J. M., Dano, K. L., Daugdaug, B. K., De Leon, G. K., Demonteverde, D. J., Diaz, R. B., Dismas, J. F. K., Dismas, L. F., Kasireddy, A., and Mallam, H. P.

#### **COLLEGE OF MEDICINE | 2015**

Death of over 1.5 million patients worldwide are accounted for non-communicable diseases, including Diabetes Mellitus. In order to provide more sources of naturally-occurring and economic hypoglycemic agents, the researchers explored the use of extracts from Durian husk. It is reported to contain flavonoids, particularly quercetin, known to have antioxidant properties. To determine the safety and the hypoglycemic effect of Durian husk, the researchers used methanolic extract of Durian husk for Acute Oral Toxicity on six female Swiss mice, and its Approximate Effective Dose on alloxan-induced New Zealand rabbits, doses computed using log 0.6 intervals (1 mg/kg, 3.98 mg/kg, 15.84 mg/kg, 63.10 mg/kg, 251.20 mg/kg and 1000 mg/kg), administered orally for seven days. Acute oral toxicity was not found in doses 300 mg/kg and 2000 mg/kg, respectively, as observed after 30 mins, 24 hours, and 14 days. Insignificant pathological changes were seen in the necropsy. The fasting blood glucose levels of the rabbits were used to evaluate the hypoglycemic effect. Alloxan-induced diabetic groups had elevated fasting blood glucose levels when compared with the control group. Significant results were noted starting from second to sixth group; however, the latter treatment group yielded the most significant results compared to the rest of the treatment groups. Study results showed that Durian husk extract do not cause oral toxicity even at a dose of 2000 mg/kg, and the Approximate Effective Dose was determined at 15.84 mg/kg.

Keywords: durian husk, rabbits, acute oral toxicity, AED

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## Assessment of the Genotoxicity of Tawa-tawa (*Euphorbia hirta*) Dedoction on Male Laboratory Mice using Micronucleus Test

Uy, L. D., Arcamo, L. C., Elefante, A., Isagurre, N. P., Soraiano, J., Tadena, P. P., Tamondong, G. A., Torres, A. J., Ubaldo, C. B., Ureta, R., Valleser, D. L., Velila, K. L. N., Villaver, J. L., Virrey, T. C., Yambao, D. K., Yap, D. J., and Myneni P.

#### **COLLEGE OF MEDICINE | 2016**

In search for prevention of and rescure from diseases, mankind has explored the use of medicinal plants since ancient times. Tawa-tawa or Euphorbia hirta is widely used as medicinal herb but its toxicity profile is not yet established. This study used in vivo micronucleus test for screening chemicals for chromosome-breaking effects or genotoxicity. The study adopted a double blind controlled experimental design using a repeated dose oral toxicity testing. The decoction preparation, treatment administration and bone marrow smear preparation were conducted at a veterinary clinic in Davao City A total of 15 mice were used. Five mice were selected by randomization through fishbowl technique and placed in each of the five groups: positive control group using cyclophosphamide, negative control group using distilled water, low dose group, median dose group, and high dose group of Tawa-tawa decoction. Preparations were analyzed for the presence of micronuclei by a pathologist. The average number of micronucleus for the low, median and high dose group was zero and the same as the negative group. However, the positive control group had an average number of micronucleated polychromatophilic erythrocytes was 12. Euphorbia hirta did not exhibit significant DNA damage as manifested by the absence of micronucleus. Study data showed significant difference between the positive control and the decoction groups .

Keywords: tawa-tawa, mice, genotoxicity, micronucleus test

Davao Medical School Foundation, Inc.

## Calabash Fruit (*Crescentia cujete*) Decoction Acute Toxicity in Rabbits And Approximate Effective Dose (AED) And Median Effective Dose (ED50) in Alloxan Induced Hyperglycemic Rats (*Sprague dawley*)

Pama, D. J., Parayao, D. Z., Parcon, I. L., Pasawa, M., Pasia, M., Paulino, R. R., Plaza, J. A., Penduma, I., Revillo, K., Salcedo, A., Salva, R., Sanchez, J., Santos, R., and Misterio, J. M.

#### **COLLEGE OF MEDICINE | 2016**

Diabetes is a global concern that cuts across geographical boundaries. The financial burden of diabetes prompts for the search of alternative treatments and herbal medicines. This study determined the hypoglycemic activity of Calabash Fruit (Crescentia cujete) decoction inalloxan-induced hyperglycemic rats (Sprague dawley). To confirm its activity, simultaneous testing with positive control (Metformin), and negative controlwere done in the bioassay. This study also determined acute toxicity of Calabash fruit pulp decoction in rabbits and Approximate Effective Dose (AED) and Median Effective Dose (ED50), and its anti-diabetic activity in alloxan-induced hyperglycemic rats (Sprague dawley). Results showed that the plant material was non-toxic. In AED, ED50, and bioassays, diabetes was induced in rats by a single intraperitoneal administration of alloxan monohydrate (150 mg/kg). Results of AED determination revealed substantial decrease in blood glucose level at a range of 15.84 to 63.1 mg/kg, while ED50 was 63.1 mg/kg. In determining the decoction's peak effect, the lateral tail vein was punctured to obtain samples for glucose determination at specified intervals up to a 24th hour. Peak effect in lowering the blood glucose level was at the 14th hour and thereafter. In the bioassay, 18 alloxan-induced hyperglycemic rats were grouped into three: Negative Control Group (normal saline), Positive Control Group (metformin), and Test Group (Calabash fruit pulp decoction). Findings showed that Calabash Fruit decoction possessed hypoglycemic activity similar to the activity of the Metformin in alloxaninduced hyperglycemic rats. Hence, Calabash Fruit decoction was a potential hypoglycemic agent towards alloxan-induced hyperglycemic rats.

Keywords: Hyperglymic rats, AED, Ed50, Calabash fruit,

## Effects of Lyophilized *Sechium edule* (Chayote) fruits extract on the Serum Uric Acid level of Pyrazinmaide-induced Hyperuricemic Rabbits

Deduce, F., Defensor, S., Del Fierro, S., Duliano, C., Elorde, J., Enriquez, K., Escudero, D., Evangelista, J., Fabila, K., Figueroa, J., Flores, L., Floresta, K., Francisco, A., and Franco, K.

#### **COLLEGE OF MEDICINE | 2016**

The study determined the effect of lyophilized *Sechium edule* (chayote) fruit extract on serum uric acid levels of pyrazinamide-induced hyperuricemic rabbits. It also compared the bioassay of lyophilized Sechium edule (chayote) fruit extract and allopurinol in lowering serum uric acid levels. Randomized Controlled Trial was used as research design. About one kilogram of dried chayote fruit was macerated with three liters of 95% methanol followed by another three liters of ethyl acetate, each soaked for 72 hours at room temperature. Rotary Evaporator (Rotavap) at 70°C was utilized for extraction. Subsequently, one kg dried chayote fruit was converted to 0.45kg and the resultant methanolic-ethyl acetate extract was 281 mg/ml. Lyophilization followed which produced 55 mg (80.43% ml of fluid loss). Twelve male rabbits were used to determine Approximate Effective Dose (AED), which yield a significant result between 63.10 to 251.19 mg/kg. Ten male and ten nulliparous and non-pregnant female rabbits were used to determine the Median Effective Dose (ED50) of 175.95 mg/kg. Probit analysis resulted to a 90% Effective Dose (ED90) of 181.60 mg/kg. Finally, 24 male rabbits, divided into two groups of 12, to determine any significant difference between experimental and control groups. All rabbits were five months of age and weighed approximately 600 to 800 grams. Result revealed a significant difference in the pre and post treatment of both groups. Although lyophilized Sechium edule (chayote) fruit extract can significantly decrease the serum uric acid levels of pyrazinamideinduced hyperuricemic rabbits it is, however, not as effective a allopurinol.

Keywords: chayote, uric acid level, hyperuricemia, probit analysis

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## Genotoxic Potential of Calabash (*Crescentia cujete*) Decoction using Micronucleus Test

Mercader, L. M., Dy, M. C., Eleseo, M. A., Esparagoza, K. K., Espero, C. M., Eugenio, A. A., Falgui, K. A., Fernandez, E. L., Galigao, K., Gecosala, H. V., Gerapusco, C., Gerona, H. J., Gloriani, D. J., Graza, A. M., . Guadalupe, F. E., and Vellaisamy, A.

#### **COLLEGE OF MEDICINE | 2016**

The use of herbal medicine for the prevention and treatment of diseases can be treated back through antiquity and middle ages until modern days. According to the World Health Organization (WHO), nearly 80% of the world population still rely on medicinal herbs. Crescentia cujete or Calabash was also known as the miracle fruit. Virtually, all parts of this plant are useful. The decoration of this fruit is used to treat hypertension, headaches, diarrhea, stomachache, colds, bronchitis, cough, asthma, and urethritis. Constituents of Calabash include substances that were either beneficial or harmful to the consumer. Beneficial constituents include flavonoids and antioxidants. While harmful substances found to be present in the calabash are naphthoquinones, lead, arsenic, and hydrogen cyanide which are believed to have genotoxic properties. In this study, the researchers utilized the micronucleus test to determine if there was a significant increase in the micronucleated PCE (polychromatophilic erythrocytes) and if there was a significant difference in the mean number of micronuclei present in the bone marrow smears among the three treatment groups (positive control, negative control, and experimental groups). Results showed insignificant increase in the micronucleated PCE among the groups. However, there was a significant difference in the mean number of micronuclei present among the positive control and experimental group (LSD value -12). Results suggested that Crescentia cujete was not genotoxic.

Keywords: genotoxic potential, calabash, micronucleus test

## Effects of Yacon (*Smallanthus sonchifolius*) Tuber Ethanolic Extract on the Fasting Blood Sugar and HbA1c Levels of Alloxan-induced Hyperglycemic Rabbits

Rondez Jr., R., Mudanza, M. A., Saratao, C., Saromines, P. J., Sarpamones, E., Solis, R. K., Tan, J., Tan, R., Tayong, O. S., Torrejon Jr., A., Velasco, C. A., Villanueva, M. I., Wong, C. C., Wong, E. M., and Zamoras, F. A.

#### **COLLEGE OF MEDICINE | 2016**

This study was focused on the effects Yacon tuber ethanol extracts on Fasting Blood Sugar (FBS) and Glycated Hemoglobin (HbA1c) levels of alloxan-induced hyperglycemic rabbits. The tubers were macerated, rotary evaporated and lyophilized to convert it into a powder. The Approximate Effective Dose (AED) of yacon tuber ethanolic extract at 63 mg/kg was used in the bioassay. In the bioassay, there were three treatment groups, each composed of seven randomly assigned rabbits. The first group was given Metformin daily for one month and served as the positive control. The second and third groups were given yacon tuber extract and NSS daily and served as the experimental and negative control, respectively. Before drug administration, the baseline HbA1C and FBS were taken. The FBS levels were measured every five days until the 25th day. The HbA1c levels were measured again one-month post-treatment. After data collection and statistical treatment, it showed that yacon tuber decreases gradually and significantly the FBS levels of the test subjects after 25 days of administration but its hypoglycemic capacity is inferior to that of the commercial drug Metformin. The decrease in FBS is more substantial at the 25th day of treatment so it can be inferred that continuous treatment (up to the 25th day) of alloxan-induced hyperglycemic rabbits may result in a decrease of FBS levels. Yacon extract did not show any significant decrease in the HbA1c levels after one-month administration.

Keywords: yacon tuber, HbAlc Levels, hyperglycemia

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Davao Medical School Foundation, Inc.

# Genotoxicity Study of Makahiya (*Mimosa pudica*) Leaves Decoction using Micronucleus Assay

Enriquez, J. P., Frasco, J. M. .L. P., Gabriel, N., Galope, M. A., Gapate, J., Garcia, K. Y., Garcia, L. J., Guerrero, J., Guting, P. G., Idul, C. G., Julkani, S., Labradores, A., Lam, A. L. A., La Rosa, G. A., and Lacasa, K. J.

#### **COLLEGE OF MEDICINE | 2016**

This study evaluated the genotoxicity of Makahiya (Mimosa pudica) decoction using In vivo Micronucleus assay. A random, double-blind experimental design was used. Swiss albino mice were grouped randomly into five groups each consisting of five animals. Two groups served as positive control: (cyclophosphamide) and negative control. Leaves of M. pudica were used for decoction and were administered to the treatment groups daily. After the 28-day treatment schedule, the bone marrow specimens were collected and stained with Wright-Giemsa. Using a light microscope, the mean number of Micronucleated Polychromatophilic Erythrocytes per 2,000 Polychromatophilic Erythrocytes were determined. Results showed that *M. pudica* decoction was not significantly genotoxic. Though result showed an expected significant difference between the positive control group (cyclophosphamide, 40mg/kg) and the other treatment groups, further results revealed that there was insignificant difference in the results among the lowest (320mg/kg), middle (640mg/kg) and highest (1280mg/kg) doses. These three treatment groups did not show any genotoxic potential in this study. This suggest that M. pudica decoction does not elicit genotoxicity. However, the safety of this medicinal plant cannot be guaranteed by the outcomes of this research due to the narrow range of the scope of the study. Further investigations on the genotoxicity of M. pudica were highly recommended to validate the results of this study.

Keywords: genotoxicity makahiya, micronucleus assay

## In Vitro and In Vivo Comparison of the Antibacterial Activity of *Persea americana Mill*. (Avocado) Seed Extract and Mupirocin against Methicillin-sensitive *Staphylococcus aureus* (MSSA)

Homez Jr., M. R., Ignacio, E. J., Jamiana, N. M., Kasilag, A. K., Khan, R., Kho, N. A., Kintanar III, A., Lacang, J. B. A., Leonardia, A., Leyson-Azuela, J., Leyva, J. M., Libago, M. R., Lim, J., Monteverde, E. T., Ng, L. M., and Vellaisamy, A.

#### **COLLEGE OF MEDICINE | 2016**

Persea americana Mill. (Avocado) has antibacterial activity against different bacterial strains including Staphylococcus aureus. The seed extract of Avocado contains flavonoids which could possibly explain its antibacterial effect. In this study, the researchers determined the in vitro and in vivo antibacterial activities of Avocado seed extract and Mupirocin against S. aureus. The zones of inhibition of Avocado seed extract and Mupirocin ointment against S. aureus was determined using the Kirby-Bauer method. The Minimum Inhibitory Concentration (MIC) of the Avocado seed extract was then determined using the Broth-Dilution method. The Avocado seed extract was suitably formulated into an ointment preparation. Subsequently, 15 female White Albino mice (Mus musculus) were randomly divided into three groups: experimental group (Avocado seed extract), positive control group (Mupirocin) and negative control group. All the test animals were superficially inoculated with S. aureus in their shaven dorm and were treated for one week according to their respective groups. Qualitative bacterial colony counts were taken before inoculation of S. aureus, after inoculation and post-treatment. The mean diameter of inhibition zones (mm) and reduction of bacterial colony counts produced by the three groups were significantly different, with Mupirocin having superior antibacterial activity against S. aureus than that of Avocado seed extracts. Nevertheless, Avocado seed extracts show good potential as a source of therapeutic agents that may contribute to the ongoing search for botanical species as antimicrobial agents.

Keywords: avocado seed extract, mupirocin, MSSA

Davao Medical School Foundation, Inc.

## Effect of *Hibiscus rosa-sinensis L*. Leaf Extract to the Fasting Blood Glucose and Alanine aminotransferase Levels of Alloxan Induced Hyperglycemic New Zealand White Rabbits

Nadera, M. J., Nasiluan, J. N., Nawal, N., Naparan, F., Ninal, K. C., Nuval, C., Ong, A. J., Orongan, R., Pacatang, C., Pacatang, J., Palaca, M., Parada, I., Santos, J. R., and Singh, B.

#### **COLLEGE OF MEDICINE | 2016**

Two major health problems plaguing society today are diabetes and cardiovascular diseases with known diverse complications. These medical conditions are currently treated with synthetic medicines, which are costly and are known to have adverse side effects. Given such, this study explored the potential of Hibiscus rosa-sinensis leaf extract to decrease blood sugar levels in alloxan-induced diabetic rats. The approximate effective dose of H. rosa-sinensis leaf extract was 15mg/kg. The ED50 and ED90 dose of the H. rosa-sinensis leaf extract was 9.13 and 11.62 mg/kg, respectively. The H. rosa-sinensis leaf extract dose three, with a dosage of 11.096mg/kg, was compared against the positive control glibenclamide. Results showed a reduction of the fasting blood glucose level and a conclusion that dose three was insignificantly different from the Positive Control. This suggested that the extract had hypoglycemic activity in the diabetic animals comparable to that of the standard hypoglycemic drug glibenclamide. ALT measurements done in this study did not have a significant correlation with the blood glucose level. Factors attributable to this result may be the use of different plant and animal subjects as compared to the literature used by the research, and the presence of other active components that could affect the results.

Keywords: Hibiscus rosa-sinensis, white rabbits,

## Effect of a Decoction made from Black Zapote (*Diospyros digyna*) Leaves on Liver Function Tests of Male New Zealand Rabbits

Pasion, J., Peñaflorida, A., Rajbanshi, M., Reyes, F. J., Reyes, L. E., Ronquillo, J., Rosalia, F. A., Rustia, K., Sabando, F. L., Salmasan, J. M., Sanchez, R. J., Sangkigay, A., Sian, A. C., So, S. F., and Sarenas, D. M.

#### **COLLEGE OF MEDICINE | 2016**

The Black Zapote (*Diospyros digyna*) locally known as "Sapote" has many therapeutic claims from residents living at Lacson, Calinan, Davao City. A survey of the area showed that as much as 73 out of 100 respondents are taking or have taken the plant decoction. Amidst the many therapeutic claims, very little is known about the plant's toxicity. Thus, this study determined the effects of zapote leaves decoction on the liver function of male New Zealand rabbits. An experimental randomized pre and post test design was utilized. Fifteen male New Zealand rabbits were randomly assigned into three treatment groups, each with five rabbits: the negative control group (5 ml/kg of Distilled Water), positive control group (300 mg/kg Acetaminophen), and experimental group (5 ml/kg of the Black Zapote leaves decoction). The rabbits per group were administered with their respective test substances daily for 28 days. Pre and post test blood samples were taken and analyzed for liver function tests, specifically Alanine Aminotransferase (ALT) and Aspartate Aminotransferase (AST) levels. Qualitative phytochemical screening of the Black Sapote leaves reveal presence of saponins and tannins. Results also showed insignificant difference between the decoction made from Black Zapote leaves and negative control group, while a significant difference between the decoction and the positive control was noted. This suggested that Black Zapote leaves decoction do not have toxic effect on the liver of the test animals. This was supported by the histopathologic analysis which showed no histopathologic changes in the livers of the rabbits administered with Black Zapote.

Keywords: black zapote, decoction, white rabbits, liver function

### Effect (*Crescentia cujete*) Decoction on Liver and Kidney Fucntion Tests of New Zealand White Rabbits (*Oryctogalus cuniculus*)

Abundo, S. A., Acedilla, R. M., Aclaracion, K., Aquino, M. A., Aquino, R. A., Arado, R. J., Arquiza, A. L., Avelino, G., Bajada, K., Bangot, K. A., Blah, A., Branzuela, A., Brillante, C. V., Calimbas, M. A., Eugenio, L. E., and Kaveri, V.

#### **COLLEGE OF MEDICINE | 2016**

Herbal medicine is still the mainstay of about 75 to 80% of the world population, mainly in developing countries. The use of herbal medicines is accepted, practiced, and widespread throughout the Philippines. This study determined the effect of 28 days administration of ED90 and Double ED90 doses of Calabash (Crescentia cujete) decoction on liver and kidney functions of New Zealand White Rabbits (Orvctolagus cuniculus). A randomized, experimental study was conducted where serum creatinine and serum ALT levels as markers for kidney and liver injury were measured. A repeated dose oral toxicity via oral gavage administration was performed on thirty-five test subjects divided into five groups: Paracetamol (positive control for increased serum ALT), Isoniazid+Rifampicin (positive control for increased serum creatinine), ED90 Dose of Calabash Decoction, Double ED90 Dose of Calabash Decoction, and Distilled water (negative control). After 28 days, baseline serum creatinine and ALT levels were compared to post-treatment levels. Highest increase in serum creatinine and serum ALT was recorded from positive controls. Serum creatinine level changes were second most significant for the Water and third by the Double ED90 Dose groups, and the least increase was observed for the ED90 Dose Group. Significant serum ALT increase were higher in the Paracetamol group followed by equal changes in the Water, ED90 and Double ED90 Dose groups. This data signified similar liver toxicity for the latter three groups.

Keywords: crescentia cujete, liver, kidney, function, decoction

## Wound Healing Effects of Guyabano Leaves (*Annona muricata*) Formulated Ointment on Full-Thickness Excision Wound on Mice

Guillonsod, J. Ledesma, G., Legaray, K., Leonor, D., Lerog, A. K., Librea, M. J., Luna, G. S., Makol, H. S., Masagnay, A. M., Mesa, I. P., Millanes, D. S., Miras, N. P., Niervo, E., Notarte, D. J., and Pableo, R. M.

#### **COLLEGE OF MEDICINE | 2016**

A wound is a medical problem that is encountered by humans but with primitive medical management. The use then of plant leaves to hasten healing of wounds is explored. This study focused on determining healing effects of Guyabano leaves (Annona muricata) formulated ointment on full thickness wounds in mice. The wound healing effect was determined through wound contraction, bacterial colony count and histopathologic findings. Fifteen mice were randomly assigned in three groups: Negative Control (5% Normal Saline Solution), Positive control (10% Povidone iodine) and Experimental (10% Guyabano Leaves Ethanolic Extract GLEE). For 15 days, each mouse was given its appropriate treatment following the proper wound cleansing. Outcomes show that experimental group shows the highest wound contraction, followed by positive and negative control groups. Greatest bacterial colony count was recorded from the experimental group, followed by the negative control and positive control. With the histopathologic findings, the positive control obtained the highest wound healing score, followed by the negative control and experimental control. The result of this study signifies that 10% of GLEE ointment is almost at par with 10% Povidone-Iodine ointment available in the market.

Keywords: wound healing, guyabano leaves

#### BIOLOGY

Davao Medical School Foundation, Inc.

### Hypoglycemic Effect of Combined Gotu Kola (*Centella asiatica Linn*.) Aqueous Extract and Metformin in Diabetes-Induced Rats

Burgos, J., Buscato, C., Cabanban, J. R., Capirig, C. J., Carin, V. M., Carreno, D. A., Cascabel, K., and Castro, M. C.

#### **COLLEGE OF MEDICINE | 2016**

Diabetes mellitus is an emerging life-threatening metabolic disorder that predisposes an individual to a constellation of complications such as cardiovascular and renal diseases. Metformin, an oral hypoglycemic drug, is widely used to manage blood glucose levels in individuals affected by the disorder. Centella asiatica, locally known as Gotu kola, is a tropical plant containing asiatic acid which lowers blood glucose levels by blocking the breakdown of complex sugars and preventing intestinal absorption. This study investigated whether Gotu Kola could lower the blood glucose levels in diabetic rats induced by high-fat diet administration and low dose streptozotocin. The rats were divided into six groups: A with 50 mg/kg C. asiatica extract (CAE), B with 50 mg/kg metformin, C with 50 mg/kg CAE+100 mg/kg metformin, D with 100 mg/kg CAE+50 mg/kg metformin, E with 100 mg/kg CAE+100 mg/kg metformin, and F with distilled water (control). The treatment was administered for 14 days with blood collection done on day zero, seven, and fourteen. Results showed that on the 14th day of treatment, all but treatment F had effectively lowered blood glucose levels to 117.4±16.46, 95±15.76, 100.2±11.34, 100.6±18.56, 94.4±8.59 for Treatments A to E, respectively; with treatment E still having the lowest glucose level. However, Treatment E with 2:2 CAE and Metformin have similar effects as that of Treatment B with metformin alone and Treatment D with 2:1 CAE+Metformin ratio. The results suggested that CAE could be advantageous when added to metformin therapy.

Keywords: Gotu Kola, metformin, diabetes, rats

## **Research on the Complete Blood Count and Reticulocyte Count of Wide-Format Printing Workers in Davao City**

Adelino, M. L., Arceo, J., Burgas, V., Chandra, C., Delisana, I. F., Hernero, H. A., Lim, A. B., Martinez, R. P., and Varghese, S. R.

#### **COLLEGE OF MEDICINE | 2014**

Glycol ethers are common solvents used in wide-format printing. Studies have shown that the use and exposure to glycol others have resulted to anemia. Thus, exposure to wide-format printing ink that is used with machines designed to spray it onto coated canvas brought up questions of the effects of using the said ink. This led the researchers to determine if workers chronically exposed to wide format printers have abnormal hematologic functions. The study determined the complete blood count and reticulocyte count of wide-format printing workers in Davao City. From the data given by the business bureau, 15 establishments with 25 workers were determined as the sample population. Results showed that 18 out of 21 male workers had decreased red blood cell (RBC) count, and two of them had increased reticulocyte count. Among the four female workers, only one had decrease RBC count while two had increased reticulocyte count. Both male and female respondents exhibited normal hematocrit and hemoglobin concentrations. From the data gathered, none of the wide-format printing workers in Davao City fall into the World Health Organization's definition of an anemic, which is a state of having lower than the normal hemoglobin.

Keywords: CBC, Reticulocyte Count. printing workers

## Antiangiogenic Effect of Garlic (*Allium* sativum) and its Synergism with Vitamin C on Chorioallantoic Membrane on Fertilized Chicken Eggs

Abad, Y., Avila, F., Brasileño, L. D., Dela Cruz, A. M., Fernandez, M. A. P., Jinon, P. H., Llamas, L., Ombao, R. A., Pilay, G., and Saavedra, I.

#### **COLLEGE OF MEDICINE | 2014**

Antiangiogenesis has been a recent interest among researchers, especially in the alliin compound found in *Allium sativum*. However, this study made use of three test substances: *A. sativum*, Garlic in combination with vitamin C, and sterile water to determine the antiangiogenic effect of *A. sativum* and its synergism with vitamin C on the chorioallantoic membrane on fertilized chicken eggs. Specifically, the researchers determined the mean, and significant difference among the three substances. With the use of an experimental three group before and after study design, results showed that there was a significant difference between before and after application of *A. sativum*, its combination with vitamin C, and sterile water. *A. sativum*, combined with vitamin C has the highest antiangiogenic effect. Results of this study maybe useful for future researchers.

**Keywords:** Antiangiogenic, Garlic, Synergism, Vitamin C, Chorioallantoic Membrane

## **Complete Blood Count and Peripheral Blood Smear of Roadside Fuel (Takal-Takal) Vendors in Davao City Exposed to Benzene From Fuel Sources**

Abpi, M. M., Bataga, J. I., Bulacan, K. M., Eleria, G. P., Flores, L., Lagera, C. A., Luis, J., Orongan, R. R., Prudencio, T. L., and Sardinia, A.

#### **COLLEGE OF MEDICINE | 2014**

Benzene-containing fuel exposure imposes importance in determining its effects on human health due to the possible complications it presents with long term exposure to the source. It has been reported previously that benzen in fuels has hematologic effects. Thus, establishing the complete blood count (CBC) and peripheral blood smear (PBS) of selected roadside fuel "takal-takal" vendors would provide a profile for a better understanding regarding long term effects of benzene-containing fuel. In this study, a total of enumeration of 26 samples were obtained, examined, and tested, in terms of CBC, red blood cells (RBC), hematocrit (Hct), hemoglobin (Hb), white blood cells (WBC), lympho- cytes, monocytes, eosinophils, segmenters (Polys), stabs, and estimated platelet, and PBS. Results showed presence of ansio-poikilocytosis, hypochromia, lymphocytosis, monocytes, eosinophilia, and neutrophilia, while other blood parameters remained at normal levels. It has also been noted that among those with abnormal results, 15 presented with poikilocytosis, six have presented with microcytosis, and six have hypochromia. Hence, abnormal changes have been observed and may be due to the action of benzene on the stromal microenvironment of the bone marrow. Further testing may be done to confirm if effects observed were solely due to benzene exposure.

Keywords: CBC, peripheral blood, benzene, roadside fuel

## Correlation of Video Game Play Duration to Cortisol and Aggression Levels of Adult Volunteers in Davao City

Abragan, S. Aquino, M. L., Aranda, J. M., Bodikey, P. J., Dauz, S. M., Esteves, J. Y., Guerrero III, J., Lasam, S. K., Santos, S., Supan, J. J., Torres, B., Ty, G., and Yuson, L.

#### **COLLEGE OF MEDICINE | 2014**

Video game playing has been rampant nowadays and has been linked to increased incidences of violence in society. This study determined the relationship of video game play duration as to the cortisol and aggression levels of adult volunteers chosen through purposive sampling. The researchers employed interviews and questionnaires to find out the duration of game playing, mental and neurological status of the respondents, including medications for the past six months. The instruments used in gathering data were the Buss and Warren Aggression Scale for the type and level of aggression as well as cortisol ELISA kit to measure the serum cortisol levels of the respondents. Results showed that video game play duration has a significant relationship with cortisol levels. However, video game play duration did not show asignificant relationship with aggression.

Keywords: video game, cortisol, aggression level, adult volunteers

## **Determinants of Hearing Loss among Tricycle Drivers in a Local Subdivision in Davao City**

Aban, L. M., Azuelo, S. R. K., Bron, J. M., Dilangalen, H., Ferrer, C. A., Julhan, R., Ong, R. J., and Porras, B.

#### **COLLEGE OF MEDICINE | 2014**

Noise is a disturbance to the human environment, which is escalating at such a high rate, that it will become a significant threat to the quality of human lives. At safe levels, these noises do not affect our hearing. However, at times, these sounds become too loud or prolonged that they become harmful, which in the long run, may result in hearing loss. The research locale was in a local subdivision in Davao City. This study determined whether decibel level of noise from the tricycle, duration of exposure, and age of tricvcle driver have a relationship with the development of hearing loss. Instruments used in the study included a questionnaire, an audiometry test, and a decibel meter. Results showed that if the three factors were taken individually, they may not determine the occurrence of noise-induced hearing loss. However, if taken as a whole, they acted synergistically and elicit a significant effect on the development of hearing loss. Also, the study showed that the decibel level of the tricycle noise has a significant relationship with the development of hearing loss of either conductive or sensorineural type. Age was also proven significant in predicting the occurrence of a drop in the audiometry results. Lastly, the researchers recommend that tricvcle drivers should use ear protection and take other necessary precautions to prevent the fast progression of hearing loss.

Keywords: hearing loss, determinants, tricycle drivers

Davao Medical School Foundation, Inc.

## Ear Disorders of Spear Fishers Related to Barotrauma

Cariño, K. A., Evangelista, J. M., Gawat, C. M., Berguia, B. M., Maglana, C., Ancheta, C. M., Ledesma, Z. P., Reyes, S. A., and Paguirigan, N.

#### **COLLEGE OF MEDICINE | 2014**

Spear fishers are prone to diving-related injuries including ear barotrauma defined as damage due to changes in pressure. In studies done by the Divers Alert Network (DAN), ear barotrauma was very common among drivers, middle ear barotrauma being the most common. This study covered spear fishers of Barangay Kaputian, Sitio Kidupong, the Island Garden City of Samal who had actively dived with depths of at least two meters. The demographic data, which included age, sex, and current work experience was acquired from the respondents. The presence and absence of ear disorders were also noted from them. All of the respondents were males, while the respondents diagnosed with ear disorders are found at the age group of 26-30, 31-35, 36-40, and 51 above. Of the 16 respondents, 11 were diagnosed with ear disorders. All respondents diagnosed with ear disorders had a driving frequency of at least four times a week. Three respondents diagnosed with ear disorders dive for more seven to nine hours long and another respondent dive for longer than 11 hours. An increased population of respondents may improve generalizations that can be generated from this study context. Ear disorders experienced by spear fishers must also be included in priority health projects of the community.

Keywords: ear disorders, barotrauma, spear fishers, Samal

## Effect of Daily Coco Syrup Intake on Hemoglobin and Serum Potassium Levels of Healthy Volunteers

Avenido, J. R., Bragat, S., Famacion, A. C., Jamiana, N. M., Librea, M. J., Nueza, S. E., and Ruyeras, C.

#### **COLLEGE OF MEDICINE | 2014**

This study determined the effect of coco syrup on hemoglobin and serum potassium levels among healthy volunteers. A convenience sampling design was utilized to determine the participants of the study. The volunteers were then screened for the exclusion of the healthy volunteers before and after three weeks of daily coco syrup intake. Data revealed that there was insignificant increase in both the hemoglobin and serum potassium levels of healthy volunteers. Thus, it cannot be directly inferred that daily cocoa syrup intake can increase hemoglobin and serum potassium levels after three weeks of daily consumption.

Keywords: coco syrup, hemoglobin, serum potassium

## Effect of Tai Chi on Blood Pressure and Lipid Profile Among Adult Volunteers in Davao City

Acevedo, B. J., Arcamo, J. L., Brillantes, M., Dela Cruz, A. B., Estrera, J., Goh, E. S., Gutierrez, A. G., Lee, N. J., Mama-o, J., Marquez, R. D., Rendon, E. P., Sebellino, H. D., Sustino, F., Urbano, R. A., and Zafra, K.

#### **COLLEGE OF MEDICINE | 2014**

This study determined the effect of Tai Chi on blood pressure and lipid profile among adult volunteers in Davao City. A quasi-experimental design was used. Thirty respondents were enrolled in a six-week Tai Chi program, three sessions per week, one hour per session. However, nine dropped out. Pre and post test levels of blood pressure, total cholesterol, triglycerides, HDL, and LDL, were obtained. Systolic blood pressure significantly decreased at week four. Systolic blood pressure decreased significantly at week six. Triglycerides, LDL, and HDL did not show a statistically significant decrease. However, based on their means, there was an improvement. Triglyceride levels decreased from 2.11 mmol/L to 1.89 mmol/L. HDL levels increased from 2.04 mmol/L to 2.26 mmol/L. LDL levels decreased from 3.41 mmol/L to 3 mmol/L. Results suggested that Tai Chi can decrease SBP, DBP, and total cholesterol among female adults aged 54-81 years old. Other lipid profile components have also improved, but a more extended period was required to validate these findings.

Keywords: Tai Chi, blood pressure, lipid profile

## **Effect of Tomato Juice on the Blood Pressure of Prehypertensive Volunteers**

Antaran, G. M., Balakrishnan, J., Basañes, H., Dakingking, R. A., Espinosa, S., Guerra, Z. M., Laganso, J. R., Manalo, K. P., Pagayao, L., Pathania, R., Ponce, A., Samiana, T. J., Sunga, T. M., Tubog, M. A., and Ylaya, M. J.

#### **COLLEGE OF MEDICINE | 2014**

Hypertension is a chronic medical condition which is considered as the most significant single risk factor for deaths worldwide. An increasing incidence in the Philippines of hypertension poses an excellent threat to Filipinos. This study determined the effect of tomato juice on blood pressure among prehypertensive volunteers in a local barangay in Davao City. Using randomized purposive sampling, 35 prehypertensive volunteers were recruited and given detailed instruction in taking tomato juice. Blood pressure (BP) was taken every day, and the respondents were monitored with the help of barangay health workers. There was a significant reduction of systolic BP after two weeks of tomato juice supplementation, from 132.06 to 113.26 mmHg. Similarly, there was a decline in diastolic BP from 87.15 to 75.54 mmHg. These significant reductions changed the category of the mean BP from prehypertensive to normal. The daily intake of 250ml of tomato juice appears to be beneficial in decreasing the blood pressure in prehypertensive individuals by 10%.

Keywords: tomato juice, blood pressure, prehypertensive

## Effect of 500ML Pre-Breakfast Water Consumption on the Caloric Intake of Healthy Volunteers in Davao City: A Pilot Study

Arciaga, D. L., Bonotano, E., Custodio, K. B., Fabian, M. N., Guinomla, S. R., Leung, K., Morales, R., Pareñas, J. I., and Ripdos, J. H.

#### **COLLEGE OF MEDICINE | 2014**

The search for weight loss alternatives appears important given increasing number of overweight and obese individuals all over the world. The effectiveness of drinking pre-breakfast water in controlling weight has been present for quite some time, and yet its efficiency and mechanisms are still unclear. One of the principles of weight loss is to decrease energy intake. Thus, establishing the caloric intake of selected Davao City participants with and without pre-breakfast water consumption would provide a profile to understand the mechanisms and effects of the said treatment better. In this study, 27 participants were observed for five days concerning their breakfast caloric intake and total caloric intake with and without pre-breakfast water. Results suggested that there was insignificant data to support that 500 mL of water has a direct effect on the water to distend the stomach to the point of satiety. The time interval between water consumption and food intake may have also allowed water to be emptied from the stomach before solid food entered. In this sense, the stomach's state in the aspect of volume and distention may be the same in both baseline and treatment stages. Moreover, due to the study's limitations, future studies must increase the amount of water to more than 500mL and to increase both sample size and study duration to extensively observe trends on water's effects on caloric intake and weight.

Keywords: breakfast, water, caloric intake, healthy volunteers

## Prostatic Health Status of Taxi Drivers Working at a Private Taxi Company in Davao City

Atabug, C. J., Braga, M. B., Dalisay, P. D., Falcunit, E. J., Leyva, E. L., Parreno, F. L., Roldan, A. M.

#### **COLLEGE OF MEDICINE | 2014**

This research determined the prostate health status among taxi drivers working at a private company in the city of Davao gathered through the questionnaire on demographics, Internation Prostate Symptom Score (IPSS), and Digital Rectal Exam (DRE). Only those who were 40 years old and above were included. Results showed that majority of the drivers (67%) have no prostate condition, followed by 26% who have the prostate problems in the form of chronic prostatitis, acute prostatitis, prostatitis or benign prostatic hyperplasia, and those with no assessment at 7%. Although the scope of this study focused more on the prostate gland, the assessment had also revealed that one driver had a left epididymal head cyst.

Keywords: prostatic health, taxi drivers, IPSS

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Davao Medical School Foundation, Inc.

## Serum Ferritin Levels among Blood Donors in Davao City

Ang, K. L., Alih, S., Bagaforo, F. E., Calma, C., Carlos, S., Duron, K. M., Franco, K. K., Isaguirre, N. P., Lopmpot, K. A., Nawal, N., Roscom, D., So, S. F., Tay, R. A., Veerapan, S., and Villacorta, J.,

#### **COLLEGE OF MEDICINE | 2014**

Hemoglobin and hematocrit estimation are the most common methods used worldwide in Blood Banks to screen donors. In order to detect a non-anemic iron deficient state in repeat donors, these tests are inadequate. Thus, the need for a more specific test is recommended, such as Ferritin, wherein Iron is stored in its ferric state. The amount of Ferritin stored reflects the amount of iron stored. A descriptive type of research was used in this study. Research participants were between 18 to 29 years old, males being represented more (73%). Most participants have had donated blood more than three times (57%). The mean pre-donation serum ferritin level was 185.46 with standard deviation of 119.45 for males and a mean of 65.79 and standard deviation of 63.81 for females. Results of the post-donation serum ferritin levels showed a mean of 168.50 and standard deviation of 116.25 for males and a mean of 56.76 and standard deviation of 54.09 for females. A decrease in post donation serum ferritin level was noted for 70% of the participants while 30% showed an increased post donation serum ferritin levels. Iron supplementation should be recommended for those who had a drop in their serum ferritin levels.

#### Keywords: serum ferritin, blood donors

## Effect of Long-Term Use of Coconut Oil on the Thickness, Tensile Strength and Number of Gray Hair of Indian Immigrants in Davao City

Devanesan, A. D. M. B., Dhanvarsha Sumaldha, S. R., Evangelin, R. B., Karthik, K. R., Ramesh Tony, S. B., Annuth, C., Swapna, M., Indra, N., Sujatha, R., Samuel, A. P., Jagadeesan, J. P., Das, S., and Chiyezhath, J. R.

#### **COLLEGE OF MEDICINE | 2014**

The study was a descriptive, quantitative type conducted in Davao Indian Temple on January 23 to 26, 2014. Forty participants, 30 females and ten males, aged 35 to 55 were included in the study and were asked to describe the benefits of long-term use of coconut oil on scalp hair. Specifically, this research identified whether long-term use of coconut oil affects the thickness, tensile strength, and the number of gray hair on the scalp of Indian immigrants in Davao City. The participants were divided into two groups, 15 females and five males each. Hair thickness was measured using an oculo micrometer; strength was measured using stress load equation; and total number of hair and number of gray hair in one square centimeter of the temporal region was manually counted, and percentage of gray hair was determined. Results showed that the mean thickness, tensile strength and percentage of gray hair were 77, 38 and 16, respectively, for participants using coconut oil, on the other hand, 207 and 36, respectively, for participants not using coconut oil. Further statistical analysis revealed insignificant difference for thickness and tensile strength of hair shaft. However, the percentage of gray hair showed a significant difference. The results of the study showed that coconut oil users had less number of gray hair compared to coconut oil non-users.

Keywords: coconut oil, tensile strength, gray hair, Indian immigrants

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Davao Medical School Foundation, Inc.

## Effect of Twice a Day Intake of *Cymbopogon citratus* Tea to the Systolic, Diastolic and Mean Arterial Pressures of Prehypertensive Volunteers

Aguilar, R., Beltran, J. P., Caoagdan, G. K., Etrata, R. A., Glavan, J., Laure, K., Magat, M. J. M., Reyes, G. R., and Quijote, K. L.

#### **COLLEGE OF MEDICINE | 2014**

Prehypertension is characterized by a blood pressure range of 120/80 to 139/89 mmHg with a high risk of developing to hypertension. This study aimed to determine the effect of twice-a-day intake of *Cymbopogon citratus* lemongrass tea on the systolic, diastolic, and mean arterial pressure of prehypertensive volunteers. Commercially prepared tea bags of lemongrass were infused in 240mL warm water for 15 minutes and introduced twice a day, nine am and three pm, for three weeks. Mean arterial pressure was taken on the 7th, 14th, and 21st day of intake of *Cymbopogon citrus* tea. Results showed that compared to the baseline, twice-a-day intake of lemongrass tea significantly reduced systolic, diastolic, and mean arterial pressures of the prehypertensive volunteers, with slight variation each week. This finding might be useful in the complementary management of prehypertension and to the prevention of hypertension and its complications.

Keywords: Cymbopogon citratus tea, systolic, diastolic, MAP

## Effect of Alkaline Water on Lipid Profile of Hypercholesterolemic Volunteers in Davao City

Armada, E. K., Cacayorin, K. L., Digal, J., Felonia, M. K., Guardados, R. C., Ikeda, N. S., Lim, J., Mencidor, R. M., Muthi, J., Ramesh, S., Rivera, A. G., Su, J. C. S., Taganahan, K., and Valdopiera II, J.

#### **COLLEGE OF MEDICINE | 2014**

Increasing incidence of hypercholesterolemia in Filipinos has become the leading proponent of cardiovascular diseases. Several people have reportedly taken alkaline water due to claims of having health benefits, one of which is reducing cholesterol levels. The study determined the effect of alkaline water on cholesterol levels of hypercholesterolemic volunteers in Davao City. The study aimed explicitly to determine any significant the cholesterol levels prior and after differences between the experimentation. This study included 15 volunteers between the ages of 18 and 40 years, which served as experimental subjects tasked to drink one liter of alkaline water every day for four weeks. Lipid profile tests included those for the Triglycerides, Total Cholesterol, HDL, and LDL as determined by a licensed medical laboratory scientist. Results showed that LDL of the volunteers had a significant decrease as well as a significant increase of HDL prior to and after the experimentation period. Alkaline water was believed to indirectly take pan in the expanding of the bile pool volume. Thus, it was encouraged by the researchers.

**Keywords:** alkaline water, lipid profile, hypercholesterolemic

Davao Medical School Foundation, Inc.

### Health Status of 4th Year Medical Students According to their 2009 and 2014 Health Records

Aguirre, A. B., Azuro, E., Calvez, C. P., Dumdum, D. J., Espiritu, M. A., Francisco, A., Isaguirre, E. F., Liu, C. A., Rollo, E. A., Sinarimbo, R., Tapa, S. A., and Venus, C.

#### **COLLEGE OF MEDICINE | 2014**

Given the high demand in terms of time among medical students, health is being compromised unknowingly. This study evaluated the change in the health status of the 4th year Medical Students. The researchers gathered the first year (2009) and current (2014) data of the students through their physical examination data sheets from the school clinic, and through the questionnaire prepared. The parameters used in this study are BMI, smoking history, and alcohol consumption history. The male students' average first-year weight was 65.91 kg while their current was 70.57 kg, while the females' were 53.97 kg and 55.38 kg, respectively. There was an average increase of 4.66 kg for males and 1.41 kg in females. For alcohol consumption, 42% showed an increasing habit, and 28% do not drink at all, 18% have a usual drinking habit, and 12% who drank less. For smoking history, 18% became smokers, and 82% never smoked. Data suggested that males showed higher tendencies of increased BMI and an increased tendency for alcohol consumption among medical students.

Keywords: health status, health records, medical students
PHYSIOLOGY

# Effect of White Kidney Bean (*Phaseolus vulgaris*) Supplement on the Body Mass Index and Fat Mass of Overweight Individuals in Davao City

Ang, F. G., Banga, R. N., Dagondon, R. N., Escudero, C. A., Gonzales, J. G., Jose, A., Joshua, C. A., Lacurom, C., Malubay, L. W., Polog, J., Salvador, K. G., Sumaoy, J., Torres, M. L., Yeo, E. A., and Yu Ekey, M. G.

#### **COLLEGE OF MEDICINE | 2014**

Overweight and obesity are among the leading risks of global deaths even among Filipinos. Phaseolamin, an alpha-amylase inhibitor extracted from white kidney beans (*Phaseolus vulgaris*), may prevent weight gain by blocking the absorption of carbohydrates. In this study, a randomized, double-blind, placebo-controlled method was utilized to determine the effect of white kidney bean (P. vulgaris) supplement on the Body Mass Index and fat mass of overweight individuals. Eighteen subjects, selected according to inclusion criteria, were given 6 mg/kg body weight/day dosage of either supplement or placebo for 14 days. Comparison of pre-trial and post-trial measurements revealed a significant difference on the BMI and fat mass between the experimental and placebo group. This suggested that the duration of the trial may be inadequate to acquire statistically sound results. As such, the amount of BMI and fat mass lost by the subjects after taking white kidney bean (P. vulgaris) supplements was not enough to significantly reduce its value. This implied that there was a need for continuous intake of the white kidney bean (P. vulgaris) supplement to reduce the fat mass and BMI of the subjects significantly.

Keywords: white kidney bean, BMI, fat mass

Davao Medical School Foundation, Inc.

## Effect of L- Carnitine on the Weight of Overweight Adults in a Barangay in Davao City

Ang, V., Bitoy, J. P. A., Culas, A. G., Lequip, K., Manloza, J. P., Reyes, J. A., and Go, M. A.

#### **COLLEGE OF MEDICINE | 2014**

A 2-week experimental study was conducted to investigate the effects of L-carnitine supplementation on the weight of overweight adults. Forty eight subjects aged 18 to 45 with no existing comorbidities took part in the study and were divided into three subgroups: Group A took 500 mg of L-carnitine once daily paired with moderate intensity exercise, Group B took a placebo, and Group C which was the control group took no L-carnitine and did not perform any form of exercise. All groups had no dietary modifications. The weight and BMI of all subjects were taken before and after the implementation of the study. Results revealed that experimental group ranked the highest followed by the Placebo group and lastly by the Control group. This signified that the experimental group showed the highest amount of decrease in weight. Data suggested that there was a significant difference among the weight of participants across the three treatment groups with the Experimental group exhibiting the highest weight loss.

Keywords: L-Carnitine, obesity, Davao City

PHYSIOLOGY

## Effect of Boiled Bamboo Shoots (*Bambusa blumeana*) on the Lipid Profile of Adult Volunteers at Fatima Village, Brgy. 19-B, Garcia Heights, Davao City

Alonzo, E., Aquino, M., Avila, L., Branzuela, A., Calimbas, M., Dano, K., Dedace, F., Elorde, J., Nuval, C., Pacatang, J., Parayao, D., Plaza, J., Ronquillo, J., Salmasan, J., Tayong, S., Uy, L., Wong, C., and Evangelista, J.

#### **COLLEGE OF MEDICINE | 2015**

This study was designed to determine the extent of effect of boiled bamboo shoot and a placebo among adult volunteers in terms of their lipid profile (i.e, total cholesterol, triglyceride, low-density lipoprotein, and high-density lipoprotein) as well as the significant difference on the extent of the placebo on the placebo group and the boiled bamboo shoot of the experimental group. A double-blind, placebo-controlled study was utilized. Twenty 60-year-old volunteers of Fatima Village, Barangay 19-B, Garcia Heights, Davao City. The study revealed that the mean total cholesterol, triglyceride, and low-density lipoprotein decreased after the intervention as attributed to the beneficial biochemical composition of boiled bamboo shoots, which includes dietary fiber, phytosterol, and niacin. Results showed that the decline in these parameters were evident even after only six days of intervention, indicating that the intervention has potential in lowering the parameters above even though statistically there is no significant difference.

Keywords: boiled bamboo shoots, lipid profile, adult volunteers

## Effect of Ginger *(Zingiber officinale)* Tea on the Postprandial Plasma Glucose among Individuals at Risk for Prediabetes

Abourjaily, N. M., Adtoon, J., Baliling, B. E., Bangayan, L. L., Billanes, F. L., Butiong, G. E., Cartagena, A., Cordero, T. F., Defensor, S. P., Dy, M. C., Escudero, D. R., Falgui, K. A., Gerapusco, C., Guerra, Z. M., Hingpit, L. F., Labradores, A. G., Leonoar, P., Msterio, J. M., Mohammad Aaseem M. M., Naval, R. M., Pacatang, C., Penduma, I., Rondez, R., Soneja, D. Jr., Valleser, L., Yap, D. J., and Arado, R. J.

#### **COLLEGE OF MEDICINE | 2015**

Prediabetes is a high-risk state for diabetes with increasing prevalence. Potentially, 15 to 30 percent progresses into diabetes within a decade of initial diagnosis in the premise of lifestyle modification failure. Among various therapeutic regimens, low-risk low-cost alternatives are reported to show generally good efficacy and safety data. Ginger (Zingiber officinale), in particular, is a globally popular traditional spice indicated to have hypoglycemic effect. However, its effect in general and in vivo remains to be elucidated. This study investigated the effect of ginger tea on the post prandial glucose level of high-risk prediabetic individuals. In a one group pre and post test experimental design, high-risk prediabetic volunteers  $(n=22, 50.4\pm 15.4 \text{ years old}; \text{ mostly women})$ , were given commercially prepared, BFAD-approved 2-gram ginger tea bags, one each day, for a 30-day period. Postprandial blood (2-hour after breakfast) was sampled at baseline, and 15 and 30 days interval for glucose level determination. Data showed a decreasing trend in postprandial glucose level from Day 0 (7.232 mmol/L) to Day 15 (6.350 mmol/L) and Day 30 (5.855 mmol/L). Pairwise comparison showed significant differences between day zero to fifteen, day zero to thirty, and day fifteen to thirty. The null hypothesis was rejected consequently proving that intake of ginger tea reduces the postprandial glucose levels making it a good adjunct management in regulating blood glucose especially among at-risk prediabetic individuals.

Keywords: ginger, plasma glucose, prediabetes

## Relationship of Sleep Duration and Lipid Profiles of First and Second Year Medical Students of Davao Medical School Foundation, Inc.

Andico, R., Aquino, R., Banez, J., Brillante, C., Calixijan, A., De Cilis, J., Enriquez, J., Figueroa, J., Galigao, K., Gerona, H., Libago, M., Mesa, I., Ng, L., Obguia, S., Palaca, D., Parcon, I., Rosalia, F., Salva, R., Tadena, P., Toreja, J., Vaporoso, E., Yambao, D., and Khan, R.

#### **COLLEGE OF MEDICINE | 2015**

The duration of sleep is said to be a factor that has an effect on lipid profile. This study determined the relationship of sleep duration and lipid profile. The research participants were first and second year medical students (aged 20 to 40 years old) of Davao Medical School Foundation. Inc. who were enrolled for the second semester of School Year 2014-2015. The Two Week Sleep Diary by the American Academy of Sleep Medicine was used to determine the sleep duration of the respondents, and to classify as either short or normal sleepers. The data showed, 69 respondents, with 39 short sleepers (less than 6 hours) and 30 normal sleepers (7 to 8 hours). Lipid profiles of the respondents were collected using the lipid profile test. The results of which were classified as Low, Normal, Borderline High (Borderline Low, HDL), and High. Post data collection; statistical treatment was applied to the data. The correlation between LDL, HDL and TAG showed that HDL was the best predictor of sleep duration for short sleepers however not significant. Thus, the HDL results showed an insufficient evidence to conclude that there was a weak negative correlation with sleep duration. Also, the best predictor of sleep duration for normal sleepers was the LDL, however not significant. It also showed that a weak negative correlation between LDL and sleep duration could not be concluded.

Keywords: lipid profiles, medical students, sleep duration

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## Relationship of Length of Chalk Dust Exposure and Respiratory Function of Secondary School Teachers in Davao City

Acedills, R., Arquiza, A., Barcebal, F. F., Batohanon, T., Blah, A., Calanoy, P., Cocjin, E. L., Dalen, J. M., Eleseo, M. A., Espero, C. M., Gabrieal, N., Graza, A. M., Jamina, N., Kasilag, A., Lam, A. K., Lerog, A. K., Mudanza, M. A., Orongan, R. R., Pasawa, M., Quiblat, M. R., Saromines, P. J., Tamondong, G. A., Sanchez, J. L., and Villaver, J. A.

#### **COLLEGE OF MEDICINE | 2015**

In a typical Philippine educational institution, teachers spend an average of four to six hours inside a classroom and thus are exposed to chalk dust. With frequent and extensive exposure, they are prone to develop various occupational-related problems compromising respiratory function. This study determined the relationship between the length of chalk exposure and respiratory function in terms of the following parameters: FEV1. FVC, FEV1/FVC, PEF, FEF25-75. The study was conducted on teachers working in a secondary school in Davao City, both male and female, and have been teaching at least one year. For the assessment of respiratory function, St. George Research (questionnaire and spirometer were used. From the 55 participants, data revealed a significant relationship between the length of exposure and FEF25-75. Common signs and symptoms declared were cough, sputum production, shortness of breath, and wheezing. Also, results yielded a significant relationship between sputum production and FEVI and FEVI/ FVC as well as cough and wheezing in relation to FEF 25-75. The researchers suggested that the school devise specific counter measures (e.g. usage of whiteboard and LCD projectors) against peril on teachers' respiratory health.

Keywords: Chalk dust, Respiratory function, Secondary teachers

## **Pulmonary Status of Field Enforcers in Davao City**

Acosta, D. K., Alterado, R. D., Bajada, K. R., Bidad, V. L., Boiser, K. T., Cania, M. B., Colot, E. F., Dullano, C. D., Enriquez, K. G., Fabila, K. G., Gareia, K. A., Guilonsod, J. P., Kaveri, V. S., La Rosa, G. D., Legaray, K. L., Mercadder, L. M., Napran, F. V., Pendatun, B. A., Reyes, F. M., Santos, R. D., Solis, R. I., Ubaldo, C. R., Ubaldo, E. Y., De Guzman, P. V.

#### **COLLEGE OF MEDICINE | 2015**

Davao City, as one of the most dominant centers of the Philippines, has an increasing risk for hazards of occupation, population growth and vehicular usage in the city. Exposure to noxious vehicular exhausts and emissions can affect the health and air quality of the city. Field Traffic Enforcers are inevitably at higher risk of decreased pulmonary function leading to the development of pulmonary disease. The researchers studied the pulmonary status of the field traffic enforcers in the city using a Questionnaire adapted from the American Thoracic Society-Division of Lung Disease, Peak Expiratory Flow Rate (PEFR) and Chest Radiography (X-Ray). The respondents were 78 field traffic enforcers in Davao City. The synthesis and collation of the data, questionnaire, PEFR, and Chest Radiography results were done using the following measures: mean, standard deviation and frequency distribution. The outcome of the statistical treatment was that most of the respondents, 63% yielded Normal PEFR, 21% yielded Caution PEFR and 17% yielded Severe PEFR. Furthermore, 67% of the respondent showed negative chest radiographic findings while 11 presented a positive chest radiographic results. Based on the results using the adapted questionnaire, most of the traffic enforcers commonly experienced respiratory-related signs and symptoms such as cough, phlegm, and breathlessness. It was breathlessness that was most common, observed in 27 respondents. With these outcomes, health promotion and disease prevention was recommended to the respondents for them to be aware of the respiratory-related risks accompanying their occupation.

Keywords: Pulmonary status, enforcers

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## Effect of Cocoa *(Theobroma Cacao)* Powder to Lipid Profile of Volunteers of Brgy. 19-B Poblacion, Davao City: A Pilot Study

Arreola, B., Beceira, R., Caberte, I., Castano, C., De Leon, G., Diaz, R., Eugenio, L., Floresta, K., Garces, D., Homez, M., Ledesma, G., Luna, G., Miras, N., Ninal, K., Pama, Y., Pasion, J., Revillo, K., Sabando, F., Sarenas, D., Tan, J., Ureta, R., Velilla, K., Yu, J., and Ong, A.

#### **COLLEGE OF MEDICINE | 2015**

One out of every three deaths results from cardiovascular diseases which accounts for one of the top leading cause of mortality in the Philippines. High levels of serum cholesterol contribute significantly to development of cardiovascular diseases. To address the increasing deaths, prevention of cardiovascular diseases by treating hypercholesterolemia is a critical and important step. In the Philippines, management of diseases entails readily available, acceptable, affordable, and accessible treatment to meet the demands for healthcare needs. This study determined the effects of cocoa powder (Theobroma cacao)on lipid profile of volunteers in Barangay 19-B, Davao City. This is a nonrandomized, unblinded quasi-experimental pilot study on eight adult volunteers who were determined to be unmedicated, either normocholesterolemic or borderline hypercholesterolemic individuals without comorbidities. Participants were subjected to a baseline pre-procedure fasting lipid profile test. All participants were assigned to the intervention group and were given 26 grams of cocoa powder diluted in water daily for 14 days. Fasting lipid profile was taken on the 7th and 14th day. Results showed that there was insignificant difference in the mean total cholesterol, mean triglyceride level, and the mean LDL-Cholesterol level between baseline, 7th and 14th day of cocoa powder administration. However, results showed that there was a significant increase in mean HDL-Cholesterol level after 7th and 14th day of cocoa administration. Short-term administration of cocoa powder significantly increased HDL-Cholesterol level.

#### Keywords: Cocoa powder, Lipid profile

## Effect of Vitamin B12 and Folic Acid on the Lipid Profile of Adult Volunteers in Davao City

Abelita, R., Apostol, K. J., Bongolan, R., Calda, C. A., Coho, C. J., Dismas, J. F., Eugenio, A. A., Frasco, J. M., Garcia, L. J., Idal, C. G., Leonor, D., Macarongon, F., Nasiluan, J. N., Notarte, D. J., Pableo, R. M., Parada, I. P., Paulino, R. R., Reyes, L. E., Salcedo, E. A., Tanedo, E. V., Villanueva, M., Zamora, H. F., and Sarpamones, E.

#### **COLLEGE OF MEDICINE | 2015**

This study conducted within Davao City involved 18 participants, both male and female, aged 42 to 43 years old. The chosen respondents underwent two screening processes: first, to determine any known contraindication in taking vitamin B12 and folic acid; second, a measurement of individual lipid profiles (including total cholesterol, triglyceride, HDL, and LDL levels) to identify respondents with increased levels of cholesterol. Respondents were classified as hypercholesterolemic individuals, with no co-morbidities, and do not need any form of drug therapy. This classification is in accordance with the National Cholesterol Education Program ATP III Guidelines. For the pre-testing lipid profiles, the mean values are 229.05 (cholesterol), 57.55 (HDL), 143.22 (LDL), and 148.39 (triglycerides). Respondents were provided with 500 mcg vitamin B12 capsules and 5 mg folic acid capsules to be taken one capsule per day for fourteen (14) days. After the administration period, lipid profiles were again measured. The post-testing mean values are 181.11 (cholesterol), 42.94 (HDL), 115.71 (LDL), and 123.83 (triglycerides). Results revealed that mean differences between cholesterol, HDL, and LDL before and after vitamin B12 and folic acid administration were statistically significant. The decrease in triglyceride levels is not statistically significant at a p-value of 0.062. Oral vitamin B12 and folic acid provide a significant decrease in cholesterol and LDL levels.

Keywords: Vitamin B12, Folic acid, Lipid profile, Adult volunteers

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## Effect of Soymilk on the Blood Pressure of Prehypertensive Individuals in Malagos, Davao City

Aclaracion, K., Aliceer, J. F., Antaran, G. M., Aveline, G. N., Baron, F. M., Caminero, H., Collado, M., Daugdaug, B. K., De Los Reyes, P., Eliseo, S., Estrellado, K. A., Francisco, A., Franco, K. K., Gapate, J., Guadalupe, F. E., Kintanar III, A., Lasaca, K. J., Lim, J., Masagnay, A. M., Nadera, M. J., Ramos, K., Sanchez, R. J., Sisa, A. C., So, S. F., Torres, A. J., Virrey, T. C., and Penaflorida, A.

#### **COLLEGE OF MEDICINE | 2015**

High blood pressure, with its increasing prevalence, is a principal risk factor for heart disease and stroke. Managing prehypertension in individuals through diet is key to health and longevity. In the present study, the effect of soymilk on the blood pressure of 54 prehypertensive individuals (18 male, 36 female) in Barangay Baguio Proper, Malagos, Baguio District, Davao City was investigated. Before initiation of the study, average baseline blood pressure measurements were 127.50+5.39 mmHg for systolic and 81.67+2.38 mmHg for diastolic. After one-month daily consumption of eight oz (330 ml) soymilk, systolic blood pressure measurements decreased to 119.95±13.04 mmHG and diastolic blood pressure measurements decreased to 80.14±9.19 mmHG. In conclusion, daily soy milk consumption for one month has significant hypotensive action in systolic blood pressure measurement but insignificant hypotensive action in diastolic blood pressure measurements. Further studies involving a different locale, longer time period, population including hypertensive individuals and a control group are recommended.

Keywords: soymilk, blood pressure, Prehypertensive

## Effect of Kangkong *(Ipomoea Aquatica)* on Post Prandial Blood Glucose Levels among Residents at Risk for Diabetes in Barangay 19-B Davao City

Abundo, S. J., Agundo, C. T., Arcamo, L. V., Bangot, K. O., Bitte, A. Y., Chang, M. L., Coronel, E. P., Del Fierro, J. M., Esparagoza, K. A., Flores, L. S., Elefante, A. L., Fernandez, E. C., Gloriani, D. G., Guerrero III, J. A., Ignacio, E. D., Lconardia, A. G., Monteverde, E. G., Pantojan, M. A., Pracuelles, V. M., Salangsang, A. B., Sarato, C. M., Soriano, J. K., Villamosada, P. D., Zamoras, F. C., and Lacang, Y.

#### **COLLEGE OF MEDICINE | 2015**

*Ipomoea aquatica,* also known as water spinach, or locally known as kangkong, is a potential herbal remedy, being rich in polyphenols particularly the flavonoid, quercetin. Quercetin has a hypoglycemic activity, acting on carbohydrate digestion and absorption. It can potentially reduce postprandial blood glucose by inhibiting carbohydrate digestive enzymes. In this study, the researchers determined if there was a significant difference in the postprandial blood glucose levels between pre and post intake of kangkong *(I. aquatica)* among individuals at risk for diabetes. Blood glucose levels measurement at different time intervals (Pre-meal, and first, second, and third hour post and prandial) was done using a glucometer (One Touch Select), test strips, and lancets. Respondents were given 10 grams of *Ipomoea aquatica* diluted in 200 mL distilled water. The individuals with risk for diabetes showed a significant reduction in the postprandial blood glucose levels at the second and third hour. However, it was insignificantly reduced at first hour postprandial.

Keywords: kangkong, post-prandial, blood glucose level, diabetes

Davao Medical School Foundation, Inc.

## **Effect of Honey on Lipid Profile of Adult Volunteers in Davao City**

Barnuevo, C. T. B., Davin, C. A. S., Ekrima, Z. L., Estares, M. G. P., Iribani, F. J., Labtang, T. B., Limen, N. F. C., Lisondato, P. M. D., Masulot, I. B., and Pahm, N. A.

#### **COLLEGE OF MEDICINE | 2015**

A major risk factor of ischemic heart disease is high total cholesterol. The potential then of honey as adjunct therapy for improvement of lipid profile was investigated in this study. Fifty adult volunteers from Barangay Communal, Davao City were included in the randomized controlled trial performed. Volunteers have low risk of developing cardiovascular diseases. Baseline lipid profiles were taken prior to treatment. Subjects were assigned to either 20 grams of honey or 74 grams of honey group through the fishbowl method. The subjects were instructed to incorporate honey into their diet for 21 days. The significant difference of lipid profiles before and after the 21-day trial was determined. Results showed that the group which consumed 20 gram of honey per day showed a significant increase in HDL and a significant decrease in triglyceride and total cholesterol. The 75-gram group mean difference between before and after consumption of honey also showed a significant increase in both HDL and LDL. While the HDL increase was expected, very few other studies cite the increase in LDL which was expected to decrease upon consumption of honey.

Keywords: kangkong, post prandial, Blood glucose level, diabetes

## Peak Expiratory Flow Rate of Security Guards in Selected Open Space and Enclosed Space Parking Lots in Davao City

Abucayan, M. A., Almendras, A. N., Ambrad, K. J., Ambrosio, M. R., Amparo, C. M. A., Anima, J. P. H., Aniñon, D. L., Aquino, M. A., Araneta, T. S., Arguillas, J. P., Atega, T. J., Bantillo, R., Capol, T., and Mission, D. I.

#### **COLLEGE OF MEDICINE | 2016**

Davao, being one of the growing urban city in the Philippines, had experienced increased vehicular traffic which also is a significant factor affecting air quality. Parking lot security guards spend most of their working hours in their entitled areas that can either be in open or enclosed parking space thus are frequently exposed to vehicular exhaust fumes. Parking lot security guards are prone to occupational hazards especially occupational-related problems compromising respiratory function. The study determined the significant difference between the peak expiratory flow rate of security guards in open and enclosed space parking lots in Davao City by using Hudson RCI Pocket Peak<sup>TM</sup> Peak Flow Meter. The researchers used a questionnaire adapted from the American Thoracic Society Division of Lung Disease (ATS-DLD-78-A) to obtain demographic data and respiratory signs and symptoms of the respondents. Results of this study showed that the mean PEFR of the security guards in the enclosed space parking lot was much lower as compared to the security guards in open and enclosed space parking lots. Exposure to exhaust and fumes, inside enclosed parking lots, caused more health risk to security guards than the security guards working in open parking lots exposed to vehicular exhaust.

Keywords: security guards, parking lots, Davao City

Davao Medical School Foundation, Inc.

## Hearing Acuity of Individuals Exposed to Occupational Noise in the Entertainment Industry

Abella, E. V., Aguayco, D. K., Agujetas, W. D., Alaba, L. K., Alegro, H. J., Alfonso, M. O. Y., Ali, R. M., Amatonding, R., Andales, C. D., Aquino, J. J., Babatid, M. J., Babista, F. L. A. B., Brieta, M. J., Elizaga, M. T., and Sultan Batao, A.

#### **COLLEGE OF MEDICINE | 2016**

Noise-induced hearing loss (NIHL) is the most severe health hazard in the occupational setting in the Philippines. A descriptive study was done to know the prevalence of hearing loss due to occupational noise exposure in the entertainment industry encompassing six establishments in Davao City, with noise levels exceeding 85 decibels (dB) measured through a mini-sound level meter, as the baseline for further research. Thirty-three male and eight female individuals participated in the study based on a survey and screening test. Majority of the research participants were aged 18 to 22 (32%) and aged 23 to 27 (24%), with 46% working as waiters, 15% as musicians or entertainers and 39% as bartenders. Most of the exposed individuals had been working in a noisy environment for less than six months (66%) but at an average intensity of 94.23 dB of noise. After free otoscopic examination and Pure Tone Audiometry (PTA) testing, it was found that hearing impairment affects 59% of the exposed individuals while 41% had normal hearing acuity. Mild conductive hearing loss was found to have a frequency drop with the most common impairment at 4,000 Hz. An average hearing threshold of 18.48 dB for air conduction and 16.81 dB for bone conduction was observed, indicating that the sample population experiences a slight degree of sensorineural hearing loss.

## **Keywords:** *hearing acuity, occupational noise, entertainment industry*

## Health Status of Selected AgriVet Retail Store Employees in Davao City

Juilla, J. E., Corcino, A. L., Cruz, A. A., Dela Cruz, J., Estomata, N. R., Estores, K., Fahad, A., Gaviola, T. J., Gayak, Z. J., Gomez, P. L., Gonzaga, C. K., Gundaya, A. K., Gutierrez, G. B., Hao, K. M., Jardinel, J. A., Kismundo, J., Mai, J., and Singh, H.

#### **COLLEGE OF MEDICINE | 2016**

Exposure to animal feeds has been associated with various health issues. Moreover, to address the urgency of the more rigorous implementation of occupational health safety measures at the retailer's level, the proponents determined the health status of AgriVet retail store employees. The AgriVet feed retail store employees were subjected to laboratory tests such as complete blood count, urinalysis test, and chest X-ray. They also underwent a physical examination conducted by a licensed medical doctor. The research participants were grouped according to their demographic profile. Laboratory tests results showed that a varied number of respondents had low hemoglobin and hematocrit concentration, and high white blood cell, pus cell, red cell, and eosinophil count. Chest X-ray results showed pneumonia, left ventricular cardiomegaly, and either minimal pleural effusion or thickening of right lung wall as the significant findings. The physical examination yielded various atypical findings including increased blood pressure, upper and lower respiratory tract infection, cough and colds, chronic bronchitis, allergic rhinitis, scaling of the foot, contact dermatitis, Tinea corporis infection, hypopigmentation, and dirty sclera. Findings suggested the need to check the overall health status of Agrivet manufactures, compare the health status of workers utilizing personal protective equipment to those that do not, measure the overall health status of participants over a period of time, elucidate the different daily health practices of the respondents and compare exposure to various specific feeds such as swine or poultry feeds, and test for effects of specific components of different AgriVet feeds.

Keywords: Agrivet retail store, employees, health, Davao City

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Davao Medical School Foundation, Inc.

## Health Status of Embalmers in Davao City

Andan, R. P., Ayub, J. Jr., Babac, A. P., Bandong, S. D., Bantugan, R. R., Barlis, D., Bata, P. M., Baula, B. A., Bayogos, M., Belarmino, K. S., Benitex, J., Borromero, C., Buscato, C., Combenido, J. M., Deomampo, K. L., and Uson, A.

#### **COLLEGE OF MEDICINE | 2016**

Embalmers face several occupational hazards and risks of acquiring infectious diseases compared to other workers. Despite the role they play and the risks they face, policies ensuring their safety and studies regarding their health remain scarce. A descriptive study was conducted to determine the health status of embalmers. Twenty research participants from funeral homes in Davao City were included. Essential information was gathered by means of the interview, physical examination, and radiographs. The demographic evaluation showed that 45% of the embalmers were in their third decade. Appreciably, 60% of the respondents were college graduates. On the other hand, the majority were employed for six to ten years that ranks second on the number of embalming performed with an average of 1.60 corpses per day. Upon physical assessment, respiratory, skin, head, musculoskeletal, eyes, cardiovascular, gastrointestinal, throat, and mouth findings were remarkable. Chest radiograph revealed that two of the respondents have pulmonary tuberculosis and another one suffers from pneumonia. Vital signs revealed 15% of the patients are hypertensive. Personal and social history revealed that only 35% of the respondents were smokers, and 25% appeared to have hypertension. None of the respondents appeared to have previous hospital admission. Data suggested the susceptibility of embalmers at work. It was recommended that further study shall be done with elaborate tests at wider spatial and longer temporal scale.

Keywords: embalmers, health, Davao City

## Effect of Raw Garlic *(Allium sativum)* on Fasting Blood Glucose Levels among Adult Type 2 Diabetic Volunteers in Barangay Tigatto, Davao City

De Guzman, T. M., Dela Victoria, F., Faustino Jr., H., Fernandez, C. D., Gonzales, P. M., Hadjiula, A., Hashiba, Y., Julhan, F. D., Jurilla, J. R., Kedtag, J., Lacar, Z., Lagmay, P. A., Lanoza, J. M., Laurente, N. M., Lumba, J. A., Mamaclay, Y. P., Mantawil, A., Maquilan, R., and Octa, C. M.

#### **COLLEGE OF MEDICINE | 2016**

World Health Organization (WHO) projects that Diabetes Mellitus (DM) will be the seventh leading cause of death in 2030, with its estimated increase to 366 million from 171 million in 2000. In the Philippines, Davao Region belongs to the top five with the highest prevalence of DM, causing 3% of the total deaths. As such, the researchers explored the effects of raw garlic (Allium sativum) on the fasting blood glucose levels of adult Type II Diabetic volunteers in Barangay Tigatto, Buhangin District, Davao City. In this quasi-experimental study, 19 adult volunteers were included. Participants were male and female, aged 25 and above, diagnosed with Type II DM with Fasting Blood Sugar (FBS) level of greater than 126 mg/dL or 7.0 mmol/l, and were taking oral hypoglycemic maintenance medications. The participants were randomly divided into two groups: Group A (experimental group), given raw garlic for 15 days; and Group B (control group), not given raw garlic. FBS levels were measured at Day 0 and 16. Both groups showed a slight decrease in FBS levels. Statistical analyses revealed that there was insignificant difference on the FBS levels of both groups before and after intake of raw garlic. Future studies may utilize hbA1c to determine blood glucose levels, lengthen the experimental period for at least 12 weeks, and proportion the dose of raw garlic based on the weight and blood glucose levels of the participants.

Keywords: raw garlic, blood glucose, diabetes

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Davao Medical School Foundation, Inc.

## Effect of Moderate Aerobic on Long-Term Memory among First Year National Medical Students of Davao Medical School Foundation, Inc. S.Y. 2015-2016

Doromal, D., Galapate, C. J. R., Gumarang, J., Laguialam, L., Legarde Jr., E., Limjap, A. A., Lomboy, M. C., Lumongsod, H. P., Maadil, M. C., Macapas, A., Madayag, N. B., Magtulis, N., Mercado, R. G. M., Nakan, S. F., Oking, M. K. Y., Ong, M. R., Vergara, E., and Oponda, C. V.

#### **COLLEGE OF MEDICINE | 2016**

This within-subject repeated measures experimental study determined the effects of a single bout of moderate aerobic exercise on long-term memory among first-year National Medical (NMD) students of Davao medical School Foundation, Inc. (DMSFI) S.Y. 2015-2016. Participants were screened using the Physical Activity Readiness Questionnaire (PEPARQ) and Visual Auditory Kinesthetic (VAK) Learning Style Quotient (IQ) test was done to determine if IQ was predictive of long-term memory. Participants underwent two phases in the study: Phase I (without-exercise phase) and Phase II (with-exercise phase). On each phase, a recognition test was administered thirty-five minutes and seven days after exposure to photographic stimuli. Results showed that there was no significant difference in the scores of recognition test obtained thirty-five minutes after and seven days after exposure to stimuli when comparing the without exercise phase and the with exercise phase. Single bouts of moderate aerobic exercise did not produce a significant difference between the scores of the two phases. IQ level has no influence on long term memory, thus, was not a predictor of long-term memory. To make a more conducive argument on the relevance of exercise to memory retention, the researchers recommend designing a longer duration of the study, with larger sample size, more trials, possibly measurements of reaction time towards recognition of stimuli and use other types of test aside from recognition test to measure long-term memory.

Keywords: long-term memory, first-year, medical students

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## Effect of Induced Mental Stress on Cardiovascular Reactivity of Healthy Subjects

Ancheta, L. A. V., Baliling, B. E., Coquilla, J. R. S., Gayares, F. K., Jacob, T., Jemima, J., Kirol, M. M., Lucas, C. L., Penales, R. A., Sacatani Jr., M., Suarez, S. L., Tacata, J. R., Tio, J. G., and Yap, J. K.

#### **COLLEGE OF MEDICINE | 2016**

Stressor tests have been used as a research strategy to examine cardiovascular reactivity in varied populations. This study analyzed the changes in terms of blood pressure and heart rate induced by Stroop test, a mental stressor, and predict the future occurrence of cardiovascular diseases among the 58 (13 males and 45 females) respondents. Hyperreactive responses were classified as those having percent changes in systolic and diastolic blood pressures, and heart rate belonging to the seventh percentile. Ten percent of the 58 respondents were hyperreactive. Among the classified hyperactive respondents, 83% were males and all of them were positive for family history of cardiovascular diseases. The small number of hyperreactive can be allotted to the fact that majority of the respondents were females and this may have affected the cutoff limit for hemodynamic hyperreactivity, thus, lowering the total number of hyperreactive in the study population. This study showed the possibility that the hyperreactive respondents were more likely to develop future cardiovascular diseases as compared to the rest of the study population. Despite this, it must be considered that this was only an assessment test and the results are dependent on the study group.

Keywords: mental stress, cardiovascular, healthy subjects

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## Effect of Coconut (*Cocos nucifera*) Vinegar on the Lipid Profile of Borderline Hypercholesterolemic Adults: A Pilot Study

Leoncito, D., Lom-oc, C. C. L., Nono, E. J., Pacete, J. R., Palmera, F., Pangilinan, M. V., Pasandaan, S. R. M., Peli, V. A. Rivas, E. J., Romancap, J., Santamaria, R. R., Selvido, I. V. J. M., Singco, A. M., Tallo, K. M., Tan, S., Tan, Z. J., Wong, J., and Zamoras, A.

#### **COLLEGE OF MEDICINE | 2016**

Hypercholesterolemia and its related diseases are the leading causes of mortality worldwide. To help combat this problem, the researchers explored on a trending natural dietary alternative - the intake of certain vinegar becoming known as adjuncts for lowering cholesterol. Coconut vinegar contains acetic acid that reduces cholesterol levels. This study focused on its effects on lipid profile fraction. A quasi-experimental research design and a purposive sampling was employed. Twenty participants, consisting of both males and females aged 27 to 76 years old, from Brgy. 19-B, Poblacion District, Davao City finished the intervention. They were screened as borderline hypercholesterolemic and free from any diseases. They underwent blood extraction for the determination of their baseline lipid profile levels. The participants then took 15 mL of coconut vinegar every after breakfast and after dinner for 4 weeks. Another blood extraction was done after 4 weeks. There was a significant decrease in the total cholesterol and triglyceride levels of the participants. There was also a significant decrease in HDL. Insignificant difference in the LDL levels was found. The short duration of the study may not be enough to observe any significant change. The researchers, therefore, recommended the use of an experimental research design to further investigate the specific components of coconut vinegar that could affect each of the lipid profile fractions.

Keywords: coconut vinegar, lipid, hypercholesterolemic

## Effect of Saluyot *(Carchorus Orlistorius L.)* on Fasting Blood Sugar Levels of Volunteer Prediabetic Patients in Brgy. 19-B, Poblacion District, Davao City

Carreno, D. A., Cascabel, K., Chio, J., Del Fierro, A. I., Domingo, M. J., Dumandan, J. M., Enobio, P. M. J., Enriquez, A. D., Estrella, E. E., Eullaran, J., Flores, J., Flores, K. M., Guiomala, R. A., and Maglasang, N. J.

#### **COLLEGE OF MEDICINE | 2016**

Saluyot (Corchorus olitoruus L.) has long been recognized for its potential to reduce blood sugar levels. Among its essential component, corchoruside A has an inhibitory effect toward a-glucosidase thus decreasing blood sugar levels among diagnosed diabetic patients. The study determined the effect of saluvot on the fasting blood sugar levels of volunteer prediabetic patients in Brgy. 19-B, Poblacion District, Davao City. A double- blind randomized controlled trial via fish-bowl technique was used. Twenty participants equally divided into two groups: control and experimental were involved. Each group received supplementation of placebo (control) and saluyot capsules (experimental) for 15 days. A decreasing trend of blood sugar for both control and experimental groups was noted. Statistically, the betweensubjects test showed that there was no statistical difference in the decrease of mean fasting blood sugar between the control and experimental group. However, the within-subjects test showed that there was a statistical difference in the decrease of mean fasting blood sugar between the control and experimental treatment group over time. The results imply that taking 50 mg saluyot capsule three times a day can reduce the fasting blood sugar level. Thus, researchers suggested the use of saluyot as a supplement in the diet of prediabetic and diabetic individuals.

Keywords: saluyot, blood sugar levels, fasting, prediabetic

Davao Medical School Foundation, Inc.

## Effect of Okra (*Abelmoschus esculentus (L.) Moench.*) Powder on the Lipid Profile of Adult Volunteers from a Local Barangay in Davao City

Torralba, H. L., Wee Eng, A. E., Vargas, D., Mantilla, N. A., Quinto, L. M., Roferos, R., Romancap, J., Rivero, N. J., Rubinos, M. G., Shanmugan, L., So, A. K., Sohal, S., Soriano, E., Trangia, K. C., Tuble, T. T., Tumuran, J., Ugay, R., Uyking, N. E., Yee, G. M., and Quero, M. I. B.

#### **COLLEGE OF MEDICINE | 2016**

Okra (*Abelmoschus esculentus* (L.) Moench.) is a common vegetable in Asia and is one of the richest sources of soluble fibers, noted for its cholesterol-lowering abilities. This study evaluated the effect of 24g of okra powder in the mean lipid profiles: total cholesterol, triglycerides, HDL, and LDL levels of adults with borderline high cholesterol levels. This study used a quasi-experimental study design. Forty one participants from Brgy. 18-B Bo. Obrero consumed 24 g of okra powder daily for a duration of four weeks. The blood samples were extracted at baseline and at post intervention. Results showed that the decrease in cholesterol, HDL (0.016), and LDL (0.006) levels were significant. However, the decrease in triglyceride levels was insignificant. Soluble fibers bind with bile acids preventing lipid absorption. This induced bile acid synthesis, which in turn decreases LDL. In effect, total cholesterol also decreased. These results suggested that consumption of 24 g of okra powder, which contains 3 g of soluble fiber, daily for four weeks significantly lowers cholesterol levels.

Keywords: okra powder, adult volunteers, lipid profile

## Effect of Chayote *(Sechium Edule)* on Mean Blood Pressure Among Prehypertensive of Purok I-C, Barangay 19-B, Garcia Heights, Bajada, Davao City

Biolanco, J., Briones, N., Galo, C., Banate, A. G., Gamao, R., Capirig, C. J., Barol, A., Buenavista, B., Bonjibon, C. E., Cabanban, J. R., Caingat, D., Balbin, M., Balboa, B. G., Breva, M., De Vera, J., Elevazo, P., Procalla, R. G., and Canacan, S. R.

#### **COLLEGE OF MEDICINE | 2016**

This research determined the effect of Chayote *(Sechiumedule)* on mean blood pressure (MBP) among prehypertensive of Purok 1C, Barangay 19-B, Garcia Heights, Bajada, Davao City. A 2-week double-blinded, placebocontrolled, parallel, human trial with chayote juice or placebo was conducted. There were two treatment groups which consist of the experimental and control group. The experimental group received only chayote juice while the control group only received the placebo. Both experimental and control groups received their respective treatment juice for two weeks. Results showed lowering of mean systolic and diastolic blood pressure among prehypertensive however, statistically insignificant. Nevertheless, results showed a significant difference only in the correlation between pre and post mean blood pressure that tells a consistent pattern of change in the systolic value and diastolic value of treatment and systolic value of the control.

Keywords: chayote, blood pressure, prehypertensive

Davao Medical School Foundation, Inc.

## Effect Malunggay (*Moringa Oleifera Lam*) Tea on the Postprandial Blood Glucose Levels of Prediabetic Individuals in Davao City

Espinosa, L., Macarongon, F. K., Marohombsar III, A., Medina, J., Mohammad, F., Naval, R. M., Pacana, B., Paragas, J., Parcon Jr., I., Parcon IV, R. M., Parcon, M. M., Yson, P. H., Samikanu, L., and Paulino, K. M.

#### **COLLEGE OF MEDICINE | 2016**

The study determined the effect of malunggay (Moringa oleifera Lam.) tea on the postprandial glucose blood levels of prediabetic individuals in Davao City. The research followed a crossover experimental design involving 14 prediabetic individuals, six female and eight males with an average age of 47 years old who were selected through the use of a screening tool and confirmed with fasting blood sugar results. Data collection was done over a period of two days. Blood sugar levels were measured using a glucometer at premeal, one and two hours postprandial intervals. At the first day of data collection without the intake of malunggay tea, the mean blood glucose levels were 93.79 mg/ dL, 129.43 mg/dL, and 105.93 mg/dL, respectively. On second day of data collection with the intake of malunngay tea, the mean blood glucose levels were 90.21 mg/dL, 116.71 mg/dL, and 106.93 mg/ dL, respectively. Results on comparison between the premeal, first and second hour postprandial blood glucose levels with and without intake of malunngay tea showed that there was insignificant difference in the premeal and two hours postprandial. However, there was a significant difference between the first hour of postprandial blood glucose levels. These findings suggested that the intake of malunggay tea effectively lowered one-hour postprandial blood glucose levels significantly compared to without intake of malunngay tea.

Keywords: malunggay tea, blood glucose level, diabetes

## Effect of *Psidium guavaja* (Guava) on Postprandial Blood Glucose of Controlled Diabetic Volunteers in Davao City

Barcebal, F. F., Coho, C., Galia, J., Garces, D. F., Jucar, A. A., Lopez, L., Lorenzo, C. A., Lu, R. J., Lupogan, O. J. F., Meling, A., Mulato, P., Oropeza, N. M., Pantonial, R., Peralta, A. G., and Vaporoso, E. M.

#### **COLLEGE OF MEDICINE | 2016**

In the Philippines, diabetes statistics is alarming increasing. If no intervention occurs, probably over 7 million will have diabetes by 2030. This increase is attributed to the lifestyle and culture of Filipinos especially the preference for rice. This has led to the concept that reducing postprandial blood glucose concentrations should be targeted in the prevention and treatment of this chronic disease. The study determined the possible effect of P. guavaja leaf tea extract on the postprandial blood glucose of controlled diabetic volunteers. This was a crossover experimental study on 15 volunteers. They were subjected to a two-hour postprandial blood glucose test for two days. On the first day, the volunteers were given 200g of rice and water, and on day two, 200 grams of rice and guava leaf tea extract. After, postprandial blood glucose of the adult volunteers was measured for two hours with a 30 minutes interval each measurement. The first and second day have one week interval for a wash-out period. The result showed that the treatment group which ingested rice and Guava leaf tea extract had significantly lower mean glucose levels than those who ingested rice and water during the time periods of 30 minutes, 60 minutes, 90 minutes, and 120 minutes.

Keywords: guana, blood glucose, diabetic

Davao Medical School Foundation, Inc.

## Post Combustion Oxygen Administration to Pulmonary Function of Firefighters in Davao City

Angkang, J. G., Biene, K. M., Candelario, M. A., Cariño, J., Carnicer, M. R., Commendador, M. L., Curay, A. J., Dacillo, G., Daguio, M. A. N., Dayanghirang, E. H., Domingo, A. M., Domingo, C., Doplayna, Z. L., Doromal, X. T., Dy, M. J., Endaya, R. J., Estorninos, J. C., Herrero, R. P., and Julao, F. A.

#### **COLLEGE OF MEDICINE | 2016**

Firefighters are called to rescue citizens and city properties under hazardous conditions. Fires cause a massive, toxic particulate atmospheric release. Studies show that these cause pulmonary symptoms wherein hypoxia is the most common culprit. Repeat occurrences cause morphological changes resulting in chronic respiratory diseases. To alleviate hypoxia, oxygen is administered acutely by the Emergency Medical Service (EMS). This study determined the oxygen administration efficacy in longterm pulmonary damage prevention through an observational research design. Thirty, active, male firefighters, aged 25 to 35 years old from four fire stations in Davao City with at least one year of experience were chosen as participants. A sample with similar characteristics was derived from the population. Data was collected using Pulmonary Function Test, performed on the subjects by a qualified Respiratory Therapist. After testing, the subjects were grouped according to the verbalization: (A) compliant to oxygen administration post-combustion exposure and (B) those not compliant. Results were compared and revealed that the effect of oxygen administration had insignificant difference in the pulmonary function test results of firefighters in both groups.

Keywords: oxygen, pulmonary function, firefighters

## Effect of Lemon Grass (*Cymbopogon Citratus*) Oil on Lipid Profile Among Low Risk Hyperlipidemic Volunters of Purok 23-A, Isla Suerte, Davao City

Eugenio, A., Ferrer, P., Herrera, N., Hinggo, J., Labang, S., Lipardo, C., Macarag, A., Miedes, J., Onda, C., Ontal, M., Padate, A., Pena, K., Umpa, M., and Yap, C.

#### **COLLEGE OF MEDICINE | 2016**

Familial heart disease and high fat, cholesterol, and sodium diet predispose Filipinos to cardiovascular disease (CVD), a leading cause of mortality and morbidity. To prevent CVD, lipid-lowering drugs are prescribed. However, these may be expensive for a minimum-wage earner and causes inevitable side effects. Lemongrass (Cymbopogon citratus) in contrast, has no known side effects, cheaper and quickly grown in the Philippines. It contains geraniol and citral which inhibits HMD- CoA reductase hence a potential alternative for lowering cholesterol levels. This study determined the effect of lemongrass oil on the lipid profile of low-risk hyperlipidemic individuals. Commercial lemongrass was obtained and was encapsulated at 140 mg by Philippines Institute Traditional and Alternative Health Care (PITAHC). The study has two groups of 15 volunteers each: experimental group with lemongrass oil and control group with placebo for three weeks. Baseline and post- intervention lipid profile were obtained. Results revealed that there was a significant difference between the baseline and post intervention lipid profile of the experimental group. The lemongrass oil capsule significantly lowered LDL-C, total cholesterol, and triglyceride levels. With these, the null hypothesis that lemongrass has insignificant effect to lipid profile was rejected.

Keywords: lemon grass, Cymbopogan citratus, lipid profile

#### **COMMUNITY MEDICINE**

Davao Medical School Foundation, Inc.

## Pulmonary Function Assessment in Children Aged Six to Twelve Years Old with a Smoker Household Member in Purok Fatima Zone 4, Barangay Sasa, Davao City

Sia Su, J. C. H., Kalloor, N. S., and Tinagan, J. F. F. COLLEGE OF MEDICINE | 2016

Smoking is a public health problem worldwide, which canto mortality and morbidity. The health consequences of smoking are not only death by the smoker but also others, including children who are exposed to passive smoking. Second-hand smoking can cause lower respiratory tract infections such as bronchitis and pneumonia, middle-ear infections, symptoms of upper respiratory tract irritation, small reductions in lung function, asthma onset, and additional episodes and increased severity of symptoms in children with asthma. This study determined the lung function of children aged six to twelve years old exposed to passive smoking in Purok Fatima Zone IV, Brgy. Sasa Davao City. A descriptive research design was used in this study. Forty two households were recorded to have smokers in the family, among this, thirty-nine subjects between the aged of six to twelve were identified. The researchers used a peak flow meter to measure the peak expiratory flow rate of the subjects. Results showed that the younger the age of the respondents, they were more likely affected since most of them belong to the yellow zone or those who had possible airway narrowing. Also, majority of the respondents have increase recurrence of the symptoms such as cough, colds, chest congestion, and chest illness. This implied that they had been manifesting common respiratory symptoms of children who were exposed to secondhand smoke.

**Keywords:** Smoking, children, Fatima Davao City, respiratory, infection

## Ten-Year Cardiovascular Risk among Adult Residents (40 Years and Above) of Purok Coconut, Barangay Tagakpan Tugbok District, Davao City

Sunga, T. M. B., Tagami, A. L., and Yap, J. K. K.

#### **COLLEGE OF MEDICINE | 2016**

Cardiovascular Diseases (CVDs) are the number one cause of death in the Philippines in 2010 and worldwide in 2012 (WHO). Hypertension, diabetes, and obesity are among the cardiovascular disease's principal risk factors. This descriptive study determined the 10-year CVD risk among residents aged 40 years old and above in Purok Coconut, Barangay Tagakpan, Tugbok District, Davao City. The DOH protocol Philippine Package of Essential Non-communicable Disease (PhilPEN) Risk Assessment and Screening form was used to determine age, sex, risk factors, family history, anthropometric measurements, blood pressure and past medical history of the participants. Based on these, the 10-year CVD risk was classified using the WHO/ISH risk prediction chart. Forty residents were initially interviewed with 22 participants included in the study who were pre-hypertensive and hypertensive. Male and female participants were equally represented. Thirteen participants had a family history of hypertension. Three participants were current smokers and 15 drink alcoholic beverages. Sixteen participants claimed eating processed foods weekly. Eight female participants and two males had waist circumference more than 80 and more than 90 cm, respectively. Based on the JNC 8 blood pressure classification, 15 are prehypertensive, three are Stage I hypertensive, and the remaining four are Stage II hypertensive. Out of the 22 participants, 12 were categorized with having less than 10% CVD risk, five participants had to less than 20% CVD risk, three participants had 20 to 30% risk, and two participants had more than 40% risk.

**Keywords:** Cardiovascular disease, hypertension, blood pressure, risk, adult participants

#### **COMMUNITY MEDICINE**

Davao Medical School Foundation, Inc.

## Prevalence of Hypertension and the Profile of Adults in Purok Tabuah, Barangay Wines

Dauz, S. M., Dela Cruz, A. B., Escovilla, C. D., and Fernandez, A.

#### **COLLEGE OF MEDICINE | 2016**

Hypertension is one of the leading public health challenges because of its high frequency and associated risks of cardiovascular and kidney diseases. The prevalence of hypertension is 21% in the Philippines, with notable increase annually. During the community diagnosis in Purok Tabuah, Barangay Wines, Hypertension is the leading cause of chronic morbidity wherein 60% of the adult residents aged 40 years old and above hypertensive. It was also noted in residents less than 40 years old. This study presented the sociodemographic, behavioral, and physical profile of these individuals. A house to house visit was conducted wherein blood pressure was taken among all 18 years old and above individuals in a household. Only those individuals who were hypertensive during the survey and known hypertensive were included in the study. The data was collected using a structured interview questionnaire adapted from "WHO STEP wise approach to chronic disease risk factor surveillance (STEPS). The preva- lence of hypertension among the adult population in Purok Tabuah is 32%. Thirty respondents had BP of 140/90 mmHg during the survey. Out of the total hypertensive respondents, 13 were newly screened and unaware of being hypertensive. Thirty two respondents have a high risk of developing cardiovascular morbidity.

**Keywords:** Hypertension, adult participants, cardiovascular morbidity, disease risk factor surveillance

## Efficacy of Zeolite as a Soil Amendment in Minimizing Nitrogen Phosphorus Leaching

Arcilla, W. A., Montero, J. M. R., and Pacudan, A. J.

**COLLEGE OF MEDICINE | 2015** 

Most water pollutants significantly affecting water resource quality near agricultural areas have resulted from leaching of nutrients such as phosphorous and nitrogen due to excessive fertilizer use. This study determined the efficacy of zeolite in minimizing nitrogen and phosphorus leaching with the use of column filter set ups and by simulating water runoff. Twelve column filter set ups were used. Half were assigned as Group A: control group which was untreated with zeolite and experimental group: group with zeolite. For the 12 set ups, manually assorted mixture of 2.5 kg loam soil, 2.5 kg sandy soil, and 2.5 kg fertilizer (NPK 16:20:0). The experimental group had the same initial set up as the control group but was treated with 200 g of zeolite. Before the experiment proper, 200 g samples were collected for set up. Water runoff was simulated by pouring 1.5 L of distilled water to each tube and effluents were collected after and analyzed for nitrogen and phosphorous concentration. Soil's mean phosphorous concentration from control and experimental set ups were 7,334.5 ppm and 6,966.67 ppm. Water's mean phosphorous concentration from control and experimental set ups were 0.36 ppm and 0.21 ppm. The soil samples of the control and experimental groups contained 24,016.67 ppm and 23,750 ppm Nitrogen whereas water samples for each set up contained 37.82 ppm and 34.15 ppm of nitrogen. Results showed a significant difference between treatments. The ineffectiveness of zeolite as a soil amendment in minimizing Nitrogen and Phosphorus leaching can be inferred.

**Keywords:** *zeolite, leaching, efficacy, adsorption, fertilizer, phosphorus, nitrogen pollutants* 

#### BIOLOGY

Davao Medical School Foundation, Inc.

## Nitrate and Phosphate Levels in Matina River along Sitio San Pedro, Catalunan Grande, Davao City

Estrada, T. A.

#### **COLLEGE OF MEDICINE | 2015**

A study was conducted to investigate the nitrate and phosphate levels of Talomo River water in sitio San Pedro, Catalunan Grande, Davao City. The study utilized the descriptive research design. Collection of water samples was done in three test locations: upstream (point I), middle of the plantation (point II) at approximately two kilometers from zone I, downstream (point III) at approximately two kilometers from zone II. Result revealed that nitrate content in Matina river along Sitio San Pedro, Catalunan Grande was below the critical level in all the test locations (upstream, midstream and downstream). However, the phosphate levels slightly exceed the accepted standard in all test locations. Only the mean levels of nitrate had significant differences in terms of test locations where it was higher upstream and downstream compared to the midstream location. This suggests that contamination of the water may come from other agricultural activities and not necessarily from the mango plantation across midstream where it was surmised to be originating.

Keywords: nitrate, phosphate, leaching, contamination, Matina River

BIOLOGY

## Induced Systemic Resistance of Cavendish Banana cv. Grand Naine against Fusarium wilt Disease Caused by *Fusarium oxysporum Schlect. F. sp. cubense* Using Vesicular Arbuscular Mycorrhizae Fungi (VAM)

Belarmino, K. S., Caiña, J., and Rivera, M. M.

## COLLEGE OF MEDICINE | 2015

A screen house study was conducted to identify effects of Glomus mossae and Glomus intradices on the growth of tissue-cultured banana seedlings cv Grand Naine and the reactions of the test plants to Fusarium oxysporum f. sp. cubense (Foc) one month after incoculation. The seedlings were obtained from Calinan Tissue Culture Nursery, Davao City. After a 34-day acclimatization, test seedlings were introduced with VAMF through soil inoculation at 10 g/treatment (=) 500 spores/plant) by way of the following treatments: TA: G. mossae, TB: G.intradices, TC: combination of G. mossae and G. intradices, and Untreated Control. After 30 days, the seedlings were transplanted to bigger bags using sterilized soil mixed with pure cultures of Foc propagules. Each treatment consisted of five test plants replicated fivetimes. After 120 days, results showed that banana plants treated with G. mossae, G. intradices and combination had longer roots as well as fresh and dry weights. Likewise, treatments with G. mossae and G. intradices resulted in a significantly lower incidence of Fusarium wilt (15%) than the untreated control (65%). Disease severity of the plant with G. mossae, G. intradices treated seedlings was also low (20%) compared to the untreated seedlings (88.9%). Data from this study suggest biological agent potential of G.mossae and G. intradices in Cavendish banana cultivar Grand Naine with Fusarium wilt disease. The encouraging results of this study require for more research to be conducted on the utilization of VAMFs against Foc.

**Keywords:** Glomus mossae, banana, glomus intradices, grand naine

#### BIOLOGY

Davao Medical School Foundation, Inc.

# Phytotoxic Effects of Sunflower (*Helianthus annuus*) Extracts on the Growth and Development of the Agricultural Crop Eggplant (*Solanum melongena*)

Araneta, T. S., Barlis, D., and Doromal, X. T. COLLEGE OF MEDICINE | 2015

Allelopathic plants secrete phytochemicals that either inhibits the growth of other neighboring plants or increase the growth thru the alteration of soil chemistry that best suits the plant. The study determined the effects of the phytochemicals of Helianthus annus (sunflower) on the growth of the agricultural plant, Solanum melongena (eggplant). The effects of the extracted solution to the growth of the plant in height, root length, and shoot length were determined using a purely experimental design. The extraction solution of the fresh sunflower included its petals, flower, stem, and leaves then we created a solution with a ratio for one, five and ten percent of the solution. Forty mL of the aqueous sunflower solution was introduced to the plants every day for three months. Data show that the plants exposed to 10% of the solution had the smallest plant height average, root length average and growth rate mean, as compared to the plants under one and five percent. Both five and one percent solutions ws an ideal concentration as an herbicide where no damaging effects were made on the eggplant. This study can be useful to the agricultural sectors where the use of an organic substance can be used as agricultural herbicide instead of commercial products that are harmful to both plants and farmers who are exposed to it.

Keywords: Allelopathic plants, soil chemistry, sunflower

## Microbial Profiling of Human Pathogenic Bacteria and Pathogenic Fungi on Street-vended Food in Toril, Roxas and McArthur Highway, Matina, Davao City

Balucanag Jr., Danilo, and Doromal, N. A.

COLLEGE OF MEDICINE | 2015

Street food is an important part of the Filipino food culture. The style of cooking has evolved from different origins like China and America. Due to the economic status of the Philippines, some sell street food as there way of livelihood. The Filipino people are very fond of eating street-vendor food because of its low price and flavor. In this study, researchers determined the presence of different human pathogenic bacteria from street foods, and compared the amount of growth in cooked street vended food and uncooked street-vended food. The researchers used nutrient agar and Sabourage-dextrose agar to determine the presence of both human pathogenic bacteria and fungi. Data showed that more bacterial species were isolated after cooking. Further research should be done to identify more bacteria and preventive techniques must be employed for elimination of the bacteria before and after cooking.

Keywords: Street food, Pathogens, Food contamination

#### BIOLOGY

Davao Medical School Foundation, Inc.

## Species Diversity of Epifaunal and Infaunal Sessile Macroinvertebrates of Mangrove Ecosystems in Barangay Tambo, IGACOS; Punta Dumalag, Matina Aplaya and 76-A Bucana, Davao City

Ortizo, L. K., and Sevilla, J. C.

#### **COLLEGE OF MEDICINE | 2015**

This study determined the species diversity of epifaunal and infaunal sessile macro-invertebrates grove of Brgy. Tambo, IGACOS; Brgy. 76-A, Bucana, and Brgy. Matina Aplaya, Davao City. It also determined which among the three areas was more diverse in terms of epifaunal and infaunal species of sessile macroinvertebrates. The descriptive research method was applied. Results showed diversity of epifaunal and infaunal species in each area and the dominance of one organism to the other. Representative species of Class Bivalvia, and Gastropoda dominated the sites.

#### Keywords: Epifaunal, Infaunal, Sessile Macroinvertebrates, Species Diversity, Mangrove Ecosystem
## Pollen Load of Foraging Bats in a Diversified Fruit Farm in Davao City

Esposado, P. A., Gaviola, T. J., and Yap, C. D.

## **COLLEGE OF MEDICINE | 2015**

This study was conducted to identify the species of bats visiting Alcon Farm, a diversified fruit farm in Calinan, Davao City, and their pollen load. Scotch tape method was used to obtain the pollen sample by taping it in the snout, back of the head and chest of the bats then sealing it in the glass side. The captured bats were placed inside the labeled cheesecloth pouch immediately after obtaining the pollen samples. A total of 260 bat individuals were captured belonging to five species: Rousettus amplexicaudatus. Eonvcteris spelaea, Macroglossus minumus. Ptenochirus jagori, and Cynopterus brachyotis with only 58 individuals containing pollen on either of their snout, back of the head, chest or on all three. The said individuals belonged to four out of the five species with the exception of C. brachvotis. Pollen samples collected were identified either as durian or non-durian, and were quantified. R. amplexicaudatusis the most ecnountered species in the farm ad the same species also had the highest pollen load. This is remarkable finding as literature claim that only E. spelaea are almost exclusively the natural and established pollinators of durian. Among the three body parts of particular interest, the back of the head showed to hold the most number of pollen. Considering the importance of fruit bats and pollination, intensive research and conservation measures are imperative.

Keywords: Bats, pollen, fruit farm

Davao Medical School Foundation, Inc.

## Comparative Antimicrobial Assay of *Moringa oleifera* Seed and *Hibiscus rosa sinensis* Flower Extracts against *Escherichia coli* and *Staphylococcus aureus*

Allata, S. D., Maruya, B. L., and Feli, V. A.

#### **COLLEGE OF MEDICINE | 2015**

Despite the existence of potent antimicrobial agents, resistant or multi-resistant strains are continuously emerging, imposing the need for a constant search and development of new drugs. In this study, the antibacterial activity of the extracts of Hibiscus rosasenesis flowers and Moringa oleifera seeds against Escherichia coli and Staphylococcus aureus were measured through their zones of inhibition that were then compared to Ampicillin. The bacterial isolates of S. aureus and E. coli were exposed to different concentrations of M. oleifera and H. rosasinensis (50, 100, and 150 mg/dish). Varying degrees of sensitivity to the plant extracts were observed. S. aureus was most sensitive to the extracts of M.oleifera at 150 mg/ with 25.67 mm zone of inhibition. H. rosa-senensis showed minimal inhibitory effect to both bacterial isolates. When the plant extracts were compared to Ampicillin, M. oleifera also showed the biggest zone of inhibition. Although the effect of M. oleifera seeds and H. rosa-sinensis flowers extracts bacteria species in vitro is promising, further microbiological and pharmacological studies may further support this initial observation.

Keywords: Escherichia coli, Hibiscus rosa-sinensis, Moringa oleifera, Staphylococcus aureus, Zone of inhibition

BIOLOGY

## Water Quality Assessment in Sibulan River Using Aquatic Macroinvertebrates and Physico-Chemical Parameters

Lanoza, J. M., Panuela, G. S., and Roferos, R. F. COLLEGE OF MEDICINE | 2015

A study was conducted to determine the water quality of Sibulan River located in Sitio Cebulan, Barangay Astorga in Sta. Cruz, Davao del Sur. The parameters considered were aquatic macroinvertebrates as biological indicators together with Physico-chemical analysis of water conditions. The river was marked into three sections, namely: upstream, midstream and downstream. An improvised kick method with the use of a one-meter mesh net (0.50 mm) was done in gathering information about macroinvertebrates. The captured macroinvertebrates were identified and classified up to the Family taxon. Biological Monitoring Working Party (BMWP) Score System and Average Score per Taxon (ASPT) were used in treating the data to assess the natural water quality and laboratory analysis of the physicochemical status of the river. The analyses and interpretation of the data collected in this study yielded the following findings: (a) the BMWP Score System revealed that the Sibulan River has a Class II (score of 75 points), indicating the water quality was clean but slightly impacted while the ASPT average score of five indicates fair biological water quality, and (b) the physicochemical parameters such as temperature, pH, turbidity, dissolved oxygen (DO), total dissolved solids (TDS) and fecal coliform revealed that the water in all sampling sites is within the optimal values which could sustain the lives of aquatic macroinvertebrates.

Keywords: Water Quality, Aquatic macroinvertebrates, Physicochemical, BMWP, ASPT, Sibulan River

Davao Medical School Foundation, Inc.

## Incidence of the Scale Insect *Unaspis mabilis* on Lanzones (*Lansium domesticum*) Relative to Leaf Age and Nutrient Status

Adtoon, M. D., Chua, M. S., Dospueblos, D., and Ronquillo, J.

## **COLLEGE OF MEDICINE | 2016**

The mussel scale insect, Unaspis mabilis is the pest of lanzones (Lansium domesticum). They attack the leaves, causing yellowing of the foliage and, in severe cases, defoliation. Many theories articulate that scale insects tend to lay their young on new leaves rather than old leaves because of their higher nutritional content, nitrogen (N) in particular. The study was conducted to determine the incidence of the scale insect on lanzones relative to leaf age and nutrients status. Ten L. Domestcium trees were designated for the phonological study, two sets of leaf buds were tagged, and mussel scale incidence was monitored and observed weekly. For the leaf nutrient status study, four trees were sampled, each tree representing a replicate. Ten old and young leaves from each sample tree were collected, oven-dried at 50°C for 24 hours and were submitted to the Bureau of Soils Laboratory for leaf nutrient analysis for nitrogen (N) phosphorus (P) and potassium (K). The phonological study revealed that a leaf bud may develop to fully expanded leaves as early as eight weeks and the infestation of the female scale were recorded on the 16th week and a colony of nymphs ("crawlers") on the 20th week from the leaf bud stage. The leaf nutrient analysis revealed significantly higher K content in young leaves than old leaves but no differences in N and P contents between the two age groups, suggesting that the ovipositional preference of the mussel scale female was due more to the softness of the young leaf tissue in preparation for feeding by its juveniles as both young and old leaves may already contain sufficient amounts of N necessary for the development its progeny.

**Keywords**: Unaspis mabilis, Lansium domesticum, phenology, oviposition

## Bioassay of Agoago (*Loranthus pentandrus L.*) Extract Against *Staphylococcus aureus* in Vitro

Alvaro, A. B., Cuadrillero, H., and Larios, R.

**COLLEGE OF MEDICINE | 2016** 

Agoago (Loranthus pentandrus L.), considered as an unwanted plant due to its semi-parasitic property to economically critical horticultural plants, was studied for its potential medical value. The study determined efficacy of the leaf crude extract of the plant in inhibiting growth of Staphylococcus aureus. Treatments employed were: TA: 100% agoago extract, TB: 50% agoago extract, TC: 25% agoago extract, TD: pencillin (positive control) and TE: distilled water (negative control). The experiment was a Completely Randomized Design involving five treatments at five replications per treatment. Result of the study showed that the 100% concentration of agoago leaf inhibited the growth of S. aureus. Likewise, inhibitory effect on the study, the following recommendations were proposed for future studies: (a) test the extract between 50% and 100% concentration to determine the optimum effective concentration; (b) test the potential of the extract on other microorganisms; (c) determine the chemical properties of the agoago extract that may be causing the antimicrobial activity; (d) test other solvents in preparing the extract; (e) tap other parts of agoago as microbial agent; (f) find out the inhibition of the extracts relative to season of harvest; and (g) test the inhibitory effects on bacteria of L. pentandrus extracts harvested from various tree species.

Keywords: Loranthus pentandrus, Staphylococcus aureus, crude extract, inhibition

Davao Medical School Foundation, Inc.

# Bioassay of *Knema Glomerata* Leaf Extract Against *Staphylococcus aureus*

Arrozal II, M. A., Fernandez, J. K., Maruya, M. B., and Pepito, P.

## **COLLEGE OF MEDICINE | 2016**

Extracts from leaves of *Knema glomerata* were screened for its anti microbial activities and explore its potential as an alternative medicine against *Staphylococcus aureus*. Four different concentrations of the extractwere prepared (15%, 30%, 50%, and 75% for TA, TB, TC, and TD, respectively). The leaves were dried and ground before soaking in ethanol and subjected for rotary evaporation. The antimicrobial activity of the extract concentrations were evaluated by determining the diameter of inhibition zone against *S. aureus* using the disk diffusion method. Result of the experiment revealed that all concentrations of plant extracts did not elicit inhibitory effect against the bacterium. In view thereof, it was recommended that future studies (a) tests the extract against other species of bacteria, (b) test other parts, such as the bark of *K. glomerata* for antibacterial properties, and (c) determine the essential oils or metabolite composition of the leaf and bark extracts.

## **Keywords:** *antimicrobial activity, Staphylococcus aureus, Knema glomerata, zone of inhibition*

## Effect of Alagaw (*Premna odorata*) Leaf Extract on *Staphylococcus aureus* in Vitro

Gutierrez, R. C., and Pontillas, P. K.

## **COLLEGE OF MEDICINE | 2016**

The study determined if Staphylococcus aureus was susceptible to inhibition by alagaw (Premna odorata) leaf extracts and ascertain if different leaf extract concentrations would affect inhibition of the extract against the bacterium. The alagaw extract was obtained using 80% ethanol as solvent. Pure culture of the bacterium was streaked onto plated Muller-Hinton agar before it was subjected to four treatments: 50% alagaw leaf extract, 75% alagaw leaf extract, 100% alagaw leaf extract, and distilled water serving as control using Completely Randomized Design (CRD) at five plates per treatment replicated three times. After a 24-hour incubation period, the zones of inhibition in each treatment were measured All concentrations inhibited the growth of S. aureus, while no zone of inhibition was observed in the control. The Tukev HSD Test revealed that while there was no significant difference between the 75% and 100% concentrations, the mean zones of inhibition in both concentrations were significantly higher than the 50% concentration. Results suggest that alagaw leaf extract can inhibit S. aureus growth in vitro. Given these findings, the researchers recommend future studies to focus on: (a) testing concentrations between 75% and 50% alagaw leaf extract concentrations to determine the optimum concentration effective against S. aureus and (b) determine efficacy of alagaw leaf extract on other bacteria.

Keywords: A lagaw, Premna odorata, alagaw leaf extract, Staphylococcus aureus, antimicrobial property

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## Diversity and Community Similarity of Ant Species in Selected Forest Sites of Mount Hamiguitan, Davao Oriental

Alegre, N. A., Rabat, V. M., and Victor, A. V.

#### **COLLEGE OF MEDICINE | 2016**

Ants are good bioindicators, their presence or abundance suggestive of the condition or health of a forest ecosystem. This study was conducted to determine the diversity and community similarity of ant species in selected forest sites of Mount Hamiguitan, Davao Oriental. Ant samples were collected using the standard Ants of the leaf Litter protocol in the disturbed areas of Barangay Luzon and undisturbed areas of Barangay Oregon. Ant species were identified using Antweb, DiscoverLife and Entomologist's expertise. A total of 36 ant species were reckoned from both sites, 14 in Barangay Luzon and 26 in Barangay Oregon. The ant inhabitants were compared between the disturbed areas and the undisturbed areas using Menhinick's Index for species richness and Shannon-Wiener Index for species diversity while Jaccard Index of Similarity was utilized in determining community similarity of the two sample sites. The results showed that species richness of the disturbed area, Barangay Luzon, was generally less rich with 0.5788 compared to the undisturbed area, Barangay Oregon, with 1.394. Species diversity was also lower for Barangay Luzon with 2.066 compared to Barangay Oregon with 2.508. These were due to habitant-impinging factors such as anthropogenic activities. These findings raised awareness to the Philippine eagle Foundation for conservation measures.

**Keywords:** Formicidae, Mount Hamiguitain, species richness, species diversity

BIOLOGY

## Antimicrobial Activity of Leaf Extract from Kalingag Tree (*Cinnamomum mindanaense*) against *Escherichia coli* and *Staphylococcus aureus*

Agton, R. M., Barbas, M. A., Barbas, M. A., and Maruya Jr., M. A.

## **COLLEGE OF MEDICINE | 2016**

Several species from the genus *Cinnamomum* have been discovered to contain essential oils with inhibitory effect against specific microorganism. In this study, leaves of Cinnamomum mindanaense, commonly known as kalingag, were tested for antimicrobial activity. The study determined the antimicrobial activity of the leaf extract against Staphylococcus aureus and Escherichia coli. The bacteria were separately streaked onto Mueller-Hinton agar followed by the antimicrobial test using the Agar Diffusion Method. Three leaf extract concentrations (10%, 25%, and 50%), distilled water (negative control) and clindamycin (positive control) were used for testing at five filter paper discs per Petri dish representing each treatment, replicated three times. After 24 hours of incubation, the bacterial zones of inhibition in all treatments were measured. The kalingag extract yielded zones of inhibition against S. aureus and none against E. coli. Data analyzed through One-way Analysis of Variance (ANOVA) and Tukey's HSD Test revealed all treatments to differ from the negative control significantly. However, no significant differences in the mean diameters of the zone of inhibition against S. aureus were reckoned among the clindamycin and extract concentrations. Thus, it was recommended in future studies to (a) test the extracts at concentrations lower than 10% to determine the optimum effective concentration, (b) test the extract on other microorganisms, and (c) determine the antimicrobial compounds of kalingag.

## Keywords: Cinnamomum mindanaense, leaf extract, inhibition, Staphylococcus, Escherichia

Davao Medical School Foundation, Inc.

## **Efficiency of Rice Hull Biochar for Removal of Nitrates and Phosphates in Water**

Baula, B. A., Gonzales, N. B., and Tan, Z. J.

#### **COLLEGE OF MEDICINE | 2016**

Water pollution has long been an issue globally. Because of this, a demand for a sustainable and readily available water filtration system has increased. Biochar is said to have an adsorptive capacity to some water pollutants due to its porous and amorphous nature. The Philippines, as an agricultural country, has abundant rice hull by-product which can be readily converted into biochar. This study determined the absorptive capacity of rice hull biochar in adsorbing nitrates and phosphates when used as filtering media. The filtration column for the test experiment was set up with a diameter of 19.5cm, consisting of 30-cm of biochar layer. As a comparison, a controlled group of test column set-up containing 50-cm pea gravel was made. The control group showed a significant decrease in both nitrate and phosphate concentration in the water samples. On the other hand, although there is a decrease in nitrate concentrations in water from 10mg/L to 2.200mg/L from 75% of the data collected with 95% confidence with the biochar treatment, the results show that the biochar is a factor in the increase of nitrate concentration. Consequently, a rise in phosphate was observed wherein the initial concentration of 1mg/L increased to 21.20mg/L form 75% of the data collected with 95% confidence.

Keywords: rice hull biochar, nitrates, phosphates, water filtration



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