### LECTURES

| KEYNOTE: Prof. Dato’ Dr. Rahmah Mohamed |
| Vice Chancellor, INTI International University, Malaysia |
| ‘Research for a better tomorrow’ |
| PLENARY: Prof. Dr. Howard Morris, University of South Australia |
| ‘Vitamin D: Molecular actions to regulate bone mineral homeostasis’ |

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LECTURES

Research for a better tomorrow
Prof Dato Dr. Rahmah Mohamed
Vice-Chancellor
INTI International University

Advances in medical research in recent decades allow mankind to live longer with improved quality of life than just a few generations previously. Key milestones in research are genome sequencing leading to development of therapeutics and new drugs, and personalized medicine based on an individual patient genetic profile. Progress in stem cell research has open up possibilities for replacing damaged cells and tissues. Progress and innovations in the IT space culminates in the development of powerful imaging and diagnostics techniques. However, society is changing both in developed and developing countries. We are facing a number of great challenges: an ageing population, obesity and metabolic syndrome, mental health disorders, pandemics, allergy and chronic diseases, cancer and cardiac diseases. Under the Millennium Development Goals initiatives we have yet to succeed in addressing women health and infant mortality. In order for research to serve society effectively we need to develop several approaches; conduct high quality research encompassing biomedical, opportunities for international collaboration, deliver research outcomes rapidly to bedside and close engagement with society at large.

Vitamin D: Molecular actions to regulate bone mineral homeostasis
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Rickets in children (or osteomalacia in adults), a bone mineralisation defect, is the index disease of vitamin D deficiency. The endocrine actions of the active metabolite of vitamin D (1,25-dihydroxyvitamin D) play critical roles in the maintenance of plasma calcium and phosphate, necessary to prevent of rickets. These include stimulation of intestinal calcium absorption, renal tubular reabsorption of calcium and bone resorption. Vitamin D depletion, (ie a vitamin D status at a higher level than that which produces rickets), is strongly associated with osteoporosis, a disease of low bone mass and fragility. Local synthesis of 1,25-dihydroxyvitamin D within osteoblasts combined with adequate dietary calcium stimulates bone formation through the stimulation of the enzyme ENPP1 which synthesis pyrophosphate. In the presence of adequate alkaline phosphatase bone mineralisation is enhanced necessary to prevent osteoporosis. Thus to maintain plasma calcium homeostasis vitamin D activities regulate bone resorption and bone formation, generating anabolic and catabolic responses on bone mass. The activities of vitamin D regulating these processes include endocrine and autocrine actions of 1,25-dihydroxyvitamin D, vitamin D metabolism in bone cells and moduation of gene expression by interaction of the nuclear vitamin D receptor with other gene transcription factors. A key factor in determining whether these actions are anabolic or catabolic for bone is the interaction with dietary calcium intake.
Optimising Cardiovascular Risks in Rheumatic Diseases

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Rheumatic diseases refer to connective tissue disorders (CTDs). The common CTDs include rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), gout and spondyloarthritides. Most systemic autoimmune diseases are characterised by inflammation which accelerates atherosclerosis through various complex mechanisms. The endothelial dysfunction and damage in CTDs are mediated by the antibodies, cytokines and immune-complexes. Apart from the direct effects on the endothelium, inflammation can promote atherosclerosis by indirect mechanisms such as alteration of the lipid profile, arterial wall thickness, and body mass index. Tumor necrosis factor α (TNF-α) is the culprit cytokine in many inflammatory rheumatic diseases such as RA and psoriatic arthritis. Other cytokines commonly released during inflammatory diseases such as interferon-γ (INF-γ), interleukin-1 (IL-1), and IL-6 also have adverse effects on the lipid profile; predisposing to proatherogenic states. Silent myocardial ischemia is relatively common in patients with RA. The Framingham score in RA correlates with the duration of disease and presence of coronary calcification. Controlling disease activity is the most important step in improving survival in these patients. Methotrexate, one of the most commonly used drugs for RA, has been shown to reduce cardiovascular mortality in these patients. Besides, statins are being increasingly recognized to have immunomodulating properties. Hence, statins might serve the dual purpose of cardioprotection and rheumatic disease modification.

Surgery and Endoscopic therapy as the new treatment option for Metabolic Syndrome and Diabetes: A Paradigm Shift.

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Metabolic Syndrome comprise of a group of risk factors which includes morbid obesity, diabetes, hypertension and dyslipidemia. Untreated cases of Metabolic syndrome in particular Diabetes Mellitus leads to serious complications and death. Prior to the advent of Bariatric and metabolic surgery and more recently endoscopic therapy, the mainstay treatment of metabolic syndrome are change in lifestyle, diet control and medical treatment. Remission of Diabetes Mellitus, Hypertension and Dyslipidemia is a common effect seen after bariatric metabolic-surgery in the obese and non-obese patients. While the initial believe that remission of the components of metabolic syndrome in particular Diabetes Mellitus was due to weight loss current evidence suggest that remission is apparent even before significant weight and this has led to believe that the weight independent factor plays an important role and is regulated by a complex and not easily understood neuro-hormonal regulation. The foregut and hindgut theories state the different mechanism of action involve in particular the glycaemic control. Currently there is compelling evidence that supports the amelioration of metabolic syndrome in particular Diabetes mellitus following surgery and endoscopic therapy. We explore the relationship and interaction between surgery and the gut hormones in its role to the successful remission of Diabetes mellitus and other components of Metabolic syndrome.

Tocotrienol, Stress and Gastric Ulcer: An Update

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Various responses to stress exposure have been important for human survival. However repeated activation of responses to stress as well as sustained activation will cause an overexposure to stress hormones, thereby increasing risk to various health problems. One common health problem related to stress is the formation of gastric lesions, better known as stress ulcers. Many studies have shown that despite the diverse causes of gastritis, a common factor implicated at the molecular level in the pathogenesis of this clinical entity are free radicals which overwhelm the endogenous antioxidant system. Therefore, the administration of antioxidants such as vitamin E is a reasonable therapeutic approach. Animal model of restraint stress had been widely used for stress-related researches. This model mimics the stress endured by critically ill patients in a clinical setting and psychological stress in individuals. The scientific evidence of enteral supplementation of vitamin E in the forms of tocotrienol in animal models of stress will be discussed.
ABSTRACTS FOR ORAL PRESENTATION

O1
Effect of 12 Weeks Pedometer-Based Workplace Program on Inflammation Markers in Young Men with Cardiovascular Risks
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2Department of Electrical, Electronic and Systems Engineering, Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia
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Background: Inflammation plays a central role in the pathogenesis of cardiovascular events. The lack of exercise among Malaysians and the increasing cardiovascular disease among young men are of concern. The study aimed to enable subjects to increase their level of walking and to determine the amelioration of inflammatory markers through a pedometer based walking programme at the workplace.

Methods: A total of 70 young men (20 - 40 years) who were sedentary, achieving less than 5,000 steps/day in casual walking with 2 or more cardiovascular risk factors were recruited in IKBN Hulu Langat. Subjects were randomly assigned to a control (CG) (n=34; no change in walking) and pedometer group (PG) (n=36; minimum target: 8,000 steps/day for 12 weeks duration). Anthropometric and inflammatory markers were measured at baseline and after intervention.

Results: At post intervention, the CG step counts were similar (4983 ± 366 vs 5697 ± 407steps/day). The PG increased step count from 4996 ± 805 to 10,128 ±511 steps/day (P<0.001). Anthropometric variables were significantly improved for PG [time and group effect (p<0.001)]. For inflammatory markers, C-Reactive protein (CRP) was significantly decreased in the PG (pre= 2.28 ±3.09,post=1.08± 1.37mg/L) [time and group effect (p<0.01)] compared to CG (pre=2.49 ± 3.32, post=2.99 ± 4.26 mg/L). Similar significant decreased levels for interleukin-6 (IL-6) and tumour necrosis factor alpha (TNF-α) were observed at post intervention in PG, but no change found in CG.

Conclusion: The walking programme improved health status in terms of improving inflammatory markers levels.

O2
Long Chain Omega-3 Polyunsaturated Fatty Acids can Protect but not Treat against Inflammation on Hypertensive and/or Diabetic Obese Adults in Palestine: A Randomized, Controlled Trial (The UPM-Gaza Study).
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3Faculty of Public Health, Al Quds University of Gaza-Palestine

Background: Obesity is a condition of excess weight, which has been associated with metabolic syndrome and inflammation. The hypertensive and diabetic peoples have more risks to develop systemic inflammation. Long chain LC n-3 PUFAs can reduce the cardiovascular events and help against inflammation, but the effect on inflammatory markers among the diseased population is controversial. The aim of the study was to identify the effect of LC n-3 PUFAs on reducing the levels of inflammatory markers in hypertensive and/or diabetic obese adults.

Methods: Sixty-four patients, who were hypertensive and/or diabetic obese and had high levels of inflammatory markers, from primary health care centres of Gaza City-Palestine, enrolled in two groups of an open-label, parallel, randomized, controlled trial. Thirty-three patients were in the control group, and 31 patients were in the trial group. The trial group was treated with a daily dose of 300mg EPA and 200mg DHA.

Results: Treatment with LC n-3 PUFAs reduced the level of hs-CRP, FBS, and TG significantly after 8 weeks of treatment [P<0.001, P=0.024, and P=0.002; respectively], no changes appeared in IL-6 and TC. After comparing with the changes of the control group after 8 weeks, LC n-3 PUFAs didn’t reach the clinical significance in treating effectiveness for any of clinical variables.

Conclusion: LC n-3 PUFAs have beneficial effects on health. The dose used or the time allowed in our study could be insufficient to treat the elevated levels of inflammatory markers in hypertensive and diabetic obese, but the reduction suggests the role of LC n-3 PUFAs as a protective factor rather than a treatment of inflammation.
O3

Protective Effects of Parkia speciosa Empty Pods Against Hypertension and Cardiac Damage in Nitric Oxide Deficient Hypertensive Rats
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Background/Objectives: Decoction of Parkia speciosa roots has been used in traditional medicine in Malaysia to treat hypertension. Based on this information, we aimed to investigate the potential effect of the plant empty pod extract on hypertension and changes in heart induced by L-NAME administration in rats.

Methods: Twenty-four male Sprague Dawley rats were divided into four groups. Groups 1 to 3 were given L-NAME (25 mg/kg, intraperitoneally) for 8 weeks. Groups 2 and 3 were also given Parkia speciosa empty pods methanolic extract (800 mg/kg, orally) and nicardipine (3 mg/kg, orally), concurrently with L-NAME. The last group served as the control.

Results: L-NAME increased systolic blood pressure, angiotensin-converting enzyme, lipid peroxidation and NADPH oxidase in the heart but reduced plasma nitric oxide level. Treatment with the Parkia speciosa extract and nicardipine had significantly prevented the elevated blood pressure, angiotensin-converting enzyme, lipid peroxidation and NADPH oxidase in the heart induced by L-NAME. However, only Parkia speciosa extract, not nicardipine that prevented the reduction in plasma nitric oxide level caused by L-NAME.

Conclusion: Parkia speciosa empty pods methanolic extract has a potential as an antihypertensive, probably by reducing angiotensin-converting enzyme and oxidative stress in the heart as well preventing the loss of plasma nitric oxide in rats administered L-NAME.

O4

The Impact of Concomitant Administration of Antiarrhythmic Agent (Amiodarone) with Mustard Oil on Thyroid Gland in Experimental Animals.
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Background/Objectives: Natural products are used widely in different societies, as they had been used since the ancient age. Mustard seeds are the small round seeds of various mustard plants, which is a cruciferous vegetable related to broccoli, brussels and cabbage. The seeds contain plentiful amounts of phytonutrients called glucosinolates that has beneficial effects in cancer and inflammation. On the other hand, amiodarone hydrochloride is a Class III antiarrhythmic agent prolonging the action potential duration and hence refractory period of atrial, nodal and ventricular tissues, thereby giving a very broad spectrum of activity. This study aimed to assess the possible goitergenic of both amiodarone and mustard oil if they are used concomitantly, by measuring thyroid TSH, T3 and T4, CK, SGOT, SGPT as well as the weight of thyroid gland, heart and body weight.

Methods: 30 adult male rabbits (weight range 1250-2000 g and age-9-12 months) were divided randomly into four groups, each containing 8 animals except control group contains 6 animals. Second, the third and fourth groups were given mustard oil (2g/kg/d), amiodarone (8mg/kg/d) and combined (mustard oil 2g/kg/d + amiodarone 8mg/kg/d) respectively via an oral route using a gavage needle once daily for two weeks. The first group was kept as control.

Results: Combination of mustard oil and amiodarone was shown to cause a significant increase in thyroid hormones (T3 3.81±0.397pg/ml and T4 2.70±0.204ng/dl) compared with control and each drug alone. This effect was supported by a significant increase in the thyroid gland weight and a reduction in body weight.

Conclusion: It is evidenced that mustard oil may increase the goitergenic effect of amiodarone if they are administered concomitantly.

O5

Antioxidant Potential of Cibotium barometz Leaves In Vitro and Its Oral Acute Toxicity In Vivo.
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Background/Objectives: Cibotium barometz (L.) J. Sm. is a traditional medicinal plant. C. barometz leaf is used customarily for the medication of different diseases in Malaysia. It has antioxidative tyrosinase inhibiting and antibacterial activities and used to discontinue bleeding. The aim of this study was to assess the antioxidant potential of C. barometz leaves ethanol extract, in vitro. In addition, the acute toxicity in Sprague Dawley (SD) rats has been
investigated for ethanol extract.

**Methods:** The ethanolic extract of *Cibotium barometz* leaves was used in this work. Ferric-reducing/antioxidant power (FRAP), the 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical-scavenging assays, the total phenolic content (TPC), total flavonoid content (TFC) were evaluated for measuring the antioxidant activities *in vitro*. The acute toxicity of *C.barometz* was assessed in male and female *Sprague Dawley* (SD) rats orally. They were administrated once at high and low doses then sacrificed after observation for 14 days. Biochemical tests were analyzed for the blood; however, the liver and kidney were collected for histological examination.

**Results:** Ethanolic extract of *C.barometz* leaves exhibited antioxidant activities. On the other hand, the extract did not produce toxic symptoms at high and low doses in the experimental animals.

**Conclusion:** This study has shown antioxidant potential of *C.barometz* leaves *in vitro* and no remarkable toxic results *in vivo*.

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**O6**

**Potential Antioxidant Sources from Some Annonaceae Species**

Atiqah Aziz, Hairin Taha, Chung Yeng Looi, Hilwani Ismil, Farida Zuraina Mohd Yusof

University Technology MARA.

Malaysia is one of the most biodiverse areas in the world because two thirds of Malaysia is mostly covered by tropical lowland rainforest trees. However, only a handful has been examined for their potential bioactivities and there are still numerous plant to be discovered. Plants from Annonaceae family are edible as food sources and traditionally used by the indigenous people known as Orang Asli to treat clinical symptoms. Annonaceae family is widely distributed from Myanmar, through Indo-china, Malaysia and into north-eastern Queensland in Australia. In Malaysia, there are 38 genera, 198 native and 5 cultivated species including 17 varieties of Annonaceae plants which abundantly found in the lowland forests. The members of Annonaceae family are reported to contain bioactive compounds with antioxidant activities which can be potential pharmaceutical agents. Excessive oxidative stress is related to many chronic diseases including degenerative diseases. Many studies in search for antioxidant compounds to neutralize this illness were reported. In this paper, some of the antioxidant properties of some genus of Annonaceae will be described based on previous published research.

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**O7**

**The Effects of Gelam Honey on Ex Vivo Rabbit Corneal Epithelial Cell Proliferation and Phenotypic Characteristics**

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Department of Anatomy, Department of Physiology, Department of Ophthalmology, Universiti Kebangsaan Malaysia Medical Centre

**Background/Objectives:** Prolong antimicrobial treatment for corneal ulcers exposes risk of resistance and the preservatives in the eye drop preparations may cause disruption to epithelial barriers. Studies have been conducted to search for alternative treatment or adjunct therapy to overcome these drawbacks. Gelam honey (GH) has been reported to promote skin ulcer healing, therefore it could potentially facilitate in corneal epithelium wound healing via promoting corneal epithelial cell proliferation. This study aimed to determine the effects of GH on *ex vivo* rabbit corneal epithelial cell (CEC) proliferation and its phenotypic characteristics.

**Methods:** CEC were isolated from New Zealand white strain rabbits (n=6) and culture expanded until passage 1. The optimal dose of GH in basal medium (BM) and complete cornea medium (CCM) during CEC proliferation was identified via MTT assay. The morphology of CEC was examined by phase contrast microscopy. The gene and protein expressions were evaluated via qRT-PCR and immunocytochemistry, respectively.

**Results:** CEC cultured in BM and CCM supplemented with 0.0015% GH showed optimal proliferative capacity compared with BM and CCM groups respectively. CEC cultured in GH-enriched CCM exhibited small polygonal-shaped cell with clear cell boundaries. Gene expression of cytokeratin-3 (CK3) was increased in GH-treated CEC in both BM and CCM groups in contrast to their respective controls. Immunocytochemistry revealed abundance of CK3 protein in accordance to the gene expression analysis.

**Conclusion:** Supplementation of 0.015% GH to the culture media increased the proliferative capacity of CEC while retaining its phenotypic characteristics via morphology, gene and protein expressions.
O8
Optimization of Process Conditions for the Extraction of Anticancer Compounds from *Premna serratifolia* L.
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**Background/Objectives:** This study aimed to obtain the best processing condition of sonication to extract various compounds from *Premna serratifolia* and to investigate the processing condition affecting the potential extracted anticancer compounds.

**Methods:** Two important parameters in sonication which were duration of time and temperature, were investigated. The efficiency of extraction was determined by the yield of extract and the half maximal inhibitory concentration (IC50) of the extract against MCF-7 cells and 11 experiments with each parameter at certain range were designed by Face Centered Central Composite Design. Data was fitted to second order polynomial model to generate equation used to determine best extraction processing condition.

**Results:** The highest yield was 22.30% under condition of 45°C for 60 minutes and lowest yield was 14.06% at 30°C for 30 min. The difference of the IC50 values was approximately 10 µg/ml ranging from 56.5 µg/ml under the condition of 30°C for 90 min to 67.24 µg/ml under the condition of 60°C for 90 min. ANOVA showed that duration of time had great influence (p<0.05) on the yield of crude extract, while both parameters, time and temperature significantly (p<0.05) affected the IC50 value. From the generated second order polynomial equation and validation experiment, the best sonication processing condition for both extraction and anticancer activity was at 30°C and 67 min.

**Conclusion:** The optimal extraction processing condition of the plant identified in this study ensures that the crude extract will be obtained at lower cost and short duration of time for purification of anticancer compound.

O9
Inhibition of Histone Deacetylation Induces VGSCS Expression in the Weakly Metastatic Human Breast Cancer Cell Line
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**Background/Objectives:** Increased expression of voltage-gated sodium channels (VGSCs) have been implicated with strong metastatic potential of human breast cancer in vitro and in vivo where, the cardiac isoform Nav1.5 in its ‘neonatal’ splice variant, nNav1.5 is responsible in potentiating the metastasis cascade. However, the mechanism of this gain of expression is not yet deciphered. One of the possible causes which could contribute to this is epigenetic alteration. This study aimed to investigate the involvement of histone deacetylation in the regulation of VGSCs expression in human breast cancer cells and to assess the effect of inhibiting histone deacetylation on the cancer cell motility using histone deacetylase inhibitor, Trichostatin A (TSA).

**Methods:** A weakly metastatic breast cancer cell line, MCF-7, which expresses very low levels of VGSCs was used. MCF-7 cells were treated with TSA at a concentration range of 10-10000ng/ml for 24h. The effect of TSA on VGSCs (Nav1.5 and nNav1.5) gene expression and cell motility were measured using real-time PCR and lateral motility assay, respectively.

**Results:** Treatment with 100 and 10000ng/ml TSA significantly increased the mRNA expression of Nav1.5 by 25-fold and 38-fold, respectively. Similarly, the mRNA expression of the neonatal form of VGSC, nNav1.5, was also increased to 8-fold and 10-fold, respectively. MCF-7 cell motility was enhanced by >20% after 24h treatment with 100ng/ml TSA.

**Conclusion:** This study revealed that inhibition of histone deacetylation contributes to the up-regulation of VGSCs expression in breast cancer which helps promote breast cancer aggressiveness.

O10
Expression Of MMP-13 in Malignant Breast Carcinoma
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Background: Breast carcinoma is the most common malignant tumor. MMP-13 has been described as a prognostic marker for invasive breast cancer.

Objectives: The aim of this study was to determine the expression of MMP-13 in breast carcinomas and to correlate its expression with other specific tumor characteristics.

Methods: This is a retrospective study of 180 breast specimens resected from 2003 to 2008 at Pusat Perubatan Universiti Kebangsaan Malaysia. Ninety (90) cases were diagnosed as infiltrating ductal carcinoma and another 90 were benign lesions and all were tested for MMP-13 expression by immunohistochemistry. MMP-13 expression was detected in the cytoplasm of the cells and was evaluated by the staining index.

Results: MMP-13 expression was detected mainly in cytoplasm of malignant cells 45% (41/90) and peritumoral fibroblast in 38.8% (35/90) of cases. Staining index (SI) for positive malignant cells showed 29.3% (12/41) with high level of MMP13 while 31.4% (11/35) peritumoral cells had high level of MMP13. The detection of cytoplasmic MMP-13 in tumor cells correlated significantly with the cytoplasmic MMP-13 in the peritumoral fibroblast (P<0.05). Our study showed that 8.8% (8/90) of benign breast lesions expressed low level of MMP-13 in epithelial cells. This study stated that 58.3% (14/24) patients with distant metastasis were shown MMP-13 expression in tumor cells (p=0.14) but was not significant. Also this study failed to show correlation between MMP-13 expression and other clinicopathological data.

Conclusions: In conclusion, MMP-13 is not a reliable prognostic marker in prediction of distant metastasis.

O11

Piper sarmentosum Roxb. Ultrasound Assisted Extraction (UAE) and Its Cytotoxic Evaluation against MCF-7 Cell Line

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Background/Objectives: This study aimed to identify optimized processing conditions of Ultrasound Assisted Extraction (UAE) on Piper sarmentosum leaves and its anticancer activity.

Methods: Response Surface Methodology (RSM) was applied for the prediction of UAE optimized conditions. Important parameters of UAE which are temperature and duration of time for extraction were optimized. Both parameters were varied in a series of experiment that was designed by Face Centered Composite Design (FCCD). The extract yield percentage was determined to identify the efficiency of extraction of each varied condition. Analysis of variance (ANOVA) was carried out to identify which parameter affect the extraction. The cytotoxic activity of the plant extract against human breast cancer MCF-7 cell line was determined using MTT assay and the toxicity is expressed in half maximal inhibitory concentration (IC50).

Results: According to the RSM prediction, there are 10 various UAE processing conditions with desirability value, 1.00 to obtain high yield of extraction. Three best processing conditions were validated and the best condition is at 42°C for 68 minutes (yield percentage of 22.4% dry weight extract). From ANOVA, duration of time has significant effect (p<0.05) to the yield of extraction where longer sonication time results in higher yield of extract. The plant extract is toxic to the MCF-7 cell line with IC50 value, 44.3 µg/ml.

Conclusion: As the P. sarmentosum extract is toxic against MCF-7 cell indicating that the plant extract contains potential anticancer drugs against breast cancer.

O12

MTT assay of the aqueous crude extract and fractions of Piper sarmentosum on the adipogenesis of the 3T3-L1 cell.

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Background/Objectives: Piper sarmentosum (PS) belongs to Piperaceae family and scientific studies showed that PS has hypoglycaemic, anti-oxidant and anti-obesity properties.

Methods: The reflux method was used for the extraction (CAqE) and fractionation process (HAqF, DAqF, MAqF and AAqF). The 3T3-L1 preadipocytes cells were revived, cultured and induced. The CAqE, HAqF, DAqF, MAqF and AAqF as well as glycyrrhizic acid (GCA) were diluted into one fold serial dilutions and then added to the cultured cells from day 3 to day 15 (D3-D15), day 3 to day 9 (D3-D9) and day 9 to day 15 (D9-D15). The viability of the adipocytes were measured by MTT assay.
Results: About 200 g crude extract was produced from 10 kg of PS leaves. For the fractionation, 49.1% of the crude extract contains most polar substance (AAqF). While, 0.12%, 9.7% and 36% contain HAqF, DAqF and MAqF respectively. The treatment with one fold serial dilution of the HAqF (0.1 to 1 µg/ml), DAqF (9.76 to 97.6 µg/ml) and MAqF (3.6 to 36 mg/ml) of PS from D3-D15, showed about 70 to 80% reduction in the number of adipocytes. Meanwhile the treatment with one fold serial dilution of the CAqE and AAqF of PS (1 to 10 mg/ml), and GCA (0.24 to 2.4 mg/ml) from D3-D15, D3-D9 or D9-D15, showed 50% reduction in the number of adipocytes.

Conclusion: Therefore, the most polar fraction (AAqF) of PS plays an essential role in inhibiting adipogenesis by reducing the adipocytes formation.

O13
Investigation of Electroporation Effect on The Growth Rate of Colon Cell Line (HT29)
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Background/Objectives: Electroporation is a method of increasing cell membrane permeability and conductivity as a result of subjecting the cell to high intensity but short electric field. Electroporation has been broadly used in medicine and biotechnology for cell fusion, electro-chemotherapy, gene-therapy, tumor cell ablation and sterilization of liquid food and water.

Methods: In this study, the effect of electroporation on the growth of colon cell line HT29 was investigated. The primary aim was to see if electroporation can be used to increase the growth rate of cell lines that in turn can be used for wound healing application.

Results and Conclusion: This study showed that electroporation has a significant effect on the growth of colon cell lines when exposed to electric field strength of 600V/cm for 500 μs duration. Electroporated cells reached 75.9 percent confluence after 48 hours while the same concentration of non-electroporated cells reached 75.6 percent confluence in 64 hours. The electroporated cells were also found to continue to proliferate and grow with the same morphology when subculture and reseeded in a new flask.

O14
Oral Leukoplakia-Like Lesions among Shammah Users in Dawn Valley, Yemen
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Background/Objectives: The traditional type of smokeless tobacco used in the Arabian Peninsula, especially common in Yemen is called shammah. Shammah and other risk factors play an important role in development of oral leukoplakia-like lesions. This study amid to determine the association of shammah use and other factors associated with oral leukoplakia-like lesions.

Methods: A cross-sectional study was conducted on 346 randomly selected adult males. Multi-stage random sampling was used to select the study location. After completing the structured questionnaire interviews, all the participants underwent clinical examination for oral leukoplakia-like lesions. Clinical features of oral leukoplakia-like lesions were characterized based on the grades of Axéll. Data was analyzed using multiple logistic regressions.

Results: The mean age of the total participants was 34.3 years. The significant factors associated with oral leukoplakia-like lesions were age [adjusted odd ratio (AOR)= 1.03; 95% CI: 1.01, 1.06; P= 0.006], primary level of education (AOR=8.65; 95% CI: 2.81, 26.57; P= 0.001), former shammah use (AOR,3.65; 95% CI:1.40,9.50; P= 0.008), current shammah use (AOR, 12.99; 95% CI:6.34 ,26.59; P = 0.001), and frequency of shammah per day (AOR, 1.17; 95% CI:1.02 ,1.36; P= 0.026).

Conclusion: Shammah affects oral health of its consumers. Therefore, it is important to develop comprehensive shammah prevention programmes in Yemen.

O15
Effect of Aqueous Roots Extract of Datura Metel Linn on Liver Function Indices in Female Albino Rats
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Background/Objectives: The effect of Datura metel aqueous root extract at the doses of 50, 100, and 200mg/kg
body weight on some marker enzymes and liver function indices in Wistar female albino rats were determined. **Methods:** The extract was administered for twenty eight (28) days. The liver function indices as well as some marker enzymes activity were determined using the standard methods. **Results:** Significant increases (P≤ 0.05) in serum aspartate transaminase, alanine transaminase and globulin were seen in all treated groups compared to control. Alkaline phosphatase significantly increased (P≤ 0.05) in rats treated with 50 and 100 mg/kg body weight (bw) extract and significantly decreased (P≤ 0.05) in 200 mg/kg bw group compared with the control A significant increase (P≤ 0.05) in serum total protein concentration was seen in the 100 and 200 mg/kg bw groups, compared with control group. Significant decreases (P≤ 0.05) in serum albumin and direct bilirubin concentrations was seen in all treated groups compared to the control. A significant decrease (P≤ 0.05) in serum indirect bilirubin concentration was seen in rats treated with 100 and 200 mg/kg bw of extract but it increased (P≤ 0.05) in rats treated with 50 mg/kg bw of extract compared with the control group. **Conclusion:** This finding indicate that the plant has hepatotoxic effect on liver as revealed in the alteration of the liver function indices and some marker enzymes analyzed.

**Caesalpinia sappan Attenuates Liver Damage in Rats Induced by Thioacetamide**

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**Background/Objectives:** The anti-fibrotic effects of ethanolic extract of traditional medicinal herb *Caesalpinia sappan* (CS) on liver fibrosis induced by thioacetamide (TAA) in rats and expression of transforming growth factor β1 (TGF β1) was studied. **Methods:** Liver fibrosis was induced in male Sprague Dawley rats by TAA administration (0.03% w/v) in drinking water for a period of 12 weeks. The administration of CS extract was at two different doses of 100mg/kg and 300 mg/kg body weight. The therapeutic effect of the extract was investigated using five groups of rats: control, TAA, Silymarin (SY), and CS high dose and low dose groups. In vivo, determination of hepatic CYP2E1 of extract was employed. The effect of CS on liver fibrogenesis was detected by Masson’s trichrome staining, immunohistochemical analysis and Western Blot study. **Results:** Masson’s trichrome staining showed liver fibrosis in rats was greatly alleviated when treated with CS extract. Immunohistochemistry and Western blot results showed CS intervention remarkably inhibited TGFβ1 in rat liver. However, CS could not reverse the pathological changes of liver fibrosis completely when compared with normal control. **Conclusion:** These results indicate that CS can partially protect rat liver from the fibrogenesis induced by TAA. The mechanism may depend on the down regulation of TGFβ1 and CYP2E1. Thus, CS may be of considerable potential aid for alleviation of liver fibrogenesis.

**Effect of *Piper betle* extract on *Mitragyna speciosa* induced hepatotoxicity in male Sprague Dawley rats: an electron microscopy study.**

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**Background/Objectives:** *Mitragyna speciosa* (MS) has been reported to be misused in various parts of the world. There is an urgent need to develop a proper antidote for treating toxicity resulting from MS. *Piper betle* (PB) is reported to possess antioxidative and hepatoprotective properties. This study aimed to observe and compare the ultrastructural changes in the liver of MS induced toxicity in experimental rats treated with or without PB. **Methods:** Twenty four Sprague-Dawley rats were randomly divided into four groups i.e. Group I: control group administered with 15% Tween 80 vehicle: Group II: administered with MS extract (500mg/kg): Group III: administered with MS extract (500mg/kg) and PB extract (200mg/kg) and Group IV: administered with PB extract alone (200mg/kg). At the end of 28 days, the rats were sacrificed and the liver tissue was processed for electron
microscopy study.

**Results:** In MS administered group, the liver showed presence of irregular and pyknotic nucleus while presence of regular nucleus was observed in the control and the treatment groups. The MS group showed the presence of increased vacuoles in the cytoplasm and fragmented rough endoplasmic reticulum (RER). In the PB treated group, there were less vacuoles in the cytoplasm and the RER did not exhibit any damage.

**Conclusion:** In may be concluded that concomitant ingestion of PB extract has the potential to reduce the hepatotoxicity in the liver. These results open the door for future treatment of MS toxicity with appropriate dose of PB extract.

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**O18**

**Acute Toxicity Effect of Hoya diversifolia Leaf Extract in Sprague-Dawley Rats**

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**Background/Objectives:** This study was conducted to investigate the toxicological symptoms of orally administered *Hoya diversifolia* leaf extract in rats.

**Methods:** The dried leaf powder was soaked in ethanol for three days and distilled under reduced pressure in a rotary evaporator. A total of 18 male and 18 female rats were used in this study (6-8 weeks) weighing 150-180 gm. All male and female rats were randomly assigned equally into 3 groups i.e. vehicle control, low extract dose (2 g/kg) and high extract dose (5 g/kg). The vehicle chosen was 0.5% carboxymethylcellulose. The rat was weighed and the administration of leaf extract was performed by oral gavage. Then, animals were observed for mortality or behavioural changes up to 14 days. It may indicate the onset of clinical or toxicological symptoms. On the 15th day, all surviving rats were sacrificed and subjected to necropsy for the gross and histological examination, lipid profile, liver and renal function.

**Results:** The loss of internal organ weight was seen in the *H. diversifolia* leaf extract-treated group of rats with the *p* value < 0.05 compared to the control group. The biochemical results indicated significantly lower level of AP, higher level of AST and ALT in the serum of rats treated with extract. Histological evaluation of liver in group treated with *H. diversifolia* leaf extracts showed significant structural differences with the presence of pathological lesions and inflammatory cells in the liver tissues compared to the vehicle group.

**Conclusion:** At the dose of 2 g/kg and 5 g/kg, leaf extract of *H. diversifolia* was toxic and further test is needed to determine the safe dose to be used.

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**O19**

**Wound Reduction Effects of Sea Cucumber (Stichopus chloronotus)**

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**Background/Objectives:** *Stichopus chloronotus* (Black Knobby or green fish) is a sea cucumber species with potential to expedite healing of wounds. An experimental study was carried out to evaluate the healing potential of *Stichopus chloronotus* in rats.

**Methods:** Aqueous extract of *Stichopus chloronotus* was applied once a day for 14 days on the excision wound model. A total of 125 male Sprague-dawley rats weighing between 250-300 gm were used as experimental animals. The rats were then divided randomly into 5 groups of treatment: Normal control (Non treated animals), Positive control (animals treated with Flavine), Negative control (animals was treated with cetamarcrogol emulsifying ointment only), sea cucumber (animals was treated with 0.5% aqueous extract *Stichopus chloronotus* ointment), Combination (animals was treated with combination of Flavine and 0.5% aqueous extracts *Stichopus chloronotus* ointment). After general anaesthesia, four round 6 mm in diameter, full-thickness wound were made on the dorsal of each rat using disposable punch biopsy. Changes in the wound area were measured using a caliper and photographs were taken on day 1, 3, 6, 10 and 14 after creating the wound.

**Results:** Percentage of wound reduction in the group *Stichopus chloronotus* was significantly higher than the other groups from day 6 after wound creation.

**Conclusion:** *Stichopus chloronotus* demonstrated positive effects to expedite minor wound healing and has the potential as a minor wound healing agent.
O20

Activation of Mouse Oocytes and *In Vitro* Embryo Enhancing Potential of *Nigella sativa*

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**Background/Objectives:** Aim of the present study is to optimize the development of the mouse embryo with addition of different concentrations of *Nigella sativa* extract in the culture.

**Methods:** In this study, three different concentrations of *Nigella sativa* supplementation were used to assist in the enhancement of embryo development. G-1 media was used as a control (Group I). Groups II, III and IV were modified with the addition of *Nigella sativa* at low dose (5%), moderate dose (10%) and high dose (15%) respectively.

**Results:** Results showed an increase in the number of oocytes that successfully developed into morula and blastocyst after supplementation with three different concentrations of *Nigella sativa* in the embryo medium.

**Conclusion:** The outcome of the study indicated that *Nigella sativa* supplementation at a moderate concentration may help in the optimization of mouse embryo culture leading to an increase in the number of morulas and blastocysts.

O21

**Socioeconomic and Lifestyle Determinants of Blood Glucose Screening in Malaysia**

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**Background/Objectives:** In light of the increase in prevalence of diabetes, the objective of the present study is to examine the socioeconomic and lifestyle factors associated with use of blood glucose screening in Malaysia.

**Methods:** A nationally representative data consisting of 2415 respondents was used. It was a cross-sectional population-based survey conducted by the Ministry of Health Malaysia. A simple logistic regression model was developed to estimate the likelihood of using blood glucose screening.

**Results:** Age, marital status, ethnicity, income, smoking and body mass index (BMI) were found to be significantly associated with use of blood glucose screening. In particular, older individuals, being married, Malays, higher income earners, non-smoker, and being obese, overweight and normal weight were associated with a higher likelihood of using blood glucose screening.

**Conclusion:** In efforts to encourage the public to utilise blood glucose screening, it is essential to have a wide knowledge of which groups of individuals use or do not use the services. Consistent with previous studies conducted in the developed countries, the present study finds that socioeconomic and lifestyle factors play an important role in explaining the decision of people to use blood glucose screening.

O22

**The Relationship between Clinical Teaching Staffs’ Individual Knowledge Management and Self-Efficacy**

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**Background/Objectives:** This study aimed to determine the relationship between individual knowledge management (KM) and self-efficacy among clinical educational staffs. KM known as a multi-disciplined approach to achieve organizational objectives that helps managers and staffs to capture, develop, share, and effective using organizational knowledge. In healthcare systems KM can play a significant role to improve the whole system performance.

**Methods:** In order to achieve its objectives, 105 Iranian clinical staffs have been chosen. The data gathered through two questionnaires; self-efficacy and KM questionnaires. The data analyzed by using Pearson Correlation and Regression tests.

**Results:** The results showed a significant correlation between individual KM and self-efficacy (r=0.73). In addition, results showed that among the nine dimensions of KM, information literacy (β=-0.13, t(105)=-0.65, p<0.05) and collaborative skills (β=0.31, t=1.9, p<0.05) dimensions had respectively the lowest and highest prediction impacts.
on staffs’ self-efficacy. In general, this study found that individual KM can anticipate clinical educational staffs’ self-efficacy (β=0.46, t(105)=4.6, p<0.001).

**Conclusion:** This study found that higher KM leads to higher self-efficacy. Organization can use staffs with higher self-efficacy to improve organizational performance and to achieving organizational stated goals. Managers may use the results from this study in two ways. First they can improve their staffs self-efficacy by improving the staffs KM skills. Second, they may use assumptions of KM in hiring new personnel.

### O23

**Pharmacogenovigilance: Knowledge, Attitude and Practice of Pharmacogenomics and Pharmacovigilance towards Drug Safety among Future Doctors and Pharmacists in Malaysia**

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**Background/Objective:** The inclusion of pharmacogenomics and pharmacovigilance in the academic curricula of healthcare professionals is important as the knowledge and training are prerequisite to professionalism. Pharmacogenomics and pharmacovigilance promise many benefits. Therefore, their integration into patient care would bring solutions to pharmacotherapy related problems, but to reap these benefits, it requires good knowledge, attitude and practices towards pharmacogenomics and pharmacovigilance among healthcare professionals. Despite these anticipations, we have not encounter any research that reported knowledge, attitude and practice regarding both pharmacogenovigilance in drug safety among Malaysian future health professionals. Therefore this study aimed at getting an in-sight in to the knowledge, attitude and readiness towards applications of pharmacogenomics and pharmacovigilance in drug safety among final-year medical and pharmacy students in order to set foundations.

**Methods:** A cross-sectional observational pilot study was conducted by administering self-administered questionnaire (reliability coefficient = 0.884) to the participants, yielding a response rate of 68.4%.

**Results:** About 70% of 169 respondents were females, and 63.3% were medical students with average age of 22.98±1.03. The mean total knowledge scores was 14.66±SD3.86 with statistical significant difference between the two professions (p-value=0.01 at 95% CI). A positive attitude, but low level of practice were observed with a significant differences between pharmacy and medical students with P<0.05, respectively. Association between knowledge and practice, attitude and practice were explored.

**Conclusion:** Majority of respondents demonstrated good knowledge and attitude toward pharmacogenomics and pharmacovigilance but with very low level of practice, and researches are required with large sample and to investigate the barriers to this low practice.

### O24

**Nurses’ Knowledge and Practices regarding Oral Health and Oral Healthcare of Pregnant Women Following Oral Health Education Program**

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**Background /Objectives:** This study evaluated the effects of oral health education program (DELICATE) on knowledge and practices of nurses regarding oral health and oral healthcare of pregnant women.

**Methods:** This was a controlled community trial involving 59 clinics which provide antenatal care in 2 districts of Kelantan. An oral health education intervention program regarding oral health and pregnancy comprised of educational talk, problem-based learning, quiz and printed booklet was implemented on 29 antenatal care clinics in the study district (n=140 nurses). One hundred and thirty-three nurses from 30 antenatal care clinics in the control district received educational talk on basic oral hygiene care. A set of self-administered questionnaire was distributed to all nurses in the study and control group at baseline and after 1-2 months to capture changes in related knowledge and practices.

**Results:** At baseline, the mean knowledge score of nurses in the study group was higher than the control group although the mean practice scores were similar between the groups. Following intervention, significant increase in both knowledge and practice scores were observed among nurses in the study group. Inter-group comparisons also showed that nurses in the study group had significantly higher knowledge and practice scores than nurses in the control group.

**Conclusion:** Nurses in the study group who had undergone DELICATE intervention have better knowledge and practice than nurses in the control. The DELICATE oral health education program is effective to increase the
knowledge and practices of nurses regarding oral health and oral healthcare of pregnant women.

O25
Knowledge, Attitude and Practice on Medication Use and Safety among Nigerian Postgraduate-Students of UNISZA, Malaysia
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Background/Objectives: Public knowledge on medication use and safety is essential in promoting rational use of medicine. Patients have the right to know all adverse effects of the drugs prescribed to them, over-the-counter drugs and some common drug-interactions. The aim of this research was to survey the knowledge, attitude and practices on medication use and safety among Nigerian postgraduate-students in Malaysia.

Methods: A cross sectional questionnaire based study was conducted using adopted, modified and validated instrument. The questionnaire was distributed to 100 Nigerian postgraduate-students residing in Gonk-Badak campus. The response was analysed using SPSS version 20.

Results: The response rate obtained was 85%. Among 85 respondents, majority were males 95.3%. The age range was 20-40 years. The respondents, 71.8% stated that antibiotics should be prescription only medicine. Nearly 90.6% said traditional medicine and over-the-counter also possess adverse effects. Similarly, study population 72.9% strongly agreed that pharmacist is a reliable source of drug information. The participants, 71.8% strongly agreed that medication use and safety information are essential to the patient. In contrast, only 27.1% of the student will never ask community pharmacist for any drug without consulting doctors. Also only 37.6% stated that they will never discontinue medicine even their symptoms relieved.

Conclusion: Overall, study population had good knowledge and attitude but poor practice on medication use and safety. They did not identify the role of pharmacist as the major source of drug information. Our findings suggested that there is an urgent need for public awareness campaign on medication use and safety.

O26
Prevalence and Risk Factors of Stress, Anxiety and Depression among Preclinical Medical Students in Universiti Putra Malaysia in 2014
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Background/Objectives: To determine the prevalence and risk factors of stress, anxiety, and depression among preclinical medical students of Universiti Putra Malaysia in 2014.

Methods: Cross sectional study design was used. A questionnaire was distributed to the students which included questions about the demographic factors of the students, the DASS-21 questionnaire which is made of three domains namely stress, anxiety and depression and the MSSQ-20 questionnaire which was used to determine the risk factors that affect the students. Descriptive statistics was used to determine the prevalence of stress, anxiety and depression. Logistic regression was used to determine the risk factors.

Results: Prevalence of stress, anxiety, and depression were 16.9%, 52% and 24.4% respectively. Gender, group activities related stressor, love relationship, and absence of financial support are the main risk factors for stress in preclinical medical students of University Putra Malaysia. Multiple logistic regression shows that living in rural area and group activities related stressor are significantly associated with anxiety respectively [adjusted OR 2.4, 95% C.I. (1.26, 4.59), p = 0.008], [OR 2.56, 95% C.I. (1.8, 3.64), p <0.001]. Risk factors for depression include gender (females are protected against depression compared to males [adjusted OR 0.21, 95% C.I (0.095, 6.03), p <0.001]). As in anxiety and stress, group activities related stressor is associated with depression [adjusted OR 3.76, 95% C.I. (2.35, 6.03), P < 0.001].

Conclusion: Group related activity was found to be the main factor affecting psychological distress in preclinical medical students in Universiti Putra Malaysia.

O27
Palm Tocotrienol Protects the Bone Against Dexamethasone Induced Osteoporosis by Modulating Gene Expression
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Background/Objectives: Long-term glucocorticoid treatment induces oxidative stress which modifies the proliferative and metabolic activity of bone cells. Glucocorticoids alter the osteoblast and osteoclast-related gene expression. Palm oil is rich in tocotrienol which is an antioxidant and has protective effects against free radical associated diseases. The purpose of this study was to determine the mechanism of effects of palm tocotrienol against glucocorticoid-induced osteoporosis.

Methods: Thirty adult male Sprague-Dawley rats were used in this study. Twenty rats were adrenalectomized and replaced with 120µg/kg/day intramuscular dexamethasone injection. 10 rats were supplemented with palm tocotrienol 60mg/kg/day the other 10 rats was given vehicle palm olein 0.1ml/kg/day by oral gavage. 10 rats were sham operated and given vehicle palm olein 0.05ml/kg/day by intramuscular injection and 0.1ml/kg/day orally. The rats were sacrificed after 2 months. The right femoral bones were analyzed for bone histomorphometry and the left for gene expression analysis.

Results: Long-term glucocorticoid treatment significantly increased the expression of osteoclast-related genes (Cathepsin K, Integrin α5/β3 and osteopontin) which associated with bone resorption. Osteoblast-related gene (osteocalcin) expression was also significantly increased but bone sialoprotein expression was reduced. These were associated with significant reduction of bone structure. Palm tocotrienol had significantly maintained the bone structure. Osteoclast-related genes expression were significantly reduced, which might cause a decrease in bone resorption. The osteocalcin gene expression was significantly increased.

Conclusion: The results of this study suggested that palm tocotrienol is a potential agent in protecting the bone against glucocorticoid-induced osteoporosis.

Knowledge and Awareness Regarding Osteoporosis among Patients and Accompanying Persons Attending the Orthopaedic Clinic at Universiti Kebangsaan Malaysia Medical Centre (UkMMC)

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Background/Objectives: Osteoporosis is a global public health problem. Prevalence of osteoporosis in Malaysia was 24.1% in 2005. No survey on osteoporosis awareness has been reported in Malaysia. The purpose of this study was to investigate the awareness and knowledge regarding osteoporosis among patients and accompanying persons attending orthopaedic clinic at Universiti Kebangsaan Malaysia Medical Center (UKMMC), Kuala Lumpur.

Methods: Knowledge and awareness regarding osteoporosis among 368 participants (male and female) aged ≥20 years old, was assessed using the Osteoporosis Questionnaire (OPQ), a reliable and validated questionnaire which contains 20 items encompassing knowledge in four areas: i) general knowledge, ii) risk factors, iii) treatment, and iv) consequences. Mann-Whitney test was used to determine the differences in the mean scores between socio-demographic variables.

Results: The mean total OPQ scores was 1.7 (SD ± 3.08; range -5 to 9; maximum possible score 20). We found a significant difference in the total OPQ scores between subjects with and without family history of osteoporosis (p<0.05). However, there is no significant difference (P>0.05) in osteoporosis knowledge in the subjects with respect to age group (<50years &>50years), gender (male and female), ethnicity (Malay, Chinese and Indian), and menopausal status (pre menopause and post menopausal). The main sources of osteoporosis knowledge were magazine/newspaper (45.9%), doctors (30.4), television/radio (22.8%) and friends (18.2%).

Conclusion: Strategies to increase the awareness of osteoporosis among the public should be implemented so that they can appropriate action to prevent the disease.

Vitamin D is Significantly Associated with Total Testosterone and Sex Hormone-binding Globulin in Malaysian Men

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Background/Objectives: Epidemiological studies in the Caucasian populations reveal a significant relationship between vitamin D and testosterone level. However, similar data in the Asian populations are limited. This study aimed to determine the association between vitamin D and testosterone level in the Malaysian men.

Methods: A cross-sectional study was conducted between September 2009 and 2011. The subjects consisted of
Chinese and Malay men aged 20 years or above living in Klang Valley, Malaysia. They underwent anthropometric measurement and their blood was collected for serum testosterone, sex hormone-binding globulin (SHBG) and 25-hydroxyvitamin D (25(OH)D) assays. The relationship between 25(OH)D and testosterone levels was analysed using multiple regression analysis. The testosterone and SHBG levels among subjects with different vitamin D status were compared using univariate analysis. All analyses were adjusted for confounders such as age, ethnicity and body mass index (BMI).

**Results:** 25(OH)D was significantly and positively associated with total testosterone and SHBG levels before and after adjustment for age and ethnicity (p<0.05). The association between 25(OD)D and SHBG remained significant after further adjustment for BMI (p<0.05). The total testosterone and SHBG showed an increasing trend from subjects with vitamin D deficiency to those with optimal level (p<0.05), but significance was lost after adjusting for BMI (p>0.05).

**Conclusion:** The relationship between 25(OH)D and total testosterone and SHBG is significant but dependent on BMI in Malaysian men.

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**O30**

**Correlation of Brain Size with Mental Ability in School Children Aged 6 to 16 years in Malaysia**

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**Background/Objectives:** Intelligence quotient (IQ) is widely used to assess different aspects of mental ability. Development in mental ability initiates from conception and continues through adulthood. Various environmental factors affect IQ. The aim of this study was to assess the correlation between IQ and environmental characteristics on cranial capacity in children and adolescents in Malaysia.

**Methods:** This cross sectional study was performed on primary and secondary school students in Kuala Terengganu, Malaysia. Students, who were aged between 6 to 16 years and did not have any mental or physical disabilities, participated in this study. Measurements including weight, height, body mass index and cephalometry were performed for each subject. The Wechsler Abbreviated Scale for Intelligence- Second Edition (WASI-II) questionnaire was used for each subject to evaluate the subtests of IQ. A total of 419 subjects with the mean age of 12.51 ± 2.82 years had participated in this study.

**Results:** Boys were taller (p=0.04), had higher IQ (p=0.01) and cranial capacity (p<0.001) as well as block design score (p=0.02) when compared with girls. There was a significant mean effect for age (p=0.03), gender (p=0.04), paternal education (p=0.04), family income and block design (p=0.03) on cranial capacity.

**Conclusions:** This study revealed different patterns of brain growth, function and IQ amongst male and female subjects as well as defining the environmental factors that can affect cranial capacity and that the IQ and cranial capacity may be improved by tuning up the lifestyles and economic conditions of the families in developing countries.

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**O31**

**Design and Production of Synthetic Recombinant Multiepitope Peptides for Serodiagnosis of Toxoplasma gondii Infection**

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**Background/Objectives:** Toxoplasmosis is a prevalent parasitic disease causes serious clinical and veterinary problem. Detection of *T. gondii* infection by serological tests are common and provide satisfactory results. However, producing reliable reagents and standard antigen remains difficult and expensive. Replacing native antigens in all current diagnostic kits will allow better standardization of these assays. In attempts to achieve high, sensitive and specific diagnostic assays recent reports proposed a more effective strategy to apply a multi epitope peptide as diagnostic markers. This study aimed to produce a synthetic protein consisting of a multi immunodominant epitopes of several *Toxoplasma gondii* antigens.

**Methods:** A single synthetic gene encoding for nine linear epitopes of *T. gondii* surface antigens (SAG1, GRA2 and GRA7) has been designed by using software-based prediction techniques and VNTI Bioinformatics software. The entire gene was constructed by assembly PCR and cloned into pET32a vector. The protein expression was induced
in *E. coli* expression system while the synthetic protein was successfully purified using Ni-NTA spin column. The preliminary diagnostic performance of Expressed protein was evaluated by ELISA using human sera.

**Results:** A single synthetic protein consisting of a multi immunodominant epitopes of *T. gondii* surface antigens has been successfully produced. Western blot analysis allowed successful identification of the synthetic protein, while ELISA results indicate highly immunoreactivity performance of these synthetic proteins.

**Conclusion:** The newly synthesized multi epitopes protein might be useful for additional investigation to develop an accurate diagnostic assay.

**O32**

**Urinary Incontinence in Old Women in Jordan: Prevalence and Psychosocial Problems**

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**Background/Objectives:** To find out prevalence of urine incontinence (UI) and to assess quality of life (QoL) of women.

**Methods:** A cross sectional study was conducted on a representative sample of women (n=182) aged 50 to 65 years. A questionnaire was used for data collection. Data was analyzed using (SPSS) version 12.

**Results:** Approximately one third of women had UI; 23.1% had stress UI, 26.4% had urge UI, and 18.1% had the mixed type. 68% indicated that UI impaired their QoL and 56% reported that UI interfered with daily activities. Half of women avoided social gathering and 52.6% mentioned that UI prevented them from travelling for a long time. UI prevented 44% of women from visiting relatives and friends. 61% said that UI impaired their emotional health, and more than 55% were either anxious or frustrated. UI was responsible for discomfort (84.2%), loss of self-esteem (38.6%), sexual problems (31.6%), and disturbance of sleep (54.4%). About 60% of women mentioned that UI normal (due to ageing) and only 14% sought medical advice for their condition.

**Conclusions:** Prevalence rate of UI varies from one study to another for different reasons. There is a need to raise awareness of women of this condition. A multidisciplinary approach is required taking into account all aspects of the problem. Further studies of UI are needed at the national level.

**O33**

**Gene Expression Profiles of Peripheral Blood to Understand Pathophysiology of Chronic Kidney Disease of Unknown Aetiology**

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**Background/Objectives:** The objective of this study was to understand the pathophysiology of a form of chronic kidney disease (CKD) that is highly prevalent in certain tropical regions of the world including Latin America, Sri Lanka, Egypt and India, for which the aetiology is yet unknown (CKDu), but for which environmental sources of renal toxicity have been suggested.

**Methods:** Gene expression profiles of peripheral blood were compared between Stage 4 CKDu patients residing in an endemic area (Girandurukotte) of Sri Lanka and healthy controls from a non-endemic area (Kandy). Briefly, total RNA was isolated from peripheral whole blood, amplified, reverse transcribed and hybridized to Illumina HumanHT-12 v4 Expression BeadChip arrays and scanned with an Illumina BeadArrayReader confocal scanner.

**Results:** The data from the microarray analysis, using fold change ≥ 2 or ≤ 0.5 in expression, resulted in 41 up-regulated and 26 down-regulated genes. These genes were grouped into annotation clusters and most of them were related to defend response against microorganisms (DEFA1B, BPI, etc.), and disulfide bond formation (FOLR3, OLFM4, etc.). Genes regulating apoptosis (MPO, MX1, etc.) and transition metal ion binding (ARG1, HBZ, etc.) were also seen to be differentially regulated.

**Conclusion:** Gene expression analysis of patients having Stage 4 CKD of unidentified aetiology showed progression pattern similar to CKD patients having known aetiologies. Immunosuppression leading to infections and further inflammatory response was seen, along with regulation of apoptosis and iron binding. Future studies analyzing transcriptome patterns in earlier stages of the disease would help identification of factors initiating the disease.
Reliability and Validity of the Malay Version of Kidney Disease Quality of Life-Short Form (Kdqol-Sf™) Questionnaire

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Background/Objectives: To determine the reliability and validity of the Malay version of Kidney Disease Quality Of Life Short Form (KDQOL-SF™) questionnaire for hemodialysis patients in Kelantan.

Methods: A cross sectional study was conducted from May 2014 through September 2014 on patients underwent hemodialysis at six private hemodialysis centres in Kelantan. English version of KDQOL-SF™ questionnaire was translated into Malay by two translators. Interviews was done to assess the quality of life of end stage renal disease patients. Exploratory factor analysis was used to determine construct validity of the eight SF-36 sub-scales and ten sub-scales of kidney component. Cronbach’s alpha coefficient was used to determine internal consistency and reliability.

Results: 215 hemodialysis patients (mean age=54 years) completed the KDQOL-SF™ questionnaire. All 36 generic items of SF-36 and 43 kidney disease targeted items were maintained. The internal consistency was acceptable for all sub-scales except work status (0.53) and quality of social interaction (0.51). All items were reproducible with test and retest scores ranged from 0.82 to 0.98.

Conclusion: The Malay version of KDQOL-SF™ questionnaire is reliable and valid to assess the quality of life of hemodialysis patients in Kelantan.

POSTERS

Effect of ADD-X on Blood Pressure and Body Weight in Ovariectomized Sprague-Dawley Rats
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Background: Increase in blood pressure and body weight is associated with high cholesterol diet. Additive X(ADD-X) a plant extract belongs to the rutaceae plant family, is known to possess beneficial effects in health. The present study was aimed to determine the effects of heated palm oil mixed with ADD-X on the blood pressure and body weight changes in ovariectomized rats fed with cholesterol diet.

Methods: The rats were divided into 7 groups (n=6); Sham control (SCG) and Basal control (BCG); ovariectomized control (Ovx); five times-heated palm oil (5HPO); five times-heated palm oil with ADD-X(5HPO + ADD-X); ten times-heated palm oil (10HPO); ten times-heated palm oil with ADD-X(10HPO+ ADD-X). Following 2 weeks of ovariectomy, experimental groups received 2% cholesterol diet. The dosage of ADD-X added in the palm oil was in the ratio of 1:10 and was continued for 4 weeks. Peroxide value and free fatty acid value of oil, food intake, body weight and blood pressure were measured.

Results: A significant decrease in peroxide and free fatty acid values was observed in the 5HPO and 10HPO with the addition of ADD-X on the blood pressure and body weight changes in ovariectomized rats fed with cholesterol diet.

Conclusion: The present study concluded that addition of ADD-X in the heated palm oil reduces the peroxide and free fatty acid values of the oil, and maintained the blood pressure and body weight of the ovariectomized rats fed with cholesterol diet.
Effects of Virgin Coconut Oil and Tocotrienol Combination on Blood Pressure and Vascular Reactivity in Atherosclerotic Rats

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Background/Objectives: Previous studies have shown that repeatedly heated palm oil increased blood pressure and vascular reactivity in rats. Therefore, this study was performed to explore the effects of virgin coconut oil (VCO) and tocotrienol in atherosclerotic rats that were fed with repeatedly heated palm oil and cholesterol diet on these parameters.

Methods: Fifty-six female rats were divided into 7 groups (n=8): (i) sham control group (SCG) was given basal rat diet, whereas other groups were ovariectomized and fed with 2% cholesterol diet and five-time heated palm oil (5HPO); (ii) atherosclerotic control group; (iii) VCO (1.43 ml/kg, oral), (iv) VCO (4.29 ml/kg, oral); (v) TRF (30 mg/kg, oral); (vi) VCO (1.43 ml/kg)+TRF (30 mg/kg), orally; (vii) VCO (4.29 ml/kg)+TRF (30 mg/kg), orally. Blood pressure was measured at baseline and at monthly intervals for 24 weeks. End of study, the rats were sacrificed and thoracic aortas were taken for measurements of vascular reactivity.

Results: Blood pressure was increased significantly in the atherosclerotic control group compared to all other groups. Blood pressure in combination of higher dose of VCO and TRF was significantly lower than atherosclerotic control group. Aortic rings from the atherosclerotic control group exhibited attenuated relaxation in response to acetylcholine and sodium nitroprusside as well as increased vasoconstriction to phenylephrine compared to the treatment groups. Aortic rings from group (vii) showed only attenuated vasoconstriction to phenylephrine which gives protective effect to the aortas.

Conclusion: The present study concluded that the combination of VCO and TRF with a higher dose of VCO able to prevent blood pressure elevation and improve endothelial function in atherosclerotic rats that were fed with repeatedly heated palm oil.
**Background/Objectives:** This study was carried out to determine whether the blood pressure lowering effect of *Nigella sativa* may be mediated via its effect on blood pressure-regulating enzymes, nitric oxide and oxidative stress markers.

**Methods:** Twenty-four adult male Sprague-Dawley rats were divided equally into 4 groups. One group served as control (group 1) while the other three groups (groups 2-4) were administered L-NAME (25 mg/kg, intraperitoneally). Groups 3 and 4 were respectively given daily oral nicardipine at the dose of (3 mg/kg) and *Nigella sativa* oil at the dose of (2.5 mg/kg) for 8 weeks.

**Results:** The *Nigella sativa* oil prevented the increase in systolic blood pressure (BP) in L-NAME treated rats. The blood pressure reduction was associated with reduction in cardiac lipid peroxidation product, NADPH oxidase, angiotensin-converting enzyme and reduction in plasma nitric oxide. Whilst it increased heme oxygenase-1 activity in the heart. The effect of NS on BP, lipid peroxidation product, NADPH oxidase and ACE was similar to nicardipine. In contrast, L-NAME had an opposite effect on lipid peroxidation, ACE and NO.

**Conclusion:** The antihypertensive effect of *Nigella sativa* oil appears to be mediated via reducing in cardiac oxidative stress and angiotensin-converting enzyme, increasing cardiac heme oxygenase-1 activity as well as preventing the loss of plasma nitric oxide. Thus, *Nigella sativa* oil might be beneficial for controlling hypertension.

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**P5**

**Prospective Study Health Related Quality Of Life and Sick Leave Duration among Employee with Acute Coronary Syndrome in Kelantan**

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**Background/Objectives:** The aim of this study were to determine the duration of sick leave and to determine the correlation between health related quality of life among employee diagnosed first episode of acute coronary syndrome with sick leave duration during diagnosis and three months post diagnosis.

**Methods:** This was a prospective observational study done in a tertiary hospital in Kelantan. The tools used were a proforma to collect data on socio-demographic, type of occupation and sick leave duration given by the treating physician. Second tool was an interviewed guided questionnaire using generic health related quality of life Short Form (SF 36) questionnaire. The interview was done during admission and follow up at three months. The study period commence from October 2013 till December 2014.

**Results:** A total of 78 respondents were joining this study with no loss of follow up three months post diagnosis. The correlation of sick leave duration was significant for domain of social function during baseline (correlation coefficient=0.272, p-value=0.016). There was no correlation between quality of life domain three months post diagnosis with sick leave duration.

**Conclusion:** The health related quality of life among the respondents does not much affect by the disease during first diagnosis and three months post diagnosis.

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**P6**

**The Assessment Of Finger Photophlethysmography Fitness Index (PPGF) Among Young Men**

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**Background/Objectives:** The assessment of peripheral vascular function may help in risk stratification and early identification of vascular damage. Recently, one method to assess vascular function via finger photophlethysmography (PPG) was introduced, namely PPG fitness index (PPGF). PPGF is obtained by comparing subject’s volume pulse with a reference pulse from a healthy subject and is measured in percentage. Higher PPGF reflects healthier vascular function. The aim of this study is to determine the association between PPGF with other major cardiovascular disease risk factors and carotid femoral pulse wave velocity (PWVCF), which is an established marker of arterial stiffness.

**Methods:** One hundred and fourteen young men aged 20 to 40 years old were recruited. Their age, height, weight, peripheral and central blood pressure (BP), lipid profiles, PPGF and PWVCF (Vicorder) were determined. Data were analyzed via Social Package of Social Science (SPSS) version 16. Significance level was set at P<0.05.
Results: The subjects’ mean age was 28.94±4.86 years old. The mean systolic BP (SBP), diastolic BP (DBP), PWV_{CF} and PPGF were 127.70±10.55 mmHg, 73.93±7.84 mmHg, 7.36±0.78 m/s and 60.25±8.30 % respectively. The mean PPGF value indicated that the vascular health status was low for their age. PPGF was associated with height (r=0.22, P<0.05), PWV_{CF} (r=-0.27, P<0.01), DBP (r=-0.24, P<0.05) and mean arterial pressure (r=-0.22, P<0.05). In multiple linear regression, the independent determinants of PPGF were height (β=0.24, P<0.01), PWV_{CF} (β=-0.26, P<0.01), SBP (β=-0.26, P=0.04) and forward pressure (P1)β=0.35, P<0.01).

Conclusion: In conclusion, PPGF was correlated and independently determined by PWV_{CF} and can be used as a marker of arterial stiffness.

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**P7**

Synergistic Effect of Cisplatin and Apigenin on TRF1 And TRF2 Expression in Triple Negative Breast Cancer Cells  
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Background/Objectives: Cancers with short telomeres are generally very aggressive. Triple negative breast cancer (TNBC) is such an example. Briefly, cancer with short telomeres showed up-regulation of telomere associated proteins; TRF1 and TRF2. Alteration of TRF1 and TRF2 expression are associated with telomeric disfunction which leads to senescence or apoptosis event in cancer cells. However so far little is known about the effect of apigenin and cisplatin on the expression of these telomeric proteins in TNBC. The present study investigated the potential effect of cisplatin, apigenin and the combination on TRF1 and TRF2 expression.

Methods: MDA-MB-231 and HCC1806 cells were treated with IC_{50} of cisplatin, IC_{50} apigenin and the combination of both. mRNA expression of TRF1 and TRF2 was measured by QPCR and protein by ELISA. The data were analyzed using one way ANOVA.

Results: The combination treatment of apigenin and cisplatin significantly up-regulated mRNA expression of TRF1 in MDA-MB-231 as compared to control (p<0.01). A similar pattern of TRF1 mRNA expression was observed at protein level in MDA-MB-231. However the result was not statistically significant. In contrast, the mRNA and protein expression of TRF1 was down-regulated in HCC1806 cells after combination treatment as compared to control group (p<0.0001). Furthermore, both cells types showed down-regulation of TRF2 mRNA and protein expression after combination treatment as compared to control groups.

Conclusion: The cell line specific expression pattern indicate that complex transcriptional and translational mechanism are involved and that each cancer may react differently to the treatment.

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**P8**

Role of *Labisia pumila* (Kacip Fatimah) Phytoestrogens in the Prevention of Postmenopausal Diseases  
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Background/Objectives: *Labisia pumila* (LP), also known as Kacip Fatimah, is a herbal medicine that has been widely used for women’s health. The extensive use of this plant has led to many speculations and studies on its phytoestrogenic properties. This systematic review summarized the role of phytoestrogens found in LP for the prevention of postmenopausal diseases.

Methods: A comprehensive search was conducted in SCOPUS, EBSCOhost and Ovid Medline for related studies published between the years 1998 to 2015. The main inclusion criteria were research articles published in English, and studies had to report the phytoestrogenic effects of LP and postmenopausal diseases. The literature search identified 113 potentially relevant articles, whereby 13 met the inclusion criteria. Ten animal studies, two *in vitro* studies and one human study were included in this review.

Results: All of the studies reported positive effects of LP on postmenopausal diseases due to estrogenic deficient state.

Conclusion: This systematic review highlights the potential of LP extract being used for treating or preventing diseases in the postmenopausal state. Further studies are required to identify the molecular mechanisms before controlled human observational studies are conducted to provide stronger evidence.
Effects Of ADDX, a Novel Frying Oil Additive on Heated Oil-Induced Hypertension in a Rat Model
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Objectives: The objective of this study is to investigate the effects of ADDX supplementation on the heated oil-induced hypertension in rat model.

Methods: Fifty six male Sprague-Dawley rats were divided into seven groups: Control group fed with basal diet and other groups fed with basal diet fortified with 15% weight/weight fresh palm oil (FPO), palm oil heated five times (5HPO) or palm oil heated ten times (10HPO) either added with ADDX (FPO+ADDX; 5HPO+ADDX; 10HPO+ADDX) in ratio ADDX:oil of 1:10 or without ADDX respectively. Blood pressure was measured at baseline and intervals of four weeks for 16 weeks using non-invasive tail-cuff method. Following 16 weeks, the rats were sacrificed and thoracic aorta were dissected for vascular reactivity measurement.

Results: Supplementation of ADDX in 5HPO+ADDX group had significantly prevented (p<0.05) the increment in blood pressure compared to 5HPO group. However, blood pressure reduction was not significant in 10HPO+ADDX as compared to 10HPO group. There was no significant difference in relaxation response to acetylcholine and sodium nitroprusside in 5HPO+ADDX and 10HPO+ADDX groups compared to 5HPO and 10HPO respectively. Vasoconstricting response to phenylephrine was significantly attenuated in 5HPO+ADDX (p<0.05) but not in 10HPO+ADDX group compared to the respective oil without ADDX.

Conclusion: ADDX supplementation prevents blood pressure raising effect of five times heated palm oil. The blood pressure lowering effect of ADD-X was associated with reduction in vascular reactivity which suggests that ADD-X may has vascular protective effects to prevent hypertension induced by heated vegetable oil.

Induction of Apoptosis by Helichrysetin in Human Cervical Epidermoid Carcinoma, Ca Ski Cells
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Background/Objectives: To investigate the cytotoxic and apoptotic effect of helichrysetin, a natural occurring chalcone on Ca Ski cells.

Methods: Cytotoxic activity of helichrysetin in Ca Ski cells was evaluated by MTT assay. Biochemical and morphological hallmark of apoptosis were investigated by fluorescence and phase contrast microscopy using DAPI staining and flow cytometry analysis using TUNEL assay, Annexin V-FITC/PI staining, and JC-1 mitochondrial membrane potential assay.

Results: Helichrysetin showed cytotoxic activity towards Ca Ski cells with IC50 of 31.02±0.45 µM. Flow cytometry study revealed that helichrysetin caused inhibition in Ca Ski cells through apoptosis. Biochemical and morphological hallmark of apoptosis such as DNA fragmentation, nuclear fragmentation, cell shrinkage, disruption of plasma membrane and mitochondrial membrane were observed in helichrysetin-treated Ca Ski cells.

Conclusion: Results suggested that this natural compound can inhibit the growth and induce apoptosis in Ca Ski cells, hence, contributing to its potential as an anti-cancer agent.

Anti-proliferative Effects of the Banana Soft Pith Fractions Against Oral Cancer Cell Line
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Background/Objectives: Banana soft pith (BSP) of Musa parasidiaca cv Abu is a local plant, traditionally used in local cuisine. Previous study has shown banana soft pith from various species of Musacae possess antihyperglycaemic, antiurolithic, antivenom and hepatoprotective properties. Nevertheless, there is a lack of study on the anticancer properties of banana soft pith. Objective of this study is to find the most cytotoxic fraction towards HSC-4 oral cancer cell line.
Methods: The banana soft pith had been extracted using 70% ethanol. Then the crude extract undergo liquid-liquid extraction according to polarity preference from non-polar to polar solvent. The crude was fractionated using hexane, ethyl acetate, butanol and water fraction. Each fraction were tested using cell viability assay. Then, the cells was analysed using fluorescence microscopy (AO/PI double staining) to observe the apoptogenic effect. The image of the cell was captured using confocal microscope under 400x magnification.

Results: All fraction of banana soft pith inhibited the proliferation of HSC-4 human oral squamous carcinoma. Hexane and ethyl acetate fraction showed the lowest cytotoxic effect with IC_{50} value of 44.30±5.94 and 26.95±1.80 respectively. The apoptotic characteristics such as cell blebbing, cell shrinkage and membrane damage can be observed under microscope.

Conclusion: Our study revealed fraction ethyl acetate of banana soft pith extract showed the lowest cytotoxic effect by inducing apoptosis towards HSC-4 oral squamous carcinoma.

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**P12**

**Immunopositivity of NF-Kb P65 as a Prognostic Marker in Renal Cell Carcinoma**

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Background/Objectives: The aim of this study was to analyse the immunopositivity of NF-κB p65 in renal cell carcinoma (RCC) tissue and its prognostic potential from a cohort of Malaysian patients.

Methods: Immunostaining of NF-κB p65 was performed in paraffin embedded renal tumour tissue slides with paired normal kidney from 94 patients operated at University of Malaya Medical Centre (UMMC), Kuala Lumpur for RCC. Positive pixel count analysis from Aperio ImageScope was used to determine the expression intensity of NF-κB p65. The clinical and pathological information was obtained from the medical records and pathology reports. Statistical analysis was performed using t-test or ANOVA and a p<0.05 was considered significant.

Results: The subtypes of the RCCs analysed were clear cell (80.9%), papillary (11.7%), chromophobe (3.2%), clear cell papillary (3.2%) and multilocular cystic (1.1%). Pathological staging of the tumours was T1 (54.3%), T2 (27.7%), T3 (14.9%) and T4 (3.2%). Metastasis was present in 23.4% of the patients at diagnosis. Compared to normal kidney tissue, the expression of NF-κB p65 was elevated in the tumour (p<0.001). Higher NF-κB p65 expression was observed with increasing T stage (p=0.033) and in tumours with metastasis at presentation (p=0.024).

Conclusion: NF-κB p65 regulates transcription of proliferation factors and may play a role in progression of RCC. Stronger immunopositivity of NF-κB p65 in higher T stage and metastatic tumours indicates that p65 could be a potential prognostic marker for RCCs.

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**P13**

**The Sub-Acute Toxicity Effects of High Doses of Old And Fresh Tualang Honey in Rats**

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Background/Objectives: Old and fresh tualang honey (TH) have varying levels of 5-hydroxymethylfurfural (5-HMF) that indicate their different safety profiles. The current sub-acute (28 days) toxicity study was conducted to compare the effects of consuming high dosages of old and fresh TH respectively, in Sprague Dawley (SD) rats.

Methods: The OECD Guidelines No. 407 was adopted with the equivalent number of both males and females SD rats were chosen in this study. Ten rats (5 males and 5 females) were allocated into each group receiving 2000 mg/kg/day of old and fresh TH respectively as well as distilled water (control). Body weights and general toxicological observations were recorded daily. Blood was collected for measurement of haematological, biochemical and hormonal assays. Data obtained was prepared for subsequent statistical analysis.

Results: This study revealed that the high doses of TH did not alter general health of all rats. None of them exhibited prominent changes in the haematological and biochemical findings. Nevertheless, there was an elevation trend in the oestradiol levels of females receiving both old and fresh TH. However, only those receiving fresh TH showed significant increase in oestradiol when compared to the control group. This effect might be influenced by the different levels of phytoestrogen present in old and fresh TH. In contrast, all male rats did not demonstrate any significant changes in all parameters tested among all groups.
Conclusion: This study suggests that the consumption of old and fresh TH at high doses were not associated with significant deleterious effects in rats but could give impact on the oestradiol levels in female rats particularly.

**P14**

Proximate Composition and Cholesterol Content of Egg Obtained from Various Bird Species

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Background/Objectives: The proximate composition and cholesterol contents of some egg species were determined.

Methods: The proximate compositions were determined by the methods of Association of Official Analytical Chemists while cholesterol contents were determined by enzymatic method. Proximate compositions of the various egg species revealed that protein was significantly higher (P≤0.05) in shika brown egg (10.31±0.04) and lower in *Columbia livia* (8.98±0.09). Crude lipid was significantly higher (P≤0.05) in *Anas platyryncha* (12.73±0.23) and lower in *Corturnix ypsilophora* (10.00±0.40), *Columbia livia* (10.40±0.35) eggs respectively. Moisture was significantly higher (P≤0.05) in *Columbia livia* (76.00±0.50), *Gallus domesticus* (75.50±0.87), *Corturnix ypsilophora* (75.00±1.26) and lower in *Anas platyryncha* (71.83±0.29), *Numida melleagris* (72.67±0.76) eggs. The carbohydrate composition was significantly higher in *Anas platyryncha* (5.04±0.04) and lower in *Gallus domesticus* (2.88±1.20) eggs.

Results: The result also revealed that cholesterol was significantly higher (P≤0.05) in *Gallus domesticus* egg (796.25±9.09) mg per dl and lower in *Columbia livia* (553.44±12.03), Shika brown (547.28±12.86) and *Numida melleagris* (548.31±23.89) mg per dl.

Conclusion: The composition of the avian egg protein and other constituent will continue to provide sources of nutrients for human. In fact, knowledge of the nutrient content from various species of birds will also serve as nutritional guide in food composition table as well as providing valuable information on nutrient intake. The variation in the proximate composition and cholesterol of some avian eggs obtained in this study may serve as a guide of providing useful information on food composition.

**P15**

HIV Surveillance in Russia-Positives and Negatives and Their Impacts on Epidemiology of HIV Infection

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Background/Objectives: This research is carried out to access the advantages and disadvantages of surveillance system and their impacts on changes in incidence and prevalence rate, modes of transmission and distribution by sex of HIV infection in Nizhny Novgorod Region(city), Volga Federal Region(state) and Russian Federation(country) from 2006-2012.

Methods: Peer-reviewed articles, conference proceedings and technical reports published from 2006-2012 were reviewed for information regarding surveillance system. Information regarding incidence and prevalence rate (per 100000 population), modes of transmission (percentage,%) and distribution by sex (percentage,%) of HIV infection from for Nizhny Novgorod Region(NNR), Volga Federal Region(VFR) and Russian Federation(RF) was obtained from Centers for Disease Control and Prevention of Nizhny Novgorod Region. Comparative statistical analysis was made using Programs EpiInfo 7 and Microsoft Excel 2007.

Results: HIV surveillance system in the Russian Federation had some advantages and disadvantages. From 2006-2012, incidence rates of HIV infection in NNR increased from 12.4 to 53.2 per 100000 population. In RF, from 2006-2010, incidence rate increased from 31.1 to 46.8 per 100000 population but decreased to 40.7 in 2012. Analysis showed that there were increases in placental (2.3%-3.8%) and sexual pathway(35.4% to 42.3%) of transmission. Number of infected males increased from 56.3% to 60.1% and infected females decreased from 43.7% to 39.9%.

Conclusion: Insufficient surveillance system can result in high number of incidence rates in NNR, VFR and RF and pronounced increasing trend of prevalence rate in VFR and RF from 2006-2012. It is related to increases in placental and sexual modes of transmission and infected male sex distribution.
Undergraduates Under Stress: From An Indian Medical School’s Perspective
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Background/Objectives: The expected doctor - patient ratio is yet to be met with. Students’ option for professional courses other than medicine has been increasing. This is perhaps attributable to medical education being perceived as stressful and demanding. This study aimed to determine the prevalence and sources of stress in medical students with focus on academic pressure, financial pressure, clinical environmental issues, interpersonal and intrapersonal issues.

Methods: Constructs from the Medical Student Stress Questionnaire (MSSQ) and Student Stress Questionnaire were used to formulate the self reporting questionnaire of this study which was distributed to 300 undergraduates in a medical school in India. Mean and bivariate regression analysis were performed to examine the association between stressors and incidence of stress.

Results: This study revealed that the prevalence of stress among medical students was 59.3%. Nineteen students (7.22%) and four students (1.14%) reported high and severe stress respectively. Academic pressure recorded the highest prevalence with a mean stress score of 2.23±0.72, particularly among females with increasing years of education. This was followed by inter & intrapersonal issues (1.31±0.85 arb), financial problems (1.16±1.00 arb) and clinical environmental pressure (0.99±0.78 arb). Interestingly, financial pressure demonstrated the strongest relationship with stress, as every 1% increase in financial pressure is estimated to raise stress levels by 0.434% especially among the lower income group, understandably so.

Conclusion: Academic and financial pressure play a paramount role as stressors in medical education. Initiatives from students, clinical administrators, university management and policy makers are warranted towards betterment in medical education.

Prevalence of Irritable Bowel Syndrome Among Undergraduate Students in a Malaysian University & Associated Sociodemographic Factors
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Background: Irritable bowel syndrome (IBS) is a functional disorder of the gastrointestinal system and is often under-reported. It presents with a myriad of symptoms of abdominal pain, disturbed bowel function as constipation or diarrhea, bloating or sensation of distension of abdomen. There is no confirmatory test for IBS and diagnosis is by symptom criteria.

Aim: To determine the prevalence of IBS in a Malaysian University and its relationship with socio-demographic factors.

Methods: Cross-sectional , self reported study. IBS-QoL questionnaires from MAPI Research Trust (1997) were distributed to 1104 students from the Faculties of Medicine, Dentistry, Physiotherapy and Nursing in a Malaysian University. Statistical analysis performed include descriptive analysis and Pearson Chi-square Test of association. A p-value of < 0.05 was considered significant.

Results: The overall prevalence of IBS was found to be 45.3% (500/1104) with a female predominance of 49.8% (426/856) and in students above 22 years 46.2% (408/883). Predominance was noted in Chinese 55%(208/378). Among the faculties, physiotherapy students preceded others 61.7% (142/230). The most common type of IBS was the mixed type (78.6%). 12.4% of IBS positive students had consulted physicians and 13.6% taken medications. Alcohol, physical activity and financial stress did not show an association with IBS.

Conclusion: The prevalence of IBS is particularly evident in female students aged 22 and over. Overall, the occurrence has escalated in University students’ population and negligence in health care seeking behavior should be addressed.
P18
Prognostic Factors of Patients with Upper Gastrointestinal Bleeding (UGIB) in Hospital Sultanah Nora Ismail Batu Pahat, Johor
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Background/Objectives: To identify prognostic factors that associated with risk of mortality of patients with UGIB.

Methods: This study was a retrospective (record review) study. It involved patients with diagnosed of UGIB between 1st January 2011 and 31st December 2013 in adult wards (surgical, medical and orthopedic) and intensive care unit. Sample size was 263 patients with power of study was 80 percent and level of significant was 0.05. Individual and clinical characteristics were the variables under study and the outcome was time of diagnosis till death due to the disease. Data was analysed by STATA version 11 using multivariable cox proportion hazard regression analysis.

Results: This study revealed that among 263 randomly selected patients, 62 patients were event (death due to UGIB) and 201 patients were censored (death due to other disease, loss to follow up, discharge, transfer to other hospital or alive until the end of the study). Multivariable cox proportion hazard regression analysis found patients with variceal bleeding were 3.69 (95% CI: 1.31, 10.45) times of higher risk of mortality than patients with non-variceal bleeding , p=0.013 and patients with comorbidity were 26.37 (95% CI: 3.51, 198.26) times higher risk of mortality than patients without comorbidity or unknown status, p=0.001.

Conclusion: Aetiology and comorbidity (clinical characteristics) were the prognostic factors that associated with the risk of mortality of the patients.

P19
Prophylactic Effects of Nigella Sativa Extract and Thymoquinone Against Cyclophosphamide-Induced Sperm Head Abnormalities and Chromatin Instability in Mice
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Background/Objectives: Evaluation of abnormalities in genetic stability is of importance in the prognosis of fertility as it reflects the DNA integrity of the sperm. Cyclophosphamide is known to be cytotoxic to germ cells of the testis leading to DNA breakage, azoospermia and infertility. This study focuses on ways to assess the effectiveness of Nigella sativa and thymoquinone in lowering chemotherapeutic-associated toxicity of cyclophosphamide on the sperm head and chromatin stability of Balb/c mice.

Methods: Thirty male Balb/c mice were divided into 6 groups, each of five animals. Cyclophosphamide was administered via intraperitoneal injection at 200 mg/kg body weight and thymoquinone as well as ethanol extraction of Nigella sativa which were similarly injected but at a dose of 10 mg/kg, 6 hours post cyclophosphamide exposure and continued on alternate days for the duration of 32 days. Sperm samples were assayed with Eosin Y and Toluidine Blue. Sperm head abnormalities were microscopically classified into normal, lacking the usual hook, banana-like form, amorphous and folded on themselves; while chromatin condensation was categorized into unstained, completely and partially-stained. One hundred spermatozoa per animals were observed.

Results: Nigella sativa extract reduced the percentage of abnormal sperm head post-cyclophosphamide treatment and showed preservation of the normal chromatin condensation indicative of protection against sperm DNA alteration.

Conclusion: This study provides further evidence on the prophylactic effects of Nigella sativa and thymoquinone as the promising natural antioxidants that can fairly prevent cyclophosphamide-induced oxidative stress in the reproductive organs and ameliorate the toxic effects of the alkylating agent on spermatozoa.

P20
Antimicrobial properties of Kacip Fatimah (Labisia pumila).
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### P21

**Evaluation of the Potential Nephroprotective and Antimicrobial Effect of *Camellia sinensis* Leaves versus *Hibiscus sabdariffa* (In Vivo and In Vitro Studies)**

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**Background/Objectives:** Green tea and hibiscus are widely consumed as traditional beverages in Yemen and some regional countries. They are relatively cheap and the belief is that they improve health state and cure many diseases. The aim of this study is to evaluate the potential protective and antibacterial activity of these two famous plants *in vitro* through measuring their antibacterial activity and *in vivo* through measuring non-enzymatic kidney markers dysfunction after induction of nephrotoxicity by gentamicin.

**Methodology:** Gram positive bacteria like MRSA (Methicillin Resistant *Staphylococcus aureus*) were isolated from hospitalized patients’ different sources (pus and wound) and Gram negative bacteria including *E. coli* and *P. aeruginosa* were used *in vitro* study. In addition, the efficacy of these plants was assessed *in vivo* through measuring nonenzymatic kidney markers including S. creatinine and S. urea.

**Results:** Green tea was shown to have antimicrobial activity against MRSA with inhibition zone 19.67 ± 0.33mm and MIC 1.25 ± 0.00mg/mL compared with standard reference (Vancomycin) 18.00 ± 0.00mg/mL. Hibiscus did not exhibit a similar effect. Both Hibiscus- and green tea-treated groups had nephroprotective effects as they reduced the elevation in non-enzymatic kidney markers.

**Conclusion:** We conclude that green tea has dual effects: antimicrobial and nephroprotective effects.

### P22

**Identification of the Common Types of Respiratory Allergens in Sana’a**

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**Background/Objectives:** Allergies can play a major role in conditions such as allergic rhinitis, sinusitis and bronchial asthma. The diagnostic process of the causative of allergy is important because it will enable the practitioner to broadly identify the allergen and recommend patient to avoid them. The immunotherapy for allergic diseases depends on the type of causative allergens. Thus, the present research aimed to identify the common types of respiratory allergens in Sana’a city and the correlation between type of allergens and other influencing factors such as age, sex or place of residence.

**Method:** This study was done on 315 male and female allergic patients selected from outpatient clinics (Chest and ENT clinics) in some major hospitals of Sana’a city for the period of four months (March to July 2014). All patients were tested for 20 types of allergens by skin-prick test.

**Results:** The results indicated that the most common allergens are weeds (34.3%), mites (18.4%), animals (15.9%), trees (12.4%), moulds and yeasts (10.5%) and finally grasses (5.1%). Mites and animals are common allergens in children (22.6%) comparing to adult patients which explain the role of contact of children with domestic animals as indoor allergens. Regarding the effects of the living area, weeds and trees are more common allergens in rural areas (37.8%) and (14.4%) respectively which may be due to its widespread as outdoor allergens in these areas.

**Conclusion:** Weeds are the the most common allergens in Sana’a and no significant relation between gender and type of allergens. Domestic animals are major allergens in children but trees and weeds are largely responsible for allergic respiratory diseases in rural areas.
Modification of the Survivability of Glutamate Induced Injury in Primary Astrocytes Cells by Tocotrienol Rich Fraction (TRF) & Tocopherol
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Background/Objectives: Neurodegenerative diseases and stroke are the most common diseases suffered by the aged population. Glutamate is considered as a main excitatory amino acid neurotransmitter in the mammalian central nervous system which can be excitotoxic, playing a key role in series of chronic neurodegenerative diseases. The aim of current study was to elucidate the potential of vitamin E in protecting glutamate injured primary astrocytes.

Methods: The primary astrocytes were isolated from mix glial cells of C57BL/6 mice by applying Easysep Mouse CD11b positive selection kit and cultured in DMEM/F12 and supplemented with special nutrients. Astrocytes were exposed to a mitotic inhibitor for 5-6 days, treated with 50-75 mM L-leucine methyl-ester (LME) for 60-90 minutes. The purification rate of astrocytes was measured by Flow-cytometer circa 79.4%. The IC₂₀ and IC₅₀ values of glutamate were determined by MTT assay at 10 mM and 100 mM respectively. The mitochondrial membrane potential (MMP) detected in primary astrocytes were assessed with 100, 200 and 300ng/ml concentration of TRF and Tocopherol.

Results: The results depicted that pre-treatment with TRF and tocopherol caused the mitochondrial activity achieved 88.46%, 83.70%, 78.43% and 93.31%, 83.42%, 78.79%, respectively. In post-treatment study, increased TRF concentration (100, 200 and 300ng/ml) caused the MMP value to increase to 61.21%, 73.01%, 84.74% of. MMP value decreased from 76.46%, 87.51%, 66.12% with increasing concentration of tocopherol.

Conclusion: We have shown that vitamin E is an effective prophylactic agent in primary astrocyte injury induced by glutamate.

Leptospirosis among Oil Palm Plantation Workers in Malaysia: Socio-Demographic and Occupational Risks (Preliminary Results)
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Background/Objectives: Leptospirosis is a zoonotic, occupational disease of worldwide importance that especially affects workers in the agriculture sector. Palm oil is a major economic industry in Malaysia and its workers are at high risk for leptospirosis exposure. This is the first study conducted to focus on the associated socio-demographic and work practice factors towards leptospirosis seropositivity among oil palm plantation workers in Malaysia.

Methods: Cross sectional study using a self-administered questionnaire that involved 350 oil palm plantation workers from selected estates as respondents. Their blood samples were then tested for anti-leptospira antibodies using MAT, with the cut-off point for seropositive as ≥1:100titre.

Results: Most of the respondents were male, non-Malaysian (81.4%), and worked in six job categories where fruit harvesters made up the majority (26.9%). 40.0% of the workers had experience working with wounded hand(s), 46.6% did not wash their hands with soap after work, and only 42.9% consistently wore rubber gloves while working. The overall leptospirosis seroprevalence was 28.6%, with fruit collectors having the biggest prevalence of seropositive with 59.2%. 75.3% of those workers who did not wash their hands with soap after work were tested positive for anti-leptospira antibodies, and 65.3% in those who did not wear rubber gloves during work.

Conclusion: The oil palm plantation workers are at risk of leptospirosis due to several factors in their work practices. Prevention strategies targeting this occupational group should be properly implemented.

SEROLOGICAL SURVEY OF LEPTOSPIRAL ANTIBODY DISTRIBUTION AMONG AGRICULTURAL WORKERS IN MELAKA AND JOHOR
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Introduction: Agriculture is an important economic sector in Malaysia. Unfortunately, agricultural workers were noted to be in one of the high-risk occupational groups towards leptospirosis infection. Leptospirosis is a public health issue and a re-emerging zoonotic disease of worldwide distribution caused by spirochetes. Recognition of specific infecting serovars and distribution assessment is important in justifying the importance and identifying the source of leptospirosis infection among agricultural workers.

Objective: To determine the prevalence and distribution of serovars detected among agricultural workers.

Methods: A six-month cross sectional study that involved 350 agricultural workers from Melaka and Johor. Serological test (MAT) was conducted among the respondents following standard procedures.

Results: Only 350 of the total 374 respondents recruited were involved in this study, resulting in a response rate of 93.6%. Using ≥1:100 titre as the cut-off point for seropositive, 100 workers were found to be positive with leptospiral antibodies. The serovars identified were Sarawak (Lepto 175), Patoc, Celledoni, Javanica, Australis, Autumnalis, Pyrogenes, Copenhageni and Terengganu. Leptospira isolated from the serovar Sarawak was the most common reaction obtained with the sera tested (62.0%), followed by serovar Patoc (42.0%). Most of the seropositive workers (63.0%) were found to be positive to more than one serovars. Three workers had four different serovars while another six workers had three serovars detected in their samples.

Conclusion: High prevalence of seropositivity with multi-serovar distribution indicates that agricultural workers are at high-risk of leptospirosis infection. Proper intervention needs to be implemented for this high-risk occupational group for future leptospirosis prevention.

P26
Natural Deaths – An Autopsy Study at the University Malaya Medical Centre
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Background/Objectives: The aim of this retrospective study was to understand the epidemiological trends of autopsy causes of natural deaths.

Methods: A three year period data extending from 1st January 2006 to 31st December 2008 was collected from the medical record office.

Results: A total of 1720 deaths were reviewed. Deaths as a result of natural causes accounted for 717 cases. Most of these deaths were found to peak in the fourth decade with a 4.7:1 ratio for male preponderance. Deaths amongst the Chinese population (30.14%) topped the chart followed closely by the Indian race (28.41%) then the Malay’s (15.36%) and lastly the other ethnicities (5%). Cardiac deaths lead with an astounding 56.49% of the natural causes of deaths, followed by 16.18% for the respiratory causes. The systemic cause (9.07%) was next, followed by deaths due to the central nervous system causes (7.39%), gastro-intestinal system (5.16%), and malignancies (2.37%), the other causes (1.95%), infectious disease (0.70%), genitourinary system (0.56%) and finally the least due to the reproductive system causes (0.14%). A major chunk of the total 405 cardiac deaths was deaths due to ischaemic heart disease (IHD) which accounted for 343 deaths.

Conclusion: IHD represents a staggering 84.69% of the natural causes of deaths. Further prospective autopsy studies would be required to diagnose more accurately the varying trends in cardiac causes of deaths.

P27
Immunomodulators and/or Probiotics as Adjunctive Therapy for Eradication of H.Pylori and Improvement of Immune System in Peptic Ulcer Disease
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Background/Objectives: This study aimed to: (1) to investigate the influence of immunomodulators of different pharmacological groups and Lactic acid bacteria and Bifidobacteria complexes(Probiotics) in combination with "quadro-scheme" therapy(QST) consisting of bismuth colloidal subcitrate, omeprazole, amoxicilin, furazolidon on efficacy of HP eradication; (2) to reveal interrelation of lysozyme activity as factor of non-specific immune resistance.

Methods: This research was carried out on 560 patients within the age range of 20-55 years with PUD caused by HP. Depending on types of received therapy, eight groups (70 patients/group) have been allocated: (a)Group 1: QST with Ribomunil®; (b)Group 2: QST with Licopid®(Tablet PO); (c)Group 3: QST with Licopid® (Sublingual); (d)Group 4: QST with Immunal®; (e)Group 5: QST with Derinat®; (f)Group 6: QST with Probiotics; (g)Group 7:
QST with Ribomunil® with Probiotics and (h)Group 8 (control group): QST. Before and six weeks after application of preparations, the histomorphological tests of biopsy material taken endoscopically from stomach and duodenum are done to determine percentage of patients having contamination of mucous membrane and presence of vegetative and coccal forms. Nephelometric tests to determine lysozyme activity are performed on saliva and gastric juice. 

**Results:** Six weeks after treatment, eradication has been less expressed in Group 8 with presence of coccal and vegetative forms. In Group 7, parameter of eradication is highest with absence of coccal and vegetative forms. The maximal increase of salivary lysozyme activity is seen in Group 7, 14.4%+3.8(p<0.05) and gastric juice lysozyme activity in Group 5, 17.57%+2.38(p<0.05).

**Conclusion:** Application of immunomodulators and probiotics on background of QST leads to increased eradication of HP and increased immune resistance.

### P28

**Association of SLC6A4 gene polymorphisms with Schizophrenia.**

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**Background/Objectives:** The SLC6A4 gene encodes for serotonin transporter which regulates synaptic concentration of serotonin thus influences perception, mood, emotion, behavior, and cognition. These are affected in Schizophrenia (Sz). This study investigated the association of SNPs within SLC6A4 gene with Sz.

**Methods:** A total of 240 Sz patients and 364 normal controls were studied. Genomic DNA was extracted from peripheral blood. Rs12449783, rs140700, rs6352 and rs6354 were selected and genotyped using allelic discrimination real time Taqman® assay.

**Results:** A significant association was found between rs12449783 of SLC6A4 gene and Sz for both alleles and genotypic frequencies (p = 1.68 x 10^{-8} and 5.11 x 10^{-7} respectively).

**Conclusion:** The significant association between rs12449783 of SLC6A4 gene in our Sz samples reaffirmed the previous similar findings in other populations, thus support role of SLC6A4 gene in Sz.

### P29

**The Role of Tocotrienol Supplementation in Delaying Ovarian Ageing in Mice**

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**Background/Objectives:** Ovarian ageing is indicated by a decline in quantity and quality of oocytes and it is due to cumulative effects of oxidative stress. Although tocotrienol, an antioxidant has been shown to overcome the adverse effects of oxidative stress in various body systems, it is however unclear if it can delay the occurrence of ovarian ageing. This study therefore investigated the effect of tocotrienol supplementation on the quality of oocyte and biomarker of oxidative stress, catalase (CAT) activity in ovarian sample in ageing mice.

**Methods:** Three-month-old female mice were divided into four groups consisting of control and tocotrienol-supplemented groups at the dose of 60mg/kg BW, 120 mg/kg BW and 240 mg/kg BW. Tocotrienol was given via oral gavage daily for two months. Young (7 weeks old) and ageing (5 months old) mice were used as negative and positive control, respectively. At the end of treatment, mice were superovulated with PMSG and hCG. The next day, mice were sacrificed and oocytes were flushed and assessed for it’s quantity and quality using inverted microscope.

**Results:** The percentage of normal oocyte was significantly lower (p<0.001) in ageing group as compared to young group. Interestingly, the percentage of normal oocytes in tocotrienol-supplemented group at the dose of 120 and 240 mg/kg BW were significantly higher (p<0.001), respectively as compared to control. Catalase activity was significantly higher (p<0.05) in ageing group than that in young group. However, catalase activities were not different between control and tocotrienol-supplemented group.

**Conclusion:** Tocotrienol supplementation delays ageing-induced decline in oocyte quality, which might in part due to it’s antioxidant effect.
P30

Effect of high fructose diet on renal 11β-hydroxysteroid dehydrogenase activity in rats
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Background and aims: Metabolic syndrome is on the rise and it has been associated with high fructose diet, in the form of high fructose corn syrup increasingly used in manufactured food products. High caloric diet leads to obesity which will later give rise to hypertension and metabolic syndrome. Renal 11β-hydroxysteroid dehydrogenase type 2 (11β-HSD2) protects mineralocorticoid receptors from excessive tissue glucocorticoid by converting active glucocorticoid into its inactive form. Therefore, it regulates sodium reabsorption in renal tubules. The aim of the study was to determine the effect of 20% fructose diet on renal 11β-HSD2 concentration in rats.

Methods: A total of 14 male Wistar rats (200-250g) were randomly divided into 2 groups: 7 control rats were given distilled water and 7 treated rats were given 20% fructose solution *ad libitum* for 8 weeks. Kidneys were harvested after 8 weeks and stored at -20 degree Celsius. 500mg of renal tissues from each rat was homogenized and the supernatant was taken and 11β-HSD2 was assayed using the ELISA kit. T-test was performed on the data with significant value set at P<0.05.

Results: Results showed that the concentration of renal 11β-HSD2 in treated rats (7.02 ± 0.70 ng/mL) were not significantly different from that of control rats (6.17 ± 1.64 ng/mL).

Conclusion: Our study showed that 20% fructose diet given for 8 weeks did not significantly inhibits renal 11β-HSD2.

P31

Panton-Valentine Leukocidin-producing *Staphylococcus aureus* Causing Necrotizing Pneumonia
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Background/Objectives: Panton–Valentine leukocidin (PVL) is a cytotoxin that causes leukocyte destruction and tissue necrosis. It is produced by fewer than 5% of *Staphylococcus aureus* strains, but PVL-producing *S. aureus* is emerging as a serious problem worldwide. There has been an increase in the incidence of necrotizing lung infections with a very high mortality associated with these strains.

Case report: This report described a fatal case of hospital-acquired necrotizing pneumonia in a patient with a brain tumor, cause by PVL-positive meticillin-susceptible *S. aureus*.

P32

Development of Bioengineered Corneal Stroma using Corneal Fibroblasts Seeded in Collagen I Sponge Scaffold
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Background/Objectives: Bioengineered corneal stroma has garnered much interest as an alternative solution to the shortage of corneal donors. This study aimed to construct a living bioengineered corneal stroma with corneal fibroblasts seeded into the collagen I sponge scaffold.

Methods: Corneal fibroblasts from the New Zealand White rabbit’s cornea were isolated and culture expanded in Ham’s F-12: Dulbecco’s Modified Eagle’s Medium with 10% foetal bovine serum until passage 3. The bioengineered corneal stroma scaffold was formed using collagen I at two different concentrations (0.5% and 1%) by mixing collagen powder with 1.0% acetic acid at 4°C. The collagen mixture was then stored at -30°C and -80°C overnight prior to freeze drying process. Cross linking with NHS (N-hydroxysuccinimide) and EDC; N-(3-dimethylaminopropyl)-N’-ethycarboximide hydrochloride) was performed and the collagen sponge scaffold was freeze dried again. Histological analysis of the collagen sponge scaffold which showed stable walls with uniform pores was selected to be seeded with corneal fibroblasts to form bioengineered corneal stroma.
Results: Non-cross linked scaffold using 0.5% or 1.0% collagen at both temperatures showed large pores with fragile architecture of the pore walls. The 1% cross-linked collagen sponge scaffold showed more uniform pores with stable pore walls that was favourable for corneal fibroblasts seeding. After 7 days of culture, corneal fibroblasts began to proliferate and filled in the bioengineered corneal stoma.

Conclusion: Cross-linked 1% collagen sponge scaffold served as a better substrate to that of non cross-linked scaffold. The collagen scaffold was biocompatible to corneal fibroblasts.

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**P33**

**Oxidative Stress Markers and 11 B Hsd-1 Enzyme Expression in the Wound Tissues of Diabetic Rats Treated with *Piper Betel* Leaves**

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**Background/Objectives:** To investigate the effectiveness of topical application of *Piper betel* (*P. betel*) leaves extract on oxidative stress and 11β hydroxysteroid dehydrogenase-1 (11β-HSD-1) expression in diabetic wounds.

**Methods:** A total 48 male Sprague-Dawley rats were randomly chosen. The experimental rats received a single intramuscular injection of streptozotocin (45mg/kg). Four full thickness (6mm) wounds were created on the dorsum of each rat. The animals were equally divided (n=6) into four groups based on the days of treatment (i.e. day 3 and 7): Control (Ctrl), diabetic untreated (DM-Ctrl), diabetic treated with 1% silver nitrate cream (DM-SN) and diabetic treated with 50mg/kg of *P. betel* leaves extract (DM-PB). The rats were sacrificed on day 3 and 7 of wound creation.

**Results:** Following day 7 wound creation, topical application of *P. betel* extract significantly increased the hydroxyproline content, superoxide dismutase (SOD) level and decreased malondialdehyde (MDA) level, 11β-HSD1 enzyme expression in the diabetic animals.

**Conclusion:** *P. betel* leaves extract improves wound healing in diabetes mellitus by decreasing the oxidative stress and 11β HSD-1 expression.

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**P34**

**Berberine Increases Moderate but not Severe Hyperthermia induced Cell Death in Osteosarcoma Mg-63 Cells**

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**Background/Objectives:** To investigate the effect of berberine chloride on short term mild, moderate and severe hyperthermia induced cell death in MG-63 osteosarcoma cells.

**Methods:** MG-63 osteosarcoma cells were exposed to 39, 43 and 45°C for 1 hour. After that, the cells were divided into two groups: a) Group 1 was treated with 80 µg/ml berberine chloride for 24h at 37°C, while b) group 2 was incubated with media for 24h at 37°C. After the 24h treatment at 37°C both groups were exposed to another session of hyperthermia (39, 43 and 45°C) for 1 hour followed by 3h at 37°C. Cell viability and apoptosis was determined by flow cytometry while caspase activity was measured by ELISA and gene expression by PCR array.

**Results:** The cell viability of MG-63 cells decreased with increasing hyperthermia, whereby only moderate (43°C) and severe hyperthermia (45°C) induced a significant reduction in cell viability after a short term treatment. The addition of berberine to the cells caused an additional significant reduction in cell viability in moderate but not in severe short term-term hyperthermia (p < 0.005 ). The reduction in cell viability went hand-in-hand with an increase in apoptosis although the mRNA expression as well as the activity of caspase 3, 8 and 9 were significantly down-regulated in the hyperthermia alone and hyperthermia plus berberine groups.

**Conclusion:** Multiple treatment with moderate hyperthermia in combination with a non-toxic berberine concentration induced significant cell death in MG-63 cells in a caspase independent manner.

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**P35**

**Factor Associated with Experiencing Child Injury among Preschool Teachers in Melaka**

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**Background/Objectives:** To determine associated factors of experiencing child injury among teachers of the preschools in Melaka.

**Methods:** A cross-sectional study with a multi stage random sampling was conducted to obtain a representative sample of the preschool teachers in Melaka. Questionnaires on knowledge, attitude and practice of child safety were distributed to 239 preschool teachers in public and private preschools. Multiple logistic regression was conducted to determine the associated factors of experiencing child injury.

**Results:** Majority participants were Malays and mean (SD) duration of the teachers employed for their current work in public preschools was longer compared to its private counterparts which was 123.48 (114.44) months, and 49.77 (50.47) months, respectively. The mean (SD) number of children under the supervision of each teacher in public and private preschools was 22.70 (10.96) and 22.78 (14.46), respectively. Multiple logistic regression analysis showed significant variables associated with experiencing child injury were the attitude scores (Adj OR: 0.88; 95% CI: 0.83, 0.93; p= < 0.001), type of preschool (Adj OR: 2.83; 95% CI: 1.49, 5.35; P= 0.001), number of children per teacher (Adj OR: 1.06; 95% CI: 1.02, 1.10; p=0.004) and not attending child safety courses (Adj OR: 2.18; 95% CI: 1.21, 3.95; p=0.010) after controlling the confounder with multiple logistic regression.

**Conclusion:** Teachers can prevent injuries in preschool centres when their attitude towards injury are good, they had adequate number of children per teacher and when attended child safety courses. These measures are needed to reduce child injury in preschool centres.

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**Prevalence of Child Injury in Pre-schools In Melaka**

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**Background/Objectives:** To compare the prevalence and type of injuries in the last six months among children in public and private pre-schools in Melaka

**Methods:** A comparative cross-sectional study was conducted from June to September 2014 involving a multistage random sampling to obtain a representative sample of the children who enrolled in pre-schools in Melaka. Injury report forms were distributed to parents of 480 children in public and private pre-schools in Melaka with the child injury criteria of at least one history of injury of any type, which had occurred in the past six months.

**Results:** Chi square test showed there was a significant association between type of preschool and child injury ($\chi^2 = 5.705, p=0.017$). The private pre-schools had a higher prevalence of child injury compared to public pre-schools with percentage of 18.8%, which is 7.5% higher than the latter. The overall prevalence of child injury in preschools in Melaka was found to be 15.0% (95% CI: 11.9%, 18.6%). The majority of the cases experienced bruises, cuts and wounds due to falls. There was no report of serious injury including fractures, burns or chemical poisoning. As for minor injuries, intervention or treatment was given to the child by the preschool teachers, but 11.1% of the child injury cases in private preschools did not require any intervention.

**Conclusion:** The prevalence of child injury in pre-schools in Melaka is relatively high although it is only self reported surveys. The education on first aid to the caregivers is essential in handling the cases.

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**Simultaneous Analysis of Four Kinds of Paraben in Various Food Products by LCMS-MS**

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**Background/Objectives:** Parabens are widely used as preservatives in foodstuffs, cosmetic and pharmaceutical products. However, the safety of using parabens as food preservatives is controversial due to some findings that show the presence of paraben in the breast tissue of patients with breast cancer. The aim of the study was to develop a simple validated HPLC-MS/MS method for simultaneous determination of four kinds of paraben in solid food products.

**Methods:** Food samples were collected from local supermarkets in Selangor. Paraben detection was done in the negative mode (ESI-) with a total run time of 6 min using Phenomenex Gemini-NX C18 column. The mobile phase system consisted of water (A) and acetonitrile (B). Sample preparation was done using solid-liquid extraction with methanol as solvent extractor. Validation was done to determine the linearity, accuracy, precision and recovery of the developed method. The calibration curve was linear over a range of 10-1000 ng mL$^{-1}$ with correlation coefficient
more than 0.996 and the limit of detection was 1 ng mL\(^{-1}\). The recovery of the method was 90.10 – 93.50 % while the values for intraday and interday accuracy and precisions were 82.10 – 119.22 % and 1.40 – 12.40 % respectively.

**Results:** From 66 solid food samples, three were found to be positive (1.13 - 7.18 ng g\(^{-1}\)) with either single or mixture of paraben compounds. However, the results were far below present limit set by the FDA.

**Conclusion:** The method developed is applied successfully in the determination of parabens in food samples.

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### P38

**Major Circulating *Mycobacterium tuberculosis* Strains and Their Genetic Diversity in Three Population Groups in the Central Province, Sri Lanka**

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**Background/Objectives:** To characterize the *Mycobacterium tuberculosis* (MTB) isolates by spoligotyping and Mycobacterial Interspersed Repetitive Unit-Variable Number Tandem Repeat (MIRU-VNTR) typing to understand how MTB strains transmit among the study population.

**Methods:** Spoligotyping and MIRU-VNTR were used to genotype the MTB isolates obtained from three distinct population groups in Sri Lanka. General population suspected of having TB attending the Chest Clinic, Kandy (n=78), patients having TB in Bogambara prison, Kandy (n=22) and estate workers having TB in the Central Province, Sri Lanka (n=50), from January 2012 to April 2014 were included in the study.

**Results:** Among 150 isolates, a total of nineteen distinct families were observed including six major spoligotyping-based families; East-African-Indian (39.33%), Haarlem (20%), Beijing (8.6%), Central European family T (6.5%), European Family X (5.2%) and Central and Middle Eastern Asian (0.6%). Beijing strains were only identified among the general population. MANU strains were significant (36.36%) among the prisoners who had clustered with the MANU strains of the general population indicating contact cases and a possible transmission within a particular geographical area. Haarlem\(^3\) (34%) was the pre-dominant strain among the estate workers. There was a close epidemiological relationship between the prisoners and the estate workers in the population studied.

**Conclusion:** This study demonstrates the potential use and the applicability of spoligotyping in conjunction with 15 loci MIRU-VNTR in a population in Sri Lanka and its feasibility to differentiate strains, determine their heterogeneity and the predominance of several worldwide distributed spoligotypes.

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### P39

**Long Term Tocotrienol Supplementation Improves Development of Ageing Mouse Embryos**

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**Background/Objectives:** Female reproductive ageing is associated with a reduction in the number of ovarian follicles and an increase in low-quality oocytes not competent for further development due to oxidative stress. Tocotrienol (TCT) plays a protective role in oxidative stress-induced DNA damage and might prevent infertility in female. This study aimed to investigate the effectiveness of tocotrienol supplementation at different durations and doses on the quality and development of preimplantation embryos retrieved from ageing mice.

**Methods:** Eight-month-old female mice (*Mus musculus*) were supplemented with either tocopherol-stripped corn oil (vehicle control) or TCT at different doses of 120 mg/kg, 150 mg/kg and 180 mg/kg body weight (BW) orally per day for two months or four months duration. At the end of the duration of respective supplementation, embryos at 2-cell stage were harvested after superovulation and cultured *in vitro* to monitor their development.

**Results:** Results confirmed that ageing caused deterioration in the quality and development of embryos. The percentage of normal embryos in TCT 120 mg/kg BW-supplemented group for four months was significantly higher (p<0.01) as compared to vehicle control group. On the other hand, the developmental capacity of embryos following two months supplementation was poor as compared to four months supplementation. It was found that only embryos in TCT 120 mg/kg BW-supplemented group for four months were able to develop to hatched blastocyst stage.
Conclusion: This finding suggests that TCT is able to improve the quality and development of preimplantation embryos in ageing mice at the dose of 120 mg/kg after long term TCT supplementation.

P40
Effects of *Morinda citrifolia* Ethanolic Leaf Extract Supplementation on General Well Beings of Postmenopausal Rats Fed with Thermoxidized Palm Oil Diet
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Background/Objectives: Deficiency of circulating oestrogen after the onset of menopause is associated with increased incidence of obesity, hypertension, non-alcoholic fatty liver disease and atherosclerosis. While Oestrogen Replacement Therapy (HRT) is prescribed to overcome these physiological deficits, it has become unpopular due to the presence of side effects such as breast cancer, cardiovascular disease and stroke. The use of dietary antioxidant supplement is opted by postmenopausal women. *Morinda citrifolia* leaf is one of the medicinal herb rich in antioxidants. This study aimed to investigate the effects of one month supplementation of *Morinda citrifolia* ethanolic leaf extract on physical parameters in postmenopausal rats.

Methods: Twenty-two adult female Sprague-Dawley rats were divided into 3 groups; Sham Control (SH), Ovariectomized (OVX) and Ovariectomized plus *Morinda citrifolia* leaf extract 500 mg/kg (OVX+MC). All ovariectomized groups were fed with thermoxidized palm oil diet whereas the sham group was fed with normal diet. Food and water intake was monitored daily, body weight was monitored weekly and blood pressure was checked monthly.

Results: The leaf extract caused weight gain without elevating the blood pressure. Improved growth, nourishment and physical activity were noted. No antinutritive, toxicity or death was observed.

Conclusion: Phytonutrients in *Morinda citrifolia* promote general health and nourishment in postmenopausal rats. The results corroborate the safe use of *Morinda citrifolia* leaf as a food supplement.

P41
Bone Analysis of Young Adult Rabbit Femur via Micro-Computed Tomography
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Background/Objectives: Micro-computed tomography is a useful tool for bone evaluation as various parameters are readily available. It has been widely used especially in small animal imaging for preclinical investigation. The Skyscan 1176 is one of the micro-computed tomography systems available that provide high performance scanning. The purpose of this paper is to provide a reference document for basic steps utilising Skyscan 1176 for ex-vivo young adult rabbit femur and similar sample.

Methods: Using Skyscan 1176 system that is served with several software such as the CT reconstruction and CT analyser software, bone analysis of the rabbit femur was performed. The bones were scanned using Al 1mm filter and 18 µm pixel resolutions. The 1422 projected images were then reconstructed before proceeding with the analysis.

Results: The reading for the bone analysis was covered for TV (1418.32mm$^3$), BS (665.96mm$^2$), BV (59.46mm$^3$), BS/BV (11.20mm$^-1$), BS/TV (0.47mm$^-1$), Tb.Th (0.33mm), Tb.Sp (4.25mm) and Tb.N. (0.13mm$^-1$).

Conclusion: In summary, Skyscan 1176 micro-CT has been successfully used in ex-vivo rabbit bone models to non-invasively examine bone microarchitecture. Micro-CT is capable of providing information in a rapid and non-destructive way.

P42
Intermediate Supraclavicular Nerve Piercing the Clavicle: A Case Report
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Background/Objective: Supraclavicular nerves (C3 and C4) arise as a common trunk that divides into medial, intermediate and lateral branches. Just above the clavicle nerves pierce deep fascia to supply skin over anterior aspect of the chest and shoulder.

Case Report: During routine dissection in adult male cadaver it was noted on the right side intermediate supraclavicular nerve was piercing the clavicle. After its exit from the bone, nerve divided into branches that ended
in subcutaneous tissue below the clavicle. No other anomalies were found in this specimen. No evidence of prior clavicular fracture was found and it is not known whether the individual had symptoms of this abnormality in life. Clavicle is among one of the bones of limbs which may be pierced by nerve, the supraclavicular nerve. Another aspect is that the nerve can be enclosed in canals that are formed usually in the central part of bone during embryonic development. The supraclavicular nerves piercing clavicle is usually clinically silent but it may cause several symptoms due to entrapment neuropathy syndrome. Nerves may become entrapped in bone following fractures such as entrapment of radial nerve after distal humeral fracture. There is an report of a patient with shoulder pain that was found to harbor entrapment of the intermediate branch of supraclavicular nerve through a foramen in the clavicle.

Conclusion: The course of supraclavicular nerve passing through osseous tunnel of clavicle is rare anatomical abnormality. Knowledge of this variation is important because it may cause neuropathy, with pain in the neck and shoulder region.

**P43**

*Cosmos caudatus Enhances Fracture Healing in Ovariectomised Rats: A Preliminary Biomechanical Evaluation*

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**Background/Objectives:** Osteoporotic fractures occur in osteoporotic states and affect patients’ quality of life. *Cosmos caudatus* (ulam raja) is a local plant known for its high calcium content and anti-oxidant properties. Previous study showed that *Cosmos caudatus* improved bone histomorphometry in ovariectomized rats by increasing double-labeled surface (dLS/BS), mineral appositional rate (MAR), osteoid volume (OV/BV) and osteoblast surface (Ob.S/BS). The present study was aimed at studying the effect of *Cosmos caudatus* on fracture healing using biomechanical analysis.

**Methods:** Twenty-four female Sprague-Dawley rats were divided into 4 groups: (i) sham operated (ii) ovariectomised control (iii) ovariectomised + estrogen (100µg/kg/day) and (iv) ovariectomised + *Cosmos caudatus* water extract (500mg/kg). Six weeks following sham operation or ovariectomy, the right tibia of the rats were fractured. The rats were then treated following the groups described. After 8 weeks of treatment, biomechanical analysis of the right tibia were performed.

**Results:** Biomechanical analysis indicated that the maximum load, stress and Young’s modulus of the ovariectomised control group (36.2 ± 4.7N, 10.01 ± 1.41MPa, 29.2 ± 9.39MPa respectively) were significantly lower compared to sham operated (150.32 ± 32.6N, 36.75 ± 7.98MPa, 183 ± 53.2MPa respectively) and the *C. caudatus* treated group (136.86 ± 16.95N, 33.45 ± 4.14MPa, 155.13± 58.58MPa respectively). If the right tibia of the rats were fractured. The rats were then treated following the groups described. After 8 weeks of treatment, biomechanical analysis of the right tibia were performed.

**Conclusion:** *Cosmos caudatus* extract restored the biomechanical property of the healed bone and may be beneficial for fracture healing in the oestrogen deficient state.

**P44**

*The Effect of Labisia pumila Whole Plant on Osteoblast Proliferation: A Pilot Study*

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**Background/Objectives:** *Labisia pumila* var.alata (Lpva) is a phytoestrogenic herb with potential as an alternative treatment of postmenopausal osteoporosis. Earlier studies have indicated the mechanisms of bone protection offered by LPva on osteoporosis rat model. Several studies reported that the bioactive phytocompounds in aqueous extracts of LPva include flavanoids, phenolics, ascorbic acid, beta-carotene, saponin and anthocyanin. The aim of this study is to determine the cell viability and proliferation effect of LPva whole plant (leaf, stem and root) on murine preosteoblast cell, MC3T3-E1.

**Methods:** Murine osteoblast-like cell line-E1 (MC3T3-E1) was purchased from ATCC. Cells were seeded into 96-well culture plates at a density of 1 x 10⁴ cells per well and incubated overnight in growth media, α-MEM and 10% fetal bovine serum. Cells were exposed to hot water extraction of LPva of whole plant at concentrations of 5 to 2500 µg/ml for 24 hours in differentiated media (growth media + 3 mM sodium phosphate + 50 µg/mL ascorbic acid). Cell viability was assessed using 3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium (MTS) assay and analyzed by Microtiter Plate Reader at 490 nm.
**Results:** The percentage of viable MC3T3-E1 cells was significantly increased at concentration of 10, 25, 50 and 100 ug/ml after 24 hours compared to normal control.

**Conclusion:** LPva whole plant has potential to enhance cell viability and proliferation of MC3T3 cells in a dose-dependent manner.

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**P45**

**Effects of Virgin Coconut Oil and Tocotrienols on Bone Histological Changes in the Ovariectomised High Fat Diet Induced-Osteoporosis**

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**Background/Objectives:** Virgin coconut oil (VCO) and tocotrienol-rich fraction (TRF) are excellent antioxidants and have been known to be beneficial to health. The study aimed to observe the protective effects of combined therapy of VCO and TRF in the femora of ovariectomised rat model of osteoporosis.

**Methods:** Twenty-four female Sprague-Dawley rats were divided into four groups. The sham group was fed with basal diet only. The other three groups were fed with 2% cholesterol diet fortified with 15% w/w five-times-heated palm oil (5HPO) and treated with VCO (1.43ml/kg), TRF (30mg/kg) and VCO (1.43ml/kg) + TRF (30mg/kg). All rats except for the sham group were ovariectomised (OVX) at the beginning of the study. Treatment was given orally for 24 weeks. Food intake and body weight were measured daily and weekly, respectively. Following 24 weeks, the rats were sacrificed and the left femora were dissected out. The specimens were stained with von Kossa and hematoxylin and eosin for light microscopic studies.

**Results:** Body weights of all groups significantly increased at the end of the study. The treated groups showed significantly higher mean food intake compared to the sham group. Microscopically, the VCO+TRF group restored the amount of bone trabeculae compared to VCO only and TRF only groups. The amount of bone trabeculae from VCO+TRF group was comparable to the sham group.

**Conclusion:** Combination therapy of VCO and TRF will be helpful in treating osteoporotic changes in the femora of ovariectomised rat model.

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**P46**

**Poor Quality of Sleep in Rheumatoid Arthritis**

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**Background/Objectives:** To determine the factors influencing the quality of sleep in rheumatoid arthritis (RA).

**Methods:** This was a cross sectional study which was carried out in Putrajaya Hospital, Malaysia from May till October 2014. We included all patients who fulfilled the American College of Rheumatology (ACR) 2010 criteria for RA. The exclusion criteria on the other hand, were the following: a) patients on regular hypnotics. b) patients on regular central nervous system stimulants or depressants. All subjects were evaluated for the quality of their sleep based on the Pittsburgh Sleep Quality Index (PSQI) questionnaire. Besides, all subjects were assessed for the RA disease activity and functional capacity based on the 28-joints based disease activity score (DAS 28) and health assessment questionnaire-disability index (HAQ-DI), respectively. The subjects were subdivided based on their PSQI scores i.e ‘good sleepers’ with PSQI scores of <5 and ‘poor sleepers’ with PSQI scores of ≥5.

**Results:** A total of 46 patients were recruited. There were 16 (34.78%) poor sleepers and 30 (65.22%) good sleepers. The poor sleepers had significantly higher mean disease duration (11.69 years versus 7.87 years, p=0.026) and HAQ-DI scores (1.34 versus 0.57, p=0.002). There were no appreciable differences between the ‘good sleepers’ group and the ‘poor sleepers’ group in terms of pain scores, DAS 28 scores, age, gender, seropositivity, the presence of erosions and pulmonary fibrosis.

**Conclusion:** A significant proportion of RA patients experience sleep disturbances. The quality of sleep in RA is influenced by the disease duration and functional capacity.
**P47**

**Beneficial Effects of Annatto-Derived Tocotrienol on Murine Preosteoblast MC3T3-E1 Cells: A Preliminary Study**

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**Background/Objectives:** Annatto-derived tocotrienol (90% δ-tocotrienol and 10% γ-tocotrienol) have been shown to improve bone structure and strength in animal model of osteoporosis. In this study, we aimed to elucidate the effect of AnTT in murine preosteoblast cell, MC3T3-E1.

**Methods:** MC3T3-E1 cells were plated in 96-well plates (1x10⁴ cells/well) and incubated overnight in growth media (α-MEM + 10% bovine serum). At day 0, the cells were cultured in osteoblastic differentiation media (ODM; growth media + 3 mM sodium phosphate + 50 µg/mL ascorbic acid) and treated with various concentrations of AnTT (2–80 µg/mL). The control group was treated with ODM alone and for the vehicle group, ethanol was added at same volume of the highest AnTT concentration. Culture media was changed every 2 days. At the end of each treatment period (day 1, day 3 and day 6), MTS was added to each well, followed by 2-h incubation to measure cell viability.

**Results:** AnTT treatment for 24hrs significantly (p<0.05) increased the viability of MC3T3-E1 cells at lower doses (2 – 10 µg/mL) as compared to the control (ODM). However, there were no significant difference in cell viability after 3 days and 6 days of treatment.

**Conclusion:** Annatto tocotrienol showed beneficial effects on preosteoblast cells by increasing their viability at lower concentrations.

**P48**

**Synergistic Effect of Metformin and Severe Hyperthermia on Osteosarcoma Cells**

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**Background/Objectives:** The aims of this study was to examine the in-vitro synergistic effect of metformin and temperature on osteosarcoma (MG-63) cells as a potential antitumor therapy.

**Methods:** Approximately 2,500 MG-63 cells/well were seeded into 96-well plates and preincubated overnight in Dulbecco’s modified Eagle’s medium (DMEM) containing 10% FBS. A range between 1mg/ml and 10mg/ml of metformin was tested at 24 h and 48 h. With the IC₅₀ of metformin for 24 h and 48 h, the synergistic effect was tested. MG-63 cells were either preincubated with metformin IC₅₀ for 48 h and then exposed to hypo- (27 & 35°C) and hyperthermia (39 & 45°C) for 30 min, 1 h and 2 h or directly exposed to the above temperatures together with metformin. After each time point, cell viability was measured using MTS assay.

**Results:** Preincubated MG-63 cells treated with hypothermia showed a non significant decrease in cell viability while moderate hyperthermia (39°C) had a protective effect as it increased the cell viability significantly (p<0.05) up to 2 h. Meanwhile severe temperature (45°C) and metformin showed a synergistic effect (p<0.001) in reduction of cell viability compared to control (37°C + metformin). Treating MG-63 cells simultanously with hypo- and hyperthermia and metformin for a short period of time didn’t lead to any significant reduction in cell viability.

**Conclusion:** Short term severe hyperthermia acts synergistically with metformin pretreatment but not in simultanous treatment suggesting a possible antitumor therapy. Moderate hyperthermia seems to have a protective effect on metformin induced cell death.

**P49**

**Effects of Labisia pumila var alata (LPva) Leaves on Osteoblast Proliferation: A Preliminary Study**

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**Background/Objectives:** Labisia pumila (LP) from Myrsinaceae family is locally known in Malaysia as Kacip Fatimah. Several in vivo studies have elucidated the mechanisms of bone protection offered by LPva in osteoporosis
rat models. These actions may be contributed by the bioactive compounds found in aqueous extracts of LPva include flavanoids, ascorbic acid, beta-carotene, anthocyanin and phenols. In this study, we aimed to assess the effect of LPva on cell viability and proliferation of preosteoblast cell, MC3T3-E1.

Methods: Murine osteblast-like cell line-E1 (MC3T3-E1) was purchased from ATCC. Cells were seeded into 96-well culture plates at a density of $1 \times 10^4$ cells per well and incubated overnight in growth media, α-MEM and 10% fetal bovine serum. Cells were exposed to hot water extraction of LPva leaves at concentrations of 5 to 2500 μg/ml for 24 and 72 hours in differentiated media (growth media + 3 mM sodium phosphate + 50 μg/mL ascorbic acid). Cell viability was assessed using 3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl) 2-(4-sulfophenyl)-2H-tetrazolium (MTS) assay and analyzed by Microtiter Plate Reader at 490 nm.

Results: The percentage of viable MC3T3-E1 cells was significantly increased at concentration of 10 to 100 μg/ml after 24 hours.

Conclusion: LPva leaves has the potential of enhancing cell viability and proliferation of MC3T3-E1 cells in a concentration dependent manner.

P50
Effects of Gentamicin- N. Sativa Fusion Emulsions on Bone Cell Viability and Osteogenesis of UMR-106 Osteoblast-Like Rat Osteosarcoma Cell Line
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Background/Objectives: Gentamicin- Nigella sativa (N. sativa) fusion emulsion was formulated and tested for its osteo-healing properties in the hope that it can be used as a treatment for osteo-infection. The study aimed at investigating the promotion of viability and osteogenesis of osteoblast in UMR-106 osteoblast-like rat osteosarcoma cell line.

Methods: Briefly, cells were seeded in 96-well plates at cell density of 0.8 x 10⁵ cells per cm² and used in 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) assay. Cells were also seeded in 24-well plate at cell density of 1.5 x 10⁵ cells per cm² for 24 hours for alkaline phosphatase (ALP) quantification, von Kossa (VK) staining and quantification and Alizarin Red S (ARS) staining. Cells were treated with gentamicin-N. sativa fusion emulsion A, B, C and D; N.sativa oil (NSO); 0.1% (w/v) gentamicin; negative control (1% (v/v) dimethyl sulfoxide (DMSO)) and positive control (1M of Dexamethasone). MTT assay was done at 24, 48, 72 and 96 hours to quantify cell viability while mineralized matrix deposits were observed and quantified for 7, 14 and 21 days for ALP, VK and ARS.

Results: Results showed that increased in NSO concentration inside emulsions also increased viability percentage. High ALP activity released by the cells and the presence of black nodules (VK staining) and red staining (ARS staining) were more intense in the well treated with emulsion D, at the day of 21. The presence of high extracellular matrix mineralisation activity released by the cells is therefore the indication of successful differentiation of osteoblast.

Conclusion: Gentamicin-N. sativa fusion emulsion may have properties that would be useful in bone regeneration.

P51
Systematic Review on the Activity of Daily Living of Hip Fracture Patients Using Katz Index Assessment Tool
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Background/Objectives: Hip fractures are common in elderly women. It was estimated that after a hip fracture, 80% of patients were unable to carry out at least one independent activity of daily living. Katz Index of Activity of
Daily Living (Katz ADL) was the most widely used tool to measure and assess functional performance. The purpose of this review was to investigate and provide an evidence-based literature on the activity of daily living (ADL) of hip fracture patients using Katz ADL.

**Methods:** A computerised literature search using Medline (OVID) and Scopus was conducted to identify relevant studies on assessment of ADL of hip fracture patients using Katz ADL. All articles which fulfilled the inclusion criteria were included in the review.

**Results:** Initial search identified a total of 314 potentially relevant articles. After a careful screening, only 5 full-text articles were selected. Three studies showed an increase in the dependence level of ADL among hip fracture patients after the fracture. Two other studies showed that a minority of patients were not able to perform ADL at their prefracture level.

**Conclusion:** Patients with hip fracture experience a decline in their ADL, which may be contributed by several factors, including old age and different scale of daily living activity.

**P52**

**The Effect of Physical Activity during Adolescence towards Bone Health: A Systematic Review**
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**Background/Objectives:** Peak bone mass (PBM) is an important determinant in achieving healthy bone. The goal of physical activity (PA) especially weight-bearing (WB) activities during childhood and adolescent years is to maximize PBM. Adolescence is a crucial stage to maximize the PBM where bone mineral will continue to accumulate until PBM is achieved. The purpose of this review is to examine and to provide an evidence-based literature on the effects of physical activity during adolescence towards bone health.

**Methods:** A computerised literature search using Medline (Ovid) and Scopus were conducted to identify relevant studies about the effect of physical activities during adolescence towards bone health. All articles included were limited to English language and fulfil all the inclusion criteria. Non-primary studies were excluded from this study.

**Results:** Initial search result identified a total of 1089 potentially relevant articles with only 10 full-text articles were selected for this present review. Overall, all 10 studies showed positive association between PA and the bone outcome.

**Conclusion:** Physical activities during adolescence have been acknowledged to optimise bone mineral accrual. However, several factors need to be considered including gender differences due to hormonal factor, discrepancy at different anatomical site, intensity or type of exposure and also critical period for bone response.

**P53**

**The effects of Virgin Coconut Oil Supplementation on Bone Markers in Postmenopausal Osteoporosis Rat Model**
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**Background/Objectives:** In the present study, we carried out biochemical analysis in order to investigate the effects of virgin coconut oil (VCO) on bone metabolism in postmenopausal osteoporosis rat model. Our previous study showed that VCO prevented trebecular bone loss in and increased endogenous antioxidant activity in the same animal model.

**Materials and Method:** Three-month-old female Wistar rats were randomly divided into five groups with eight rats per group: baseline, sham, ovariectomized control (OvxC), ovariectomized and given 8% VCO in diet (Ovx+VCO), and ovariectomized given 1% calcium (Ovx+Cal) for six weeks. At the end of the study, rats were sacrificed and the serum was obtained for biochemical assessment of bone resorbing cytokines which are interleukin-1 (IL-1) and interleukin-6 (IL-6), bone resorbing marker C-terminal telopeptide of type I collagen (CTX) and bone formation marker osteocalcin.

**Results:** Ovariectomized rats treated with VCO had a significantly reduced IL-1 and IL-6 compared to OvxC and Ovx+Cal. The Ovx+VCO rats also had significantly lower CTX than OvxC. Supplementation with VCO raised osteocalcin level significantly compared to that in Ovx+C.

**Conclusion:** VCO prevents bone loss in ovariectomized rats by reducing bone resorption and increasing bone formation. VCO can be potentially used in the treatment and prevention of postmenopausal osteoporosis.
Green Tea Polyphenols (Gtp) Abrogate Osteoclastogenesis from Human Peripheral Blood CD14+ Monocytes more Effectively Compared to Black Tea Polyphenols (Btp)
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Background/Objectives: The main objective of this study was to investigate the potential inhibitory effect of GTP and BTP on the differentiation of TNF-α stimulated CD14+ monocytes into osteoclasts and to compare the effectiveness of both extracts.

Methods: CD14+ monocytes were differentiated into osteoclasts in the presence of 30ng/ml M-CSF, 1ng/ TNFα with or without 5, 10, 50 and 100µg/ml of GTP and BTP respectively. After 25 days multinucleated cells were formed in the control groups. Cell viability of control and treatment groups were assessed by MTS assay. For tartrate-resistant acid phosphatase (TRAP) staining and gene expression of osteoclast markers control and GTP and BTP (5 and 10µg/ml) treated cells were selected.

Results: Our results confirmed that TNFα in the absence of RANKL was able to induce osteoclastogenesis. Both GTP and BTP significantly decreased the number of multinucleated and tartrate positive cells (p<0.0001) when compared to control. Cells treated with GTP and BTP also showed a significant decrease of ACP5 and RANK mRNA expression levels. However other osteoclast markers like DC-STAMP, ADAM8, Atp6v0d2, CTSK, ITGAV and CALCR were increased under BTP while decreased in GTP treatment.

Conclusions: Our findings suggest that GTP and BTP are very effective in inhibiting monocyte to osteoclast differentiation in an inflammatory environment by inducing cell death. However GTP is more effective than BTP in suppressing osteoclast maturation of the surviving osteoclast cells by downregulating both osteoclast differentiation and maturation markers. Therefore GTP has the potential to be used as a catabolic treatment for bone loss.

Effects of Controlled Deliveries of Lovastatin and Tocotrienol on Ossification-Related Gene Expressions in Fracture Healing of Osteoporosis Rat Model
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Background/Objectives: Osteoporosis increases fracture risk, which may impose significant morbidity and socioeconomic costs on patients’ life. Osteoporotic drugs are used to prevent fragility fractures, but their role in fracture healing still remains unknown. Thus, alternative agents with suitable mode of delivery are needed to promote fracture healing and prevent complications such as delayed healing and malunion. The aim of this study was to investigate the effects of direct deliveries of lovastatin and tocotrienol to fracture site on ossification-related gene expressions in fracture healing of postmenopausal osteoporosis model.

Methods: Forty-eight Sprague Dawley female rats were divided into 6 groups. The first group was sham-operated while the others were ovariectomized. After 8 weeks, the right tibiae of all rats were fractured and stabilized. The sham-operated (Sham) and ovariectomized control (OvxC) groups were given two single injections of lovastatin and tocotrienol carriers. The estrogen treatment group (Ovx+Est) was given an estrogen preparation at 64.5 µg/kg daily via oral gavages. The lovastatin treatment group (Ovx+Lov) was injected with lovastatin particles (750µg/kg), while the tocotrienol treatment group (Ovx+TT) was injected with tocotrienol particles (60 mg/kg). The combination treatment group (Ovx+Lov+TT) received two single injections of 750µg/kg lovastatin particles and 60 mg/kg tocotrienol particles. After 4 weeks, the gene expressions were measured.

Results: The combination group (Ovx+Lov+TT) showed significantly higher gene expressions of osteocalcin, BMP-2, VEGF-α, and RUNX-2 compared to OvxC group.

Conclusion: In conclusion, combined treatment of lovastatin and tocotrienol have upregulated the expression of genes related to fracture healing.
Controlled Delivery of Statin Improves Fracture Healing of Osteoporotic Bone
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Background/Objectives: Osteoporosis increases fracture risk and delays fracture healing. Recently, oral statin was shown to promote fracture healing of osteoporotic bone. Oral statin needs to be given daily at high doses to ensure its bioavailability, thus causing an increase in cost and adverse effects. This study aimed to deliver lovastatin directly to the fracture site to achieve maximal and sustained concentration. The one time injection was achieved via controlled and targeted delivery system by combining lovastatin with its polymer carrier. Fracture healing was evaluated using micro CT and biomechanical parameters.

Methods: Thirty-two female Sprague-Dawley rats were divided into 4 groups. The first group was sham-operated (SO), while the others were ovariectomized (OVx). After two months, the right tibiae of all rats were fractured and fixed with plates and screws. The SO and ovariectomized-control rats (OVxC) were given a single injection of lovastatin carrier. The estrogen group (positive control; OVx+ERT) was given daily oral gavages of Premarin® (64.5µg/kg). The lovastatin group (OVx+LV) was given a single injection of 60 mg/kg of lovastatin particles. After 4 weeks of treatment, the fractured tibiae were dissected out for micro-CT and biomechanical assessments.

Results: The OVx+LV showed significantly higher callus strength than the OVxC group (p<0.05).

Conclusion: Administration of statin via controlled and targeted delivery system may promote better fracture healing by improving strength at the fracture site of osteoporotic bone.

Effects of Combination Therapy of Virgin Coconut Oil and Tocotrienol on Food Intake, Body Weight, Visceral Fat Weight and Liver Weight in Postmenopausal Rat Model
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Background/Objectives: Long term feeding of repeatedly heated palm oil can affect food intake, body weight, visceral fat weight and liver weight. This study was performed to determine the protective effect of combination therapy of virgin coconut oil (VCO) and palm tocotrienol (TT) on these parameters in postmenopausal rat model fed with repeatedly heated palm oil and cholesterol diet.

Methods: Forty-two female Sprague-Dawley rats except for the sham control group were ovariectomized and then divided into 7 groups (n=6). The (i) sham control group (SCG) was fed with basal rat diet only throughout the study period while the treatment groups; (ii) control ovariectomized group, (iii) VCO (1.43ml/kg), (iv) VCO (4.29ml/kg), (v) TT (30mg/kg), (vi) VCO (1.43ml/kg) + TT (30mg/kg), (vii) VCO (4.29ml/kg) + TT (30mg/kg) were fed with 2% cholesterol diet mix with five-time heated palm oil (5HPO). All treatments were given orally and body weight was measured weekly. After 24 weeks of study, the rats were sacrificed. Livers and visceral fats were harvested and weighted.

Results: There was no significant difference in food intake between the treatment groups. However, the VCO (4.29ml/kg) + TT (30mg/kg) group decreased significantly in body weight and liver weight compared to the control ovariectomized group. The visceral fat weight in control ovariectomized group was significantly higher than sham and other treatment groups.

Conclusion: These findings suggest that combination therapy of virgin coconut oil (VCO) and palm tocotrienol (TT) at higher concentration gives a better protective effect in reducing weight of body, liver and visceral fat.

Role of 11β-Hsd 1 Enzyme in The Fructose Induced Metabolic Syndrome Model
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Background/Objectives: 11β-hydroxysteroid dehydrogenase type 1 enzyme (11β-HSD1) is involved in the
development of obesity. Therefore, the present study was conducted to investigate the expression and activity of 11β-HSD1 in liver of a newly established fructose-induced metabolic syndrome model in male Wistar rats. Thus, we hypothesized that 11β-HSD1 enzyme could plays a role in the mechanism of development of metabolic syndrome in male Wistar rat.

Methods: The concentration of fructose drinking water (FDW) used was 20%. Six male Wistar rats were supplemented with FDW 20% for eight weeks ad libitum. Metabolic parameters were measured before and after the experimental protocol. At the end of the experiment, the expression and activity of 11β-HSD1 enzyme in the liver was evaluated using immunohistochemical staining and ELISA technique respectively. All data were analysed and presented in mean ± SEM subjected to one-way ANOVA.

Results: Following consumption of FDW 20% for 8 weeks, features of metabolic syndrome in the animals were seen. Furthermore, both the expression and activity of 11β-HSD1 enzyme in the liver were significantly increased.

Conclusion: We conclude that in male Wistar rat, eight weeks consumption of FDW 20% showed increased expression and activity of 11β-HSD1 enzyme. Hence, 11β-HSD1 enzyme has a potential role in the mechanisms of metabolic syndrome development in male Wistar rats.

P59
Role of Mitochondria in Non-Alcoholic Fatty Liver Disease Induced by 25% Fructose Drinking Water
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Background/Objectives: Non-alcoholic fatty liver disease (NAFLD) is strongly associated to the features metabolic syndrome. It includes a histological spectrum of liver damage ranging from simple steatosis to liver cirrhosis. Structural alteration of hepatic mitochondria might be involved in the pathogenesis of NAFLD. In the present study, a newly established fructose-induced metabolic syndrome animal model were used to determine the ultrastructural modifications of hepatic mitochondria and the relation with NAFLD pathogenesis.

Methods: The concentration of fructose-drinking water (FDW) used in this study was 25%. Six male Wistar rats were supplemented with 25% FDW for eight weeks as ad libitum. Metabolic parameters were measured before and after eight weeks of the experiment. Histomorphology of the liver was evaluated with Hematoxylin and Eosin; and Oil-Red-O staining. Meanwhile the ultrastructural changes of mitochondria were assessed with transmission electron micrograph.

Results: Following eight weeks of 25% fructose drinking water consumption, the animals developed several features of the metabolic syndrome. Moreover, fructose consumption led to the development of macrovesicular hepatic steatosis with ultrastructural changes of mitochondria, which include an increase in the size, disruption of the cristae and reduction of the matrix density.

Conclusion: We conclude that eight weeks consumption of 25% FDW leads to NAFLD possibly via mitochondrial structural alteration.

P60
Effect of a Polyherbal Formulation on Biochemical and Hematological Parameters in Type 2 Diabetic Patients
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Background/Objectives: The antidiabetic activity of the individual plant parts is well known, but the synergistic or combined effects are unclear. Polyherbal formulation helps to reduce the incidence of degenerative diseases such as arthritis, atherosclerosis, cancer, heart disease, inflammation and brain dysfunction. The study focused on the polyherbal formulation of five different medicinal plants used for the treatment of type 2 diabetic patients.

Methods: In the present, study five medicinal plants (Mango, Guava, Amla, Garlic and Onion) were used in the preparation of polyherbal formulation. The efficacy of prepared formulation was tested on type 2 diabetic patients and compared with diabetic control patients received placebo.

Results: Following 8 weeks of treatment with the polyherbal formulation, a significant decrease in blood glucose level was observed in diabetic patients. The lipid profile levels were restored to normal. In addition, the BMI, blood pressure, haemoglobin and glycosylated haemoglobin levels were reverted to normal in diabetic patients treated
with polyherbal extract compared to diabetic control patients.

**Conclusion:** From the above findings, it was revealed that the polyherbal formulation has significant antidiabetic potential for type 2 diabetic patients.

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**P61**

**Effect of Plantago Major Extracts on 11-Beta Hydroxysteroid Dehydrogenase Enzyme Activity and Expression in Response to Liver Injury Following Acetaminophen Toxicity**

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**Background/Objectives:** Orally ingested acetaminophen (APAP) is metabolised in the liver. The enzyme 11-β hydroxysteroid dehydrogenase type 1 (11-β HSD1) is found in the liver. *Plantago major* (PM) is commonly known as broad leaf plantain and found in the highland area. The present study was aimed to determine the effect of *Plantago major* extracts on 11-β HSD1 enzyme activity and expression in response to liver injury following APAP toxicity.

**Methods:** Thirty male Sprague Dawley rats were divided into control (C) and APAP-induced groups. The latter was subdivided into APAP without treatment (APAP), APAP with aqueous extract (PCM +AQ), APAP with methanolic extract (PCM +MT) and APAP with ethanolic extract (PCM+ ET). The PCM (2 g/kg) was given to the rats via intragastric tube at day 0. Then the next day, the plant extracts (1 g/kg) were given orally for 6 days. The liver tissue was prepared for 11-β HSD enzyme activity and expression.

**Results:** Our results revealed the 11-β HSD1 activity and expression were reduced in the APAP group and the extract treatment returns it back to normal.

**Conclusion:** The *Plantago major* leaf extract treatment attenuates the liver injury and maintains the 11-β HSD1 activity and expression.

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**P62**

**Histological findings in the liver of experimental rats following consumption of virgin coconut oil in fresh and heated state**

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**Background/Objectives:** Edible oil is often heated repeatedly and re-used in order to cut down the expenses. The main aim of the study was to observe vascular and hepatic histological changes following ingestion of fresh and heated virgin coconut oil (VCO).

**Methods:** A total of 46 male Sprague-Dawley rats (200-250g) were randomly divided into five groups. These groups according to their feed were as follows: (i) normal diet with fresh virgin coconut oil (FVCO), (ii) normal diet with once heated (1HVCO), (iii) normal diet with 5 times heated (5HVCO) and (iv) normal diet with 10 times heated (10HVCO). All groups were sacrificed after 6 months. The liver tissue was stained with Hematoxyline and eosin (H&E), Verhoeff’s van Gieson (VvG) and Periodic Acid Schiff (PAS) and the histological changes were observed under light microscope.

**Results:** Hepatic inflammatory nuclei infiltration, oedematous hepatocytes, distortion of sinusoids and congestion were observed in the rat’s liver fed with 5 and 10 times heated VCO.

**Conclusion:** It is concluded that fresh VCO causes no detrimental effect on liver but once heated 5 and 10 times, it may cause hepatic damage.

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**P63**

**Effects of Prolonged Intravenous Phosphate Administration over Rabbit’s Serum Calcium**

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**Background/Objectives:** Phosphate administration mediates the genesis of the parathyroid gland hyperplasia thus
modulating the parathyroid hormone synthesis. Phosphate retention will consequently lead to hyperparathyroidism, which can be detected by marked high serum calcium levels. The objective of this study is to evaluate the effects of prolonged intravenous phosphate administration over the serum calcium and to establish the hyperparathyroidism animal model on rabbits.

**Methods:** Ten healthy New Zealand White aged 4 months with body mass between 2.0 to 2.5 kg were used. Their blood were withdrawn 1 week before and 5 months after the intravenous phosphate administration for serum calcium evaluation.

**Results:** Result of the study showed that the rabbit’s serum calcium level after 5 months of the intravenous phosphate administration has increased compared to 1 week before the administration.

**Conclusion:** Prolonged intravenous phosphate administration increases the serum calcium level and can be suggested as one of the ways to establish hyperparathyroidism in the animal model.

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**P64**

*Cosmos caudatus Maintains Serum Mineral Homeostasis in Ovariectomized Rats*

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**Background/Objectives:** Oxidative stress has been implicated in estrogen deficiency-induced osteoporosis. Previous study has shown that *Cosmos caudatus* (Ulam raja), which possess antioxidant property, improved bone histomorphometry in ovariectomized rats. This study determined the effects of *Cosmos caudatus* on serum and bone minerals levels in ovariectomised rats.

**Methods:** Female Sprague Dawley rats were divided into 4 groups, i.e. sham operated (SO), ovariectomised (Ovx), ovariectomised + 500mg/kg *Cosmos caudatus* extract (CC) and ovariectomised + estrogen 64.5 ug/kg of rat weight (E₂). Rats were treated for 8 weeks. Serum was collected before and after treatment for the measurements of calcium and phosphate. Upon sacrifice, left femur and fifth lumbar vertebrae (L5) were taken for the measurements of calcium and magnesium.

**Results:** Ovariectomy reduced serum calcium levels compared to SO group but did not cause any changes in serum phosphate and bone minerals levels. Groups treated with CC and E₂ showed significant increase in serum calcium and phosphate levels compared to ovariectomized group. However, both *Cosmos caudatus* and Premarin® did not affect the minerals levels of femur and L5 bones.

**Conclusion:** *Cosmos caudatus* was able to restore serum calcium homeostasis that was impaired by ovariectomy as well as increasing the serum phosphate levels. *Cosmos caudatus* is comparable to Premarin® in its effects on serum and bone minerals levels. *Cosmos caudatus* improves estrogen deficient-induced osteoporosis by maintaining serum minerals homeostasis.

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**P65**

*HDL and its Subpopulations Reduce Inflammation and Increase Adiponectin Expression in Inflammed Adipocytes*

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**Background/Objectives:** Adipose tissue is not only a reservoir for cholesterol, but also a potential source of inflammation especially in obesity. High density lipoproteins (HDL) and their anti-inflammatory properties are well established in atherosclerosis prevention. However, little is known about the effect of total HDL (tHDL) and its subpopulations (HDL2 and HDL3) on inflammed adipocytes. The effects of tHDL, HDL2 and HDL3 on IL-6, MCP-1, adiponectin, NF-κβ (p65) and STAT3 expression was investigated in TNF-α stimulated 3T3-L1 adipocytes. The changes in lipid droplet accumulation was also investigated.

**Methods:** Mature 3T3-L1 adipocytes were incubated with TNF-α alone (positive control) or together with various concentrations of either tHDL, HDL2 or HDL3 for 24 hours. The changes in lipid droplet accumulation was evaluated using Adipored™ assay. Protein expression of IL-6, NF-κβ (p65) and adiponectin was measured using ELISA while mRNA expression of IL-6, MCP-1, adiponectin, NF-κβ and STAT3 was determined by Quantigene Plex.

**Results:** tHDL, HDL2 and HDL3 significantly inhibited IL-6 and NF-κβ (p65) while increased adiponectin protein
expression. All HDL subpopulations at 0.1 mg/ml, significantly inhibited IL-6, MCP-1 and STAT3 mRNA expression whereby HDL3 was most potent in reducing IL-6 (p<0.0001), MCP-1 (p<0.0001) and STAT3 (p<0.05) mRNA expression. The highest reduction of lipid droplet accumulation was observed at 0.1 mg/ml of tHDL (p<0.0001).

**Conclusion:** These findings suggest that HDL and its subpopulations exhibit anti-inflammatory properties on TNFα stimulated adipocytes via STAT3 suppression. As HDL levels are decreased in obese individuals, this may contribute to the chronic inflammation observed in adipose tissue of these individuals.

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**P66**

**Effects of Palm Tocotrienol-Rich Fraction Supplementation on Fenitrothion Induced Liver Damage in Rats**

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**Background/Objectives:** The aim of this study was to evaluate the effect of palm tocotrienol-rich fraction (TRF) supplementation on fenitrothion (FNT) induced liver damage in rats.

**Methods:** A total of 40 male Sprague-dawley rats were divided into four groups which were control, TRF, FNT and TRF+FNT group. TRF (200 mg/kg body weight) and FNT (20 m/kg body weight) were administered through oral gavage for 28 consecutive days. In TRF+FNT group, TRF was supplemented 30 minutes prior to FNT administration.

**Results:** The activity of plasma cholinesterase (ChE) enzyme did not differ significantly in TRF+FNT compared to FNT group. TRF supplementation reduced the liver damage induced by FNT as revealed by restoration of liver enzymes namely ALT and AST, reduction of hepatic malondialdehyde (MDA) and protein carbonyl (PCO) level. The present study showed that, antioxidant status particularly reduced glutathione (GSH), glutathione peroxidase (GPx) and Ferric Reducing/Antioxidant Power (FRAP) were improved by TRF supplementation. However, no significant difference was found in superoxide dismutase (SOD), catalase and glutathione S-transferase (GST) activity. TRF supplementation was also shown to ameliorate histological and ultrastructural observation of FNT induced liver damage.

**Conclusion:** TRF supplementation has the potential to prevent the deleterious effects of FNT by reducing oxidative damage, improving the antioxidant status and morphological damage of the liver.
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