

## 9<sup>TH</sup> Malaysian Symposium of Biomedical Science

### PREVALENCE AND FACTORS ASSOCIATED WITH CRUDE HERBS USE AMONG PATIENTS WITH CHRONIC DISEASES: A CROSS-SECTIONAL SURVEY IN COMBINATION WITH LABORATORY ANALYSIS

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#### **Background:**

In Malaysia, crude herbs are often used as primary treatment for chronic diseases. Concurrent use of crude herbs with doctors' prescribed medications is widespread among patients with chronic diseases. However, the extent of crude herbs use is not known in most settings in Malaysia. This study aimed at determining the prevalence and factors associated with crude herbs use among patients with chronic diseases on doctors prescribed medications attending a government health clinic in Kampar.

#### **Methods:**

This was a cross-sectional study carried out in a health clinic in Kampar among 69 conveniently selected eligible participants via staff nurses recommendation. We included participants who were 18 years and above, were enrolled on any chronic disorder, and consented to participate in the study. Data was collected using a self-designed questionnaire. Crude herbs user, someone who had ever used the raw plant, even before it is processed or dried while on doctors prescribed medications by the time of the study. Data was captured in SPSS version 23 for analysis. Based on SPSS descriptive analysis, the highly consumed herbs were extracted using aqueous and solvent methods and phytochemical screening was conducted using the extracts respectively. Thin layer chromatography was carried out, to identify the number of phytochemical compounds present in the ethanolic extract.

#### **Results:**

The prevalence of crude herbs use was 8%. Patients between age of 60 years old and above, Chinese female, net earnings below than RM 3000, primary and secondary school leavers were significantly associated with the crude herbs use ( $p < 0.05$ ). The highly consumed types of herbs among the patients are apple, sky fruits, and celery. The phytochemical screening for apple using aqueous and solvent extracts showed the presence of all compounds tested namely phenol, alkaloid, quinones, saponin, terpenoids, glycoside, flavonoids, and tannins. Patients aged 50 years and below were less likely to use herbs ( $p > 0.05$ ). Abundant presence of phytochemical compounds may be indirectly triggered the use of herbs among the patients.

#### **Conclusion:**

The prevalence of herbs use among participants on prescribed medication was moderate. This raises clinical and pharmacological concerns that need attention by the health care service providers.

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### Screening and molecular characterisation of glucose-6-phosphate dehydrogenase (G6PD) Deficiency Among Eligible Blood donors

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#### **Background:**

Glucose-6-Phosphate Dehydrogenase (G6PD) enzyme is the most common enzyme deficiency worldwide and is an X-linked inherited disorder affecting the males at a higher percentage. This enzyme is a cytoplasmic enzyme involving in the first step of the pentose phosphate pathway. G6PD enzyme is important to maintain the reduced form of glutathione (GSH) from the oxidised disulphide form (GSSG) for detoxification of reactive oxygen species (ROS). Besides, the GSH also protect erythrocytes from oxidative stress which may be induced from ingestion of drugs, fava beans or even infection. Denaturation of haemoglobin leading to formation of Heinz bodies may occur in G6PD deficiency individuals. As G6PD deficiency individuals only presented with clinical features when haemolytic crisis occurred, thus many G6PD deficiency individuals are unaware they are G6PD deficiency and attended for routine blood donation. The objective of this study is to screen and characterise G6PD variants at molecular level among eligible blood donors.

#### **Method:**

In this study, sample recruitment was conducted at blood donation campaign and 3ml of EDTA blood samples were collected with informed consent. All the samples were screened using both qualitative (fluorescent spot test) and quantitative methods to quantitate G6PD enzyme activity. All the blood samples were extracted for genomic DNA. Purity and concentration was checked for downstream molecular analysis. Variant detection analysis was conducted for three G6PD variants, G6PD Chinese4 (Quing Yang) (392 C>T), Kaiping (1388 G>A) and Chinese-5 (1024 C>T).

#### **Result:**

A total of 392 samples whose are eligible blood donors were successfully recruited. Throughout analysis, ten (10/392; 2.6%) samples were identified as G6PD deficient either in severely reduction of G6PD enzyme (G6PD variants in hemizygous or homozygous state) or moderately reduction of G6PD enzyme (G6PD variants in heterozygous state). G6PD Kaiping was found as the predominant variants (8/392; 2.04%) consisting of 4 hemizygous and 4 heterozygous. It was followed by G6PD Chinese-5 and Chinese-4 with 1 hemizygous case respectively (1/392; 0.3%).

#### **Conclusion:**

In conclusion, G6PD deficient individuals should be screened to prevent their involvement in blood donation in order to prevent any complications as recipient receives a G6PD deficient blood might face occurrence of haemolytic crisis when exposed to oxidative stress.

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### The Effect of Forty (40) Days of Consuming Seven Seeds of Habatus Sauda (*Nigella sativa*) in Morning on Malondialdehyde (MDA) Level: A Preliminary Study

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#### Background:

Oxidative stress is a molecular phenomenon where free radical molecules such as reactive oxygen species (ROS) exceed antioxidant molecules that will cause harm to body tissues and able to generate new free radical molecules. Common contributors of oxidative stress are superoxide anion, hydrogen peroxide and further product of fatty acid peroxidation, malondialdehyde (MDA). To resist against oxidative stress, Thymoquinone in Habatus sauda or *Nigella sativa* (NS) could act as antioxidant compound. HS is considered medicinal herbs in Mediterranean region and Islamic teachings. It is medically accepted yet still considered as complementary and alternative medicine. To investigate the significant effect of consumption of seven NS seeds after 40 days, MDA production level was the key holder in measuring oxidative stress.

#### Methodology:

30 subjects had signed consent form to join this study. The subjects were required to fill in the questionnaire that cover demographic, anthropometric (Body Mass Index, heart rate and blood pressure) and history taking information before and after HS intervention. 10 ml of blood was withdrawn from each subject on 0<sup>th</sup> day and 40<sup>th</sup> of the study. 7 seeds of HS were required to be taken (chewed) by each subject on every morning (8 to 9 am) regularly. The pre and post blood samples were processed to measure the level of MDA using Thiobarbituric acid (TBA) colorimetric assay. The questionnaire was used to help in analysing the effects on physical indices and co-founding factors of the study.

#### Result:

Based on the current data obtained, it was found that 1 out of 4 subjects have reduced his or her MDA plasma level after 40 days of HS intervention. Statistically, in accordance to paired samples T-test, at 95% confidence interval, there is no significance different in MDA level between pre and post of 40 days of HS consumption.

#### Conclusion:

Our preliminary data suggested that there is no significant different in Malondialdehyde (MDA) level in human plasma before and after 40 days of consuming 7 Habatus sauda seeds ( $p$  value = 0.203). There is no significant negative effect on the physical indices of the subjects.

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### DETERMINATION OF SEROTONIN LEVEL IN CROSS-BREED CHICKEN THAT FEED WITH BLOOD AND FISH MEAL

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#### **Background:**

Blood meal (BM) and fish meal (FM) have been introduced in poultry diets for such a long time due to the advantages in term of nutrients that have met the requirement for poultry production compared to plant based protein meals. Tryptophan is one of the essential amino acids that can be obtained in both BM and FM. Tryptophan is the precursor for synthesis of serotonin that plays an important rule to regulate psychological and behavioural of poultry. Many study have been conducted to determine the effect of poultry feed in term of growth performance toward poultry, however study of effect of poultry feed on the level of serotonin that can influence the behaviour of poultry is still limited. Thus, this study is aimed to determine if there is any impact on protein feed (i.e. BM and FM) in poultry diets on the level of serotonin in chickens.

#### **Method:**

Twenty-four of chickens were divided equally into 2 groups (blood and fish meal), 12 chickens were feed with 3% of blood meal while the other 12 were feed with fish meal only. The blood and brain samples were collected after slaughtered processed. Samples were examined using commercial ELISA kit that already pre-coated with an antigen specific to serotonin and tryptophan. This commercial kit was manufacture by Apical Scientific Sdn Bhd that provided laboratories service and equipment. Besides, growth performance also was measured to determine which group give better performance. The parameters for growth performance included were body weight that were measured weekly, pH that measured of 5g of breast meat using pH meter and also measure water holding capacity that measured from 5g of breast meat

#### **Result:**

The result showed blood meal group had low level of serotonin and tryptophan and behaviour study also showed blood meal more aggressive compare with fish meal. For growth performance, fish meal group had better performance compare with blood meal group.

#### **Conclusion:**

The insight of this study might provide better welfare on the livestock of poultry and also can serve more nutrients to consumers.

**Keywords:** serotonin, blood meal, fish meal, behaviour, protein feed

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### The Effect of Raisins Consumption on Plasma Malondialdehyde (MDA) Level: A Preliminary Study

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#### **Background :**

Human body is continuously exposed to many agents either from normal cell metabolism or environment that may induce accumulation of free radicals which result in oxidative stress and lead to many diseases. Antioxidants are very importance to interact and neutralize the free radicals in order to overcome this condition. In this study, we aim to investigate the effect of consuming raisins as a source of antioxidant on oxidative stress biomarker.

#### **Method :**

This study is a quasi-experimental study design which is Pretest-Posttest design whereby 11 subjects were recruited. The subjects were given 7 pieces of raisins to be consumed in the morning for 40 days. They were required to recite 'basmalah' followed by three times of *shalawat* before consuming the raisins. The blood were collected a day before and also after 40 days of raisin consumption. Physical measurement (BMI, blood pressure and heart rate) were also measured before and after 40 days of raisins consumption. The blood was used to assay MDA level using TBARS method. Other data including demographic data, health status, diet intake and other environment factor were also collected from the subjects using a set of questionnaire after consent was given by the subjects.

#### **Result :**

The preliminary result of this study showed that there were no significant differences of plasma MDA level and physical measurement (BMI, blood pressure, and heart rate) before and after 40 days of consuming raisins.

#### **Conclusion :**

The data suggested that antioxidant properties of raisins unable to reduce plasma MDA level in subjects after 40 days.

## 9<sup>TH</sup> Malaysian Symposium of Biomedical Science

### The Effects of Hiking and Mountaineering Activities on Psychological Diseases and Oxidative Stress: A Preliminary Study

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#### **Background:**

Oxidative stress can be beneficial to our body, however, it also involves in diseases and depression where the end-product of lipid peroxidation, malondialdehyde (MDA) can be carcinogenic or mutagenic to the body. An active body is very important in combating this oxidant and protecting the normal physiology of the body. In this study, we aim to investigate the effects of hiking and mountaineering activities on the psychological diseases and oxidative stress biomarker.

#### **Method:**

In this study, the sampling method is non-random, convenience sampling with the inclusive and exclusive criteria. Male hikers and male with sedentary lifestyle between the ages of 30 to 50 years old were recruited. After consent was given, blood was taken together with physical measurements (BMI and blood pressure). The blood withdrawn was used to analyze MDA using TBARS assay. A set of questionnaire was also given for psychological screening, demographic data and health status.

#### **Result:**

The level of plasma MDA and psychological diseases (depression, anxiety and stress) assumed to have a significance difference between hikers and sedentary lifestyle group.

#### **Conclusion:**

We assumed that hiking and mountaineering activities able to reduce plasma MDA level and depression, anxiety and stress.

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### Knowledge And Attitude On Postpartum Haemorrhage Among Women In Kuantan, Pahang

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#### **Background :**

Postpartum haemorrhage (PPH) is commonly defined as excessive bleeding of 500 ml or more within 24 hours after birth. It is known as one of the leading cause of maternal mortality worldwide. In Malaysia, from 2009-2014, PPH remained to be one of the top contributors to maternal deaths, suggesting that the knowledge and attitude on PPH among mothers in Malaysia is still uncertain. This cross-sectional study aims to determine the level of knowledge and attitude on PPH among women in Kuantan, Pahang. The association between socio-demographic factors and the level of knowledge and attitude of women in Kuantan, Pahang was also examined in this research.

#### **Method :**

This study involved 124 respondents among women who have experienced pregnancy and delivery at least once and lives in Kuantan, Pahang. A convenience sampling was applied and self-administered questionnaires was distributed from February 2018 until March 2018. Data was analysed using Statistical Package Software for Social Sciences (SPSS). Descriptive frequency table was used to describe the knowledge, attitude and practice level regarding PPH. Kruskal-Wallis test was used to determine the association of socio-demographic data with the knowledge, attitude and practice level whereas Pearson's correlation test was used to study the relationship between knowledge and attitude regarding PPH.

#### **Result :**

The preliminary result of this study is there is a significant relationship between the socio-demographic data with the level of knowledge and attitude on PPH among women in Kuantan, Pahang.

#### **Conclusion :**

This study is expected to benefit the community, especially among women in Kuantan, Pahang, by enhancing the knowledge and attitude on PPH among mothers and also help mothers to experience healthier pregnancy in the future.

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### DETERMINATION OF SEROTONIN AND TRYPTOPHAN LEVEL IN GUT MUCOSA OF CROSS-BRED CHICKENS WHEN FED WITH BLOOD MEAL AND FISH MEAL

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#### **Background:**

Due to insufficient nutrient and amino acid content in traditional meal (soy and corn) for broiler chicken, fish meal (FM) and blood meal (BM) is seen as an alternative meal. However, FM and BM contain different concentration of tryptophan and may affect the pathophysiology of the chicken and thus influence the growth performance and the poultry product itself. Tryptophan is precursor of serotonin, which mostly synthesized and stored within intestine wall. Serotonin is known to perform a critical role in the gastrointestinal tract and responsible for innervating muscular activity in the gut. Therefore, in this study, we aim to determine the level of serotonin and tryptophan level in gut mucosa of chicken fed with BM and FM and to find its association with the performance of growth of chicken and quality of meat produce.

#### **Methods:**

This study involved 24 cross-bred chickens, reared for 6 weeks at chicken farm (Shiroz Farm, Pahang). The chicks were divided into two groups; BM and FM, 12 chicks per group. Body weight (BW) of every chicken are weighted and recorded once a week for 6 weeks. Slaughtering session were done at the end of week 4 and 6; 6 chickens from each group were selected randomly and slaughtered at each session. For serotonin and tryptophan measurement, the mucosa layer from segment of small and large intestine were scrapped off from approximately 1cm<sup>2</sup> the segments. Then, the mucosa were homogenized and centrifuged. For further measurement, commercial ELISA kits were used according to the manufacturer's instructions (Elabscience, China). For pH determination, pH of 5g chicken's breast muscles were determined at 5 hours and 24 hours after sample collection using digital pH meter. Next, another 5g of breast muscles were packed in a zip-sealed plastic bag and stored at 4°C. After 24 hours, the moisture from the muscle were absorbed using filter paper and the muscle were reweight. The determination of weight loss (%) were obtained from the difference in weight of sample before and after storage. All results were analyzed using SPSS 12.0 software by repeated measures analysis of variance (ANOVA) for comparing BW gained in week 1 until week 6 from both meal group. Serotonin and tryptophan level in mucosa of chicken's gut, pH level and WHC will be compared between FM and BM using one-way ANOVA and  $P < 0.05$  indicated significant differences.

#### **Results (expected result):**

Serotonin and tryptophan level in gut mucosa of chicken fed with BM is expected to be higher than chicken fed with FM. In addition, chicken fed with BM also show higher BW gained, optimum ultimate pH level, higher WHC compared with chicken fed with FM thus increase the quality of meat of chicken fed with BM.

#### **Conclusion: (to be determined)**



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### COMPARISON OF ANTIGLYCEMIC AND ANTIGLYCATIVE PROPERTIES OF ARTIFICIAL, NOVEL AND NATURAL SWEETENERS

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#### **Background:**

Diabetes mellitus (DM) is emerging as a global issue due to high consumption of sugar by world population. The presence of glucose in the blood circulation leads to accumulation of advanced glycation end-products (AGE) which results in the development of various diabetic complications. Nonnutritive or low-calorie sweeteners were introduced as a preventive measure against diabetes and highly recommended for diabetic patients. However, there are claims to support that the sweeteners contribute towards weight gain and Type 2 DM. It is imperative to understand the possible mechanism behind the effects of the sweeteners on glycemia. Therefore, the present study was designed to investigate the antiglycemic and antiglycative properties of selected sweeteners.

#### **Methods:**

Antiglycemic property of non-nutritive sweeteners (Equal Gold, Equal Classic, Equal Stevia, EverSweet, Tropicana Slim, Stevia, Ajinomoto Pal Sweet) and nutritive sweeteners (Honey, glucose, fructose, sucrose; sugar) was determined by assessing the ability of the samples to inhibit  $\alpha$ -amylase (carbohydrate hydrolyzing enzyme). Antiglycative property of the sweeteners was monitored fluorometrically by determining AGE inhibition ability of the samples using bovine serum albumin (BSA)-glucose model. The ability of the sweeteners to form AGE with BSA was studied fluorometrically by incubating the sweeteners (0.9 mg/mL) with 10 mg/mL of BSA for 40 hours at 55°C.

#### **Results:**

The sweeteners tested in this study did not exhibit antiglycemic property except for Tropicana Slim at lower concentrations. Tropicana Slim, Equal Gold and Equal Stevia showed potential antiglycative property at specific concentrations. All the sweeteners were able to trigger AGE production nonenzymatically. The level of AGE produced by Equal Classic, Ajinomoto Pal Sweet and EverSweet matched with glucose. Whereas, Equal Stevia, Equal Gold, sucrose, stevia and Tropicana Slim showed a reduced level of AGE production. Fructose showed the highest percentage of AGE formation followed by honey.

#### **Conclusion:**

Tropicana Slim showed potential antiglycemic and antiglycative properties at specific concentrations. Equal Gold and Equal Stevia showed potential antiglycative properties. Fructose and honey should be consumed minimally or with caution as both may contribute towards hyperglycemic condition and accelerate the rate of AGE accumulation in the blood circulation.

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### EFFECT OF PRE-SOAKING 3D ALGINATE/COCKLE SHELL POWDER NANOBIOCOMPOSITE BONE SCAFFOLD IN SIMULATED BODY FLUID (SBF) TOWARDS BONE MARROW-DERIVED MESENCHYMAL STEM CELL GROWTH AND DIFFERENTIATION

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#### **Background:**

Bone scaffolds are widely being developed as part of bone tissue engineering as a bone graft material in order to aid the process of bone repair and regeneration. Simulated body fluid (SBF) is a potential mineralization agent capable of forming layers of apatite on surface of calcium based scaffolds. This apatite layer has been proven to enhance infiltration and osteoblastic activity of pre-osteoblast. This study aims to observe the effect of SBF pre-soaked 3D alginate/cockle shell powder nanobiocomposite bone scaffold towards bone marrow-derived mesenchymal stem cells' (BM-MSc) growth, proliferation, differentiation and its possible osteoblastic expression.

#### **Methods:**

Nanobiocomposite bone scaffold of 40% alginate and 60% nano cockle shell powder were developed using lyophilization method. The scaffolds were prepared in a dimension of 5x2 mm prior to be divided into an experimental group that were presoaked in 10x SBF for 24 hours and a control group. BM-MSc were isolated from mice's bone marrow and cultured for 1 day prior to seeding on scaffolds at a density of  $1 \times 10^5$  cells/scaffold for 7 and 14 days respectively. At the end of the experimental period, MTT proliferation assay, scanning electron microscopy with energy dispersive x-ray analysis, Masson Trichrome staining, Von Kossa staining and biochemical analysis for ALP were carried out in order to assess the proliferation, growth and differentiation of cells on scaffolds' surface.

#### **Results:**

MTT proliferation assay showed significant decrease ( $p < 0.05$ ) in test group ( $0.497 \pm 0.442$ nm) for 7 days. ALP analysis which indicates early biomarker for stem cells osteogenic differentiation also showed significant decrease in test group ( $0.0096 \pm 0.0006$ mM) as compared to control group at  $p < 0.05$ . SEM observation revealed growth of BM-MSc on scaffolds and SBF pre-soaked scaffolds had higher Ca/P ratio compared to control scaffolds. For histological studies, Masson Trichrome staining revealed presence of collagenous extracellular matrix on scaffolds of both groups while Von Kossa staining showed deposition of calcium on both scaffolds' groups.

#### **Conclusion:**

In conclusion, nanobiocomposite bone scaffolds used did support BM-MSc' growth on it. The findings indicated SBF pre-soaked scaffolds did not provide better environment for growth and proliferation of BM-MSc.

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### ASSOCIATION BETWEEN QURAN MEMORIZATION AND OXIDATIVE STATUS OF HUFFAZ STUDENTS IN SELANGOR

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#### **Background:**

Memorizing the Quran is the spiritual practices that enhance the mental, soul and intellectual. Blending science and academic Quran integratively can produce holistic and quality students that capable of confronting the challenges of today's world. Spiritual practices from the point of Islam is believed to be able to give a good impact to mental especially, physical, and everyday life of the individual. Previous research has shown that spiritual practices that consistently and effectively practiced able to improve the quality of life of individuals which is capable of reducing stress levels and reduce or slowing down the rate of formation of oxidants in the body. So from this study it is about to investigate the effect of memorizing the Quran on oxidative status comprising oxidants and antioxidants in individuals who memorized.

#### **Method:**

This is a cross sectional study where the subject is taken using purposive sampling technique among students who have regular school syllabus from 2 schools and the other fall under memorizing syllabus from 3 schools which covers 159 people for all samples. The methodology used in this study is in the form of a survey method using a questionnaire and measurement of selected parameters in the blood serum. The level of oxidative status measured using blood serum and parameters involved is the enzyme superoxide dismutase (SOD) and glutathione (GSH) to measure changes for antioxidant status while malondialdehyde (MDA) and the products of advanced protein oxidation (AOPP) together with the amount of protein to measure the level of lipid peroxidation levels oxidation protein that acts as a marker of oxidative stress induced in the blood.

#### **Results:**

Sociodemographically, the number of respondents taken as a whole are a total of 159 students consisting of 116 (73%) of tahfiz students and 43 (27%) non-tahfiz. In terms of type of school, 55 (34.9%) students from government's tahfiz schools with integrated academic syllabus, 31 (19.5%) students from private tahfiz schools with the syllabus of academic, 30 (18.9%) students of private tahfiz schools without academic syllabus and 43 (27%) students from two secondary schools with the syllabus of academic as control school 1 and 2. The majority (42.2%) students had memorized between 11-20 juzk, followed by 35.3% of tahfiz students who had memorized between 1-10 juzk and 22.4% have memorized between 2130 juzk. While for non-tahfiz students, all of them (100%) memorize less than 1 juzk. For oxidative status the result will be shown later upon completion.

#### **Conclusion:**

The conclusion will be reported later upon completion of the results.

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### BIOCHEMICAL AND HISTOLOGICAL EFFECTS OF MONOSODIUM GLUTAMATE ON THE LIVER OF ADULT MALE *SPRAGUE DAWLEY* RATS

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#### **Background:**

Monosodium glutamate (MSG) is widely used as an additive in daily food intake. Excess consumption of MSG was reported to cause oxidative stress on brain, liver and renal resulted in the increased production of reactive oxygen species (ROS). The aim of this study was to determine the biochemical and histological effects of MSG on the liver functions level, status of oxidative damage, antioxidant levels and histological changes in the liver of adult male *Sprague Dawley* rats.

#### **Methods:**

The male *Sprague Dawley* rats (n=24) were randomly divided into three groups with two treatment groups (n=8 rats per group) and one control group (n=8). The treatment groups were administered MSG in dose of 60 mg/kg (MSG60) and 120 mg/kg (MSG120) body weight respectively and the control group received distilled water. The substances were administered to the rats via force feed for 28 consecutive days. The body weight, food and water intake of the rats were monitored every week. At day 29, all rats were sacrificed and liver was dissected out for biochemical and histological analysis.

#### **Results:**

Liver functions level of both aspartate aminotransferase (AST) and alanine aminotransferase (ALT) together with total protein content demonstrated a significant increased ( $p<0.05$ ) in MSG60 and MSG120 treatment groups compared to the control group. The antioxidant level of SOD in the liver tissue showed a significant increased ( $p<0.05$ ) in MSG120 treatment group compared to the control group. Whilst the GSH levels in the liver tissue showed a significant reduction ( $p<0.05$ ) in both MSG60 and MSG120 treatment groups compared to the control group. For the status of oxidative damage, a significant increased ( $p<0.05$ ) of MDA levels was displayed in both MSG60 and MSG120 treatment groups compared to the control group. The histological findings revealed changes to liver architecture and hemorrhage in the central veins of the liver in MSG group rats.

#### **Conclusion:**

This study indicates that the MSG consumption at a dose of 60 mg/kg and 120 mg/kg may affect the biochemical and histological parameters on the liver by altering the enzyme levels, total protein, antioxidant levels, oxidative stress status, and the structure of liver.

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### CYTOKINE LEVEL AND AL-QURAN MEMORIZATION AMONG TAHFIZ STUDENTS IN SELANGOR

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#### **Background:**

Nowadays, Tahfiz education is among the growing education in Malaysia that has been receiving attention based on the increasing establishment of tahfiz schools by government and private sector. Besides, the practice of religious and spiritual activities also has gained attraction especially in research regarding health care due to accumulating evidences showing that the practitioner will have better health progression and improved quality of life. Eventhough various research has been conducted on the relationship between religious and spiritual activities on health status and quality of life, there are no scientific studies that can prove the perception that al-Quran memorization can improve both health status and quality of life of an individual.

#### **Methods:**

In line with this, a cross sectional study involving 120 students is conducted to explore the relationship between level of al-Quran memorization on cytokine level and quality of life in selected tahfiz and non-tahfiz schools in Selangor. The students were divided into four levels of al-Quran memorization according to *juzu* of al-Quran they have memorized. They were asked to fill up questionnaire to obtain demographic data and 36 item short form health survey (SF-36) for the assessment of quality of life. A volume of blood is taken for cytokines (IL-10 and IFN- $\gamma$ ) measurement. Determination of cytokines was carried out by using Enzyme-linked Immunosorbent Assay (ELISA) kit. Overall data obtained were analysed by using IBM Statistical Package for Social Science (SPSS) Statistics version 22.

#### **Results:**

The findings indicates that a significant with weak negative correlation was found between IL-10 and level of al-Quran memorization ( $r = -0.214$ ,  $p = 0.035$ ). Furthermore, there is a weak negative correlation and significant between IFN- $\gamma$  and mental health ( $r = 0.329$ ,  $p = 0.003$ ).

#### **Conclusion:**

In conclusion, this study suggested that there is positive relationship between level of al-Quran memorization and cytokine level among tahfiz students.

## 9<sup>TH</sup> Malaysian Symposium of Biomedical Science

### THE EFFECTS OF 3 WEEKS HIGH INTENSITY INTERVAL TRAINING ON THE AUTONOMIC RESPONSE OF OVERWEIGHT AND OBESE UNIVERSITY STUDENTS

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#### **Background:**

Malaysia is suffering from the rise of an obesity epidemic. World Health Organisation estimates that there are more than 1.9 billion overweight adults worldwide in 2014 with more than 600 million of them being obese. The National Health Morbidity Survey (2015) reports the prevalence of overweight and obesity among Malaysians as 33.4% and 30.6%. The increase in prevalence of obesity among Malaysians resulted in increased rates of Non-Communicable Diseases with 36% of total deaths in 2016 from cardiovascular diseases. Autonomic response, specifically the heart rate variability is used to determine subclinically the risk towards developing cardiovascular diseases. Aerobic exercise is chosen as the intervention because it leads to greater caloric loss. High Intensity Interval Training is a type of aerobic exercise that uses short intervals of rest between bouts of high intensity exercise which has been chosen for this study due to having equal effect in weight loss to other types of aerobic exercise with a shorter time span. Hence, in this study we aim to look for a causal effect relationship between High Intensity Interval Training and the autonomic response of overweight and obese adults.

#### **Methods:**

Sampling frame include 19-29-year-old UKM students who are sedentary with a BMI greater than 23kg/m<sup>2</sup> (n=22). All subjects were chosen from Universiti Kebangsaan Malaysia Kampus Kuala Lumpur through purposive sampling. The participants were given three weeks of HIIT. Participants were required to have their body composition, hand grip strength, VO<sub>2</sub>Max and HRV measured before and after the three week time period.

#### **Results:**

The participants that were involved in this study had the mean body mass index of 29.92 ± 4.16 at prior to the intervention. After three weeks, the measurements of BMI and body composition yielded no significant changes (p>0.05). The same was found for the hand grip strength, VO<sub>2</sub>Max and heart rate variability (HRV).

#### **Conclusions:**

The three week intervention period for this study did not induce any significant changes to the participant's body composition, hand grip strength, VO<sub>2</sub>Max and HRV. This may have been due to shortened time period that should have been extended to at least six weeks.

## 9<sup>TH</sup> Malaysian Symposium of Biomedical Science

### CYTOGENETIC ANALYSIS OF EXFOLIATED BUCCAL CELLS OF TRAFFIC POLICE OFFICERS EXPOSED TO AIR POLLUTION IN KUALA LUMPUR

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#### **Background:**

The continuous occupational exposure of Royal Malaysian Police (RPM) especially traffic police officers to environment pollution is an alarming condition. The aim of this study is to analyse the frequency of micronucleus (MN) and binucleus (BNu) in the buccal cells among traffic police who have been occupationally exposed to air pollutants by using the MN assay.

#### **Method:**

Buccal swab was collected from the traffic police officers in Kuala Lumpur (n=80) using the wooden tongue depressors. The traffic police officers are interviewed to obtain the information such as demographic data and use of PPE by using a structured questionnaire. The controls in this study were the individuals working in office at traffic police office. Cytogenic analysis was carried out using Acridine Orange (AO) 0.0025% (w/v). The frequency of MN and BNu as a biomarker for cytogenic damage was determined using a fluorescence microscope.

#### **Results:**

The results are expected to show that the frequency of both MN and BNu of traffic police officers are significantly greater ( $p < 0.05$ ) than that of the controls. Besides that, in the aspects of socio-demographic factors (gender, smoking habit, alcohol consumption, age, educational levels and BMI), MN frequency of traffic police officers are expected to significant ( $p < 0.05$ ) than the control groups. Moreover, significant differences of MN frequency are expected among traffic police officers when compared between the categories of sociodemographic factors and usage of PPE. This may suggest that those factors might affect the cytogenic abnormality. Furthermore, positive strong correlations ( $p < 0.05$ ,  $r > 0.75$ ) are expected to exist between the frequency of MN and BNu and the level of PM<sub>10</sub> among traffic police officers.

#### **Conclusion:**

This study may demonstrate that exposure to air pollutant may increase the MN and BNu formation among the traffic police officers and prolonged occupational exposure may cause an induction of cytogenic abnormalities to humans.

**AN AUTOPSY STUDY ON CARDIAC DISORDERS IN SUDDEN DEATH IN SLEEP  
AT  
HOSPITAL CANSELOR TUANKU MUHRIZ**

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**Background:**

Sudden death in sleep (SDIS) has been considered as one of the most mysterious disorders. However, cardiac disorders were believed to be the most common causes to SDIS. A high prevalence of SDIS have been reported among healthy young adults particularly of Southeast Asian descendents. Thus, this study is conducted to investigate the trend of SDIS in Malaysia by evaluating the demographic factors of victims and observing the changes of their heart morphology.

**Methods:**

Medicolegal cases in 2017 were obtained from the Forensic Department of Hospital Canselor Tuanku Muhriz. The heart tissues from autopsy being processed and stained using routine haematoxylin and eosin staining techniques for microscopic observation.

**Results:**

From the result, SDIS turned to be 8% from the total sudden death reported. Histological examination revealed that heart samples did show the features of atherosclerosis, myocardial infarction in the stage of healing with minority samples depicted thrombosis. This correlated with gross examination findings during autopsy in which 45% cases occurred due to coronary occlusion due to atheroma, 22% due to ischemic heart diseases followed by 11% for myocardial infarction, thrombosis and other heart diseases. Atherosclerosis grading showed 50% of lesion occurred at grade III(51-75% occlusion). As for myocardial infarction, most were in the stage of healing (56.7%) followed by acute myocardial infarction (40%). Men (89%) is more susceptible to the risk of SDIS compared to women (11%). Among different ethnics in Malaysia, highest number of SDIS cases occurred in Chinese (44.4%) followed by Malay (22.2%) and Indian (11.1%). The finding also demonstrated that SDIS is more prevalent in age range of 50-69 years old (66.6%) followed by 30-39 years old (22.2%). Individual with 250-449g of heart's weight dominate majority of cases with 66.6%. Data from the record shown 11.1% were positive with alcohol intake whereby 22.2% were positive with drugs.

**Conclusions:**

The causes and pathophysiological mechanism of SDIS are believed to be in close relation to sleep and its complex homeostatic mechanisms, environmental, lifestyle, genetic factors as well as the biochemical and molecular abnormalities. Thus future studies on molecular analysis are needed to be conducted to further explain the mystery of SDIS.



**EFFECTIVENESS OF COMMERCIAL *Aedes* TRAP TO REDUCE MOSQUITO POPULATION IN 17<sup>TH</sup> COLLEGE, UNIVERSITI PUTRA MALAYSIA**

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**Background:**

Dengue is a global health problem and considered to be endemic in Malaysia. Dengue virus is transmitted from an infected person via vectors which are the *Aedes* mosquitoes namely *Aedes aegypti* and *Aedes albopictus*. Although dengue fever has been around for some time, there is still no vaccine against the virus or any specific medication to treat dengue. There have been a lot of measurements taken to reduce the number of dengue cases, mainly, vector control using mosquito traps. The mosquito traps currently being used are not effective in reducing the mosquito population as the trapped eggs are not killed. The AedesTech Mosquito Home System is a commercial *Aedes* trap that contains mosquito attractant and pyriproxyfen to prevent the hatching of mosquito eggs.

**Methodology:**

The hostels in the 17<sup>th</sup> College of UPM are chosen as there have been several dengue cases being reported especially Block A and B. A commercially available *Aedes* trap, AedesTech Mosquito Home System, kindly provided by One Team Networks Sdn. Bhd. is used for three months as an intervention in both Block A and B, whereas Block D is used as the control area. For the first two weeks, the conventional ovitraps are used to obtain the initial abundance of mosquito population in Block A, B and D. Both traps are placed along the corridors and near the staircase of each level. The tissues in the traps are collected once every two weeks and the attached mosquito eggs are counted. Ovitrap Index (OI) and the Hatching Index are calculated to measure the effectiveness of the traps. Paired sample T-test is used to analyze the significant reduction of mosquito population after the intervention is done, together with other factors such as level and blocks involved. Analysis of Variance (ANOVA) is used to determine the significant reduction in mosquito population compared to the control group.

**Preliminary Findings:**

The mosquito population at Block A and B is significantly higher than of Block D. There is no association between the altitude, where the mosquito trap being placed and the mosquito population. **Expected**

**Result:**

The AedesTech Mosquito Home System is expected to be effective in reducing the mosquito population in 17<sup>th</sup> College, UPM.

Keywords: dengue fever, *Aedes* mosquito, ovitrap, AedesTech Mosquito Home System

**CURCUMIN REDUCES OXIDATIVE STRESS INDUCED BY WOOD SMOKE AND PROMOTES DIFFERENTIATION OF PERIPHERAL BLOOD MONONUCLEAR CELLS INTO ENDOTHELIAL PROGENITOR CELLS**

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**Background:**

During haze period, the number of reported deaths and hospital admissions related to adverse cardiovascular events increased drastically in Malaysia. Haze contains ultrafine particulate matter (PM) that can cross the lung-blood barrier and interact with peripheral blood mononuclear cells (PBMCs). Interactions between PM and PBMCs may have negative effects on the coronary collaterals formation through inhibition of PBMCs to differentiate into endothelial progenitor cells (EPCs). EPCs are required for neovascularization process to form the “mothernature by-pass”. In this study, we hypothesized that wood smoke, which was produced during haze, impaired the differentiation of PBMCs into EPCs, and curcumin treatment could rescue this impairment.

**Methods:**

PBMCs were isolated from the blood of healthy donors, seeded in fibronectin-coated wells and incubated for 4 days at 37°C, 5% CO<sub>2</sub>. PBMCs were treated with 40ug/ml wood smoke extract (WSE40), 5µg/ml curcumin (Cur), and pre-treated with 5ug/ml curcumin followed by 40µg/ml WSE (Cur/WSE40) for 48hrs, with untreated PBMCs as control. Morphology and cell viability of the samples were studied using light microscope and MTS assay respectively. The expression of antioxidant genes *SOD1*, *CAT*, *GPX4* and *GSTP1* in all samples were assessed via real-time quantitative polymerase chain reaction.

**Results:**

Based on the morphology, PBMCs viability and differentiation into EPCs was inhibited by WSE. The inhibition was reversed through pre-treatment of curcumin. Cell viability assay showed lowered PBMCs viability (50.5%) in WSE40 samples ( $p < 0.0001$ , n=4). Meanwhile, Cur/WSE40 samples showed significantly increased viability of 264.3% ( $p < 0.05$ , n=4). Differential gene expression analysis showed increased expression of *CAT* and *GSTP1* in WSE40 sample ( $p < 0.05$ , n=1), indicating oxidative stress upon WSE40 treatment. In contrast, Cur/WSE40 samples showed reduced expression of these genes, restored close to that of the control sample.

**Conclusion:**

Overall, the data indicated that WSE reduced viability and inhibited the differentiation of PBMCs into EPCs, through increasing cellular oxidative stress, resulting in increased expression of antioxidant genes as a response. Pre-treatment of PBMCs with curcumin reduced the level of oxidative stress induced by WSE and promoted differentiation. Our study shed light on the possible use of curcumin to circumvent oxidative burden and promote coronary collateral growth to restore the cardiovascular function and reduce the mortality risk during haze period.

**Link:**

**EVALUATION OF SECRETOR STATUS AMONG PEOPLE WITH DENGUE HISTORY BY DIRECT ELISA**

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Background, Methods, Results, Discussion and Conclusion. Length of abstract must not exceed 350 words.

**Background:**

Dengue disease is a mosquito-borne condition only occur when three components which are virus (flavivirus), vector (aedes aegypti and aedes albopictus) and host (human), that has become a major public health concern and emerging infectious disease worldwide and increasingly occurs in adults and children. Dengue cases report issued by the Ministry of Health on Oct 10, 2017 in which 71, 892 cases were reported nationwide with Selangor recording the highest number of cases. The aim of the study was to evaluate the secretor status among people with dengue history by using direct ELISA in Universiti Selangor, Shah Alam.

**Methods:**

Finger prick test and saliva samples were collected from 60 individuals with dengue history comprising 20 individuals in each blood group and 12 individual without dengue history. The direct Elisa was used to determine the blood group antigens in the saliva and then the results were correlated with the blood group of the collected blood sample. The compiled data was statistically analyzed using Kruskal-Walis H.

**Results:**

The result show positive and negative by color changes and the results suggest that the FUT2 gene, which determines the presence of ABO blood group in the saliva, is significantly between secretor and non-secretor of dengue history patient. Secretor status evaluation of the ABO blood group antigen in saliva using direct Elisa to detect probable dengue infection in risk population, especially in those with secretor status.

**Conclusion:**

For diagnosis of dengue, most tropical doctors make use of presumptive diagnosis however, the definite diagnosis should be based on immune diagnosis or viral study. Secretor status can be part of routine investigations to assess the disease status and to check an individual's susceptibility to manifest the dengue disease.

**Link:**

**STABILITY TEST FOR 100 BASE PAIR DNA LADDER GENERATED FROM  
POLYMERASE CHAIN REACTION USING BRIDGING INTEGRATOR 1 GENE AS  
DNA TEMPLATE**

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Background, Methods, Results, Discussion and Conclusion. Length of abstract must not exceed 350 words.

**Background:**

DNA ladder or DNA marker is used for determining the size or molecular weight of the DNA fragments in the molecular field. This study focused on the development of DNA ladder using conventional PCR technique. There were four fragments from 100 to 400 bp successfully produced in this study utilizing *BIN1* gene as the template.

**Methods:**

Five primers were designed to amplify four fragments to produce 100 to 400 bp. The primers were designed based on Homo sapiens of the *BIN1* gene sequence. One forward primer namely F\_BIN1 and four reverse primers (R\_BIN1\_100, R\_BIN1\_200, R\_BIN1\_300 and R\_BIN1\_400) were designed with the aid of Oligo Explorer 1.2 Software according to general primer design guidelines. The DNA fragments were amplified by using GoTaq® Green Master Mix. The 100 to 400 bp DNA fragments were stored in three different temperatures which were -20°C, 2-8°C and room temperature. The change in band intensity was observed for 13 weeks.

**Results:**

The 100 to 400 bp DNA fragments were successfully generated. The PCR bands formed by the PCR products were clear and the size of each fragment accordance with the commercialized DNA ladder. Observation of stability shows the generated ladder stable at -20°C for 13 weeks, 10 weeks for 2-8°C before showing signs of degradation and two weeks for room temperature.

**Conclusion:**

The observation period was shortened from initial plan due to time constraint. It would be much more efficient if the observation period can be extended. For future studies, the 500 to 1000 bp should be generated and the visualization of DNA ladder stored at room temperature should be observed daily instead of weekly to observe the changes in intensity.