

ABSTRACT BOOK



INTERNATIONAL HEALTH CONFERENCE IIUM (IHCI) 2014

"HEALTH SCIENCES TRANSFORMATION TOWARDS
HIGH QUALITY OF LIFE"

3rd - 4th December 2014
Swiss Garden Resort & Spa,
Kuantan, Pahang,
MALAYSIA



الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
بُونَيِّ رِسِيَّتِي اِسْمَاكُرْ اَنْبَارِ اِبْحَسِبَا مِلْدِسِيَا



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Introduction



The 2nd International Health Conference is continuity from the first IHCI initiated in year 2011 by the Department of Basic Medical Sciences for Nursing (BMSN), International Islamic University of Malaysia (IIUM). It was one of initiatives in introducing BMSN to the community, and particularly to those involved in the medical fields and research.

The first IHCI at once raised the IIUM's name in general and particular BMSN globally. This year, we aim to organize the second IHCI with a theme of "Health Sciences Transformation towards High Quality of Life" in order to attract more delegates from health professionals in Malaysia and the Islamic community also around the globe. In addition, it is also expected to provide and stimulate latest updates in regenerative medicine, toxicology and criminology, alternative medicine, molecular biology, and epidemiology.

This high-profile conference will be a unique opportunity to build the future in the context of globalization and regeneration in medicine taking into account the need to protect health worldwide. It will inform responsible parties and decision makers about the important links between the health of people and their relations with the environment. The conference will bring together participants from both the public and private sectors to analyze the societal benefits, including public health and environment.



Objectives

- To discover latest issues and updates in regenerative medicine which is promised brighter hope for uncured illness
- To explore recent preventing methods, safety and addiction of toxicology and criminology research to improve safeness of daily life
- To learn the applicability, effectiveness and abuse in alternatives medicine in order to expand innovative horizon in treating disease
- To incorporate high technology approaches in molecular biology to substantiate the latest findings in widely diverse medical research
- To assemble enormous information of local pandemic and infectious diseases for anticipating future health and epidemiological changes

Participants

- Students, health professionals (medical doctors, nurses, dietitians, pharmacists, etc) and scientists whose works are focused on the state-of-the-arts approaches in health and medical sciences.
- Educators as well as persons interested in the relationship between religion and medical sciences are welcome to participate.

Topics

- AAALAC International: Updates & Issues in the Care & Use of Animals
- Regenerative Medicine: Issues and Updates
- Toxicology and Criminology: Crime Scene Investigation
- Alternative Medicine: Cupping Therapy in Reducing Cardiovascular Disease
- Molecular Biology: High Technology Approaches - The development of Enzymes as Biosensors
- Epidemiology: Local Epidemic and Pandemic of Emerging Viruses
- Collaboration Research: Transform Health Sciences Towards High Quality of Life



GREETINGS FROM THE RECTOR



*“aiming to improve
the well-being of
mankind”*

Dear Conference Participants:

Praise be to the Almighty Allah (swt), for granting us the opportunity to organize the International Health Conference (IHCI) 2014 in Swiss Garden Resort & Spa, Kuantan Malaysia.

International Islamic University Malaysia (IIUM) is honored to be the host of this prestigious biennial conference. It is therefore a great pleasure to Welcome all of you, speakers, presenters and participants who come from all corners of the globe to this auspicious conference.

This conference is a timely event, bringing together leading scholars in the field of medical and health sciences, aiming to improve the well-being of mankind, and in particular in terms of better quality of life.

On behalf of the university, I would like to take this opportunity to thank the organizing committees, ICRACU, the co-host and everyone whom directly or indirectly working to ensure the success of this conference.

I pray to Allah (swt) to bless this conference with His mercy and bounties, I wish you all the best and hope your presence in Kuantan will be a memorable one

With warmest personal regards,

Prof. Dato' Sri Dr. Zaleha Kamaruddin
Rector, International Islamic University Malaysia



Organizing Committee

Advisor : Asst. Prof. Dr. Ridwan bin Abdul Wahab
Chairman : Asst. Prof. Dr. Muhammad Lokman Md. Isa
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Sr. Faizah bt Abdullah Asuhaimi
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Br. Nik Ahmad Zaquan bin Hamad
Sr. Noor Faizah bt Kamarudin
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Sr. Nur Syamim bt Rahmat
Sr. Nurwahida Atira bt Nordin
Br. Syed Muadz bin Syed Ismail
Sr. Nurulhanum bt Mat Tasir
Sr. Syaza Sailah bt Mohd Nasir



Conference Itinerary

Day 1 – 2nd December 2014 | Tuesday

1600 – 2100 Registration & Information

Day 2 - 3rd December 2014 | Wednesday

0800 – 0830 Registration & Arrival of participants
0830 – 0850 Arrival of VIP's, National Anthem & IIUM Song
0850 – 0855 Recitation of Doa
0855 – 0905 Conference Briefing
0905 – 0935 Demonstration Session: Forensic Unit, Royal Malaysia Police
0935 – 0950 Welcoming Remarks
Asst. Prof. Dr Muhammad Lokman Md Isa
Chairperson, IHCI 2014
Official Opening
Hon. Prof. Dato' Sri Dr. Zaleha Binti Kamarudin
(Rector, IIUM)
Venue: Grand Ballroom
0950 – 1000 Exhibition Booth Visit
Venue: Ballroom Foyer
1000 – 1100 Poster session I and Coffee-break
1100 – 1200 Plenary Session I
Venue: Grand Ballroom
Keynote Speaker #1 – Professor Dr Ahmad Faris Ismail
*"Collaboration Reseach: Transform Health Sciences
Towards High Quality of Life"*
1200 – 1300 Lunch Talk :
Dr. Thuan D. Bui, CEO i-DNA Biotechnology Pte Ltd
1300 – 1400 Lunch & Prayer Break



CONCURRENT SESSION I

1400 – 1500	Keynote Speaker #2 – Professor Abu Bakar Salleh <i>“Molecular Biology: High Technology Approaches”</i>
1500 – 1615	Oral Session II : Molecular Biology
1400 – 1500	Keynote Speaker #3 – Dr. Montip Gettayacamin <i>“AAALAC International: Updates and Issues in the Care & Use of Animals”</i>
1500 – 1630	Oral Session III : Collaboration Research
1630 – 1800	Poster Presentation and Judging (Session II & III) <i>Topic: Molecular Biology & Collaboration Research</i> Tea-break

Day 3 - 4th December 2014 | Thursday

CONCURRENT SESSION II

0830 – 0930	Keynote Speaker #4 – Professor Wing-Hong Seto <i>“Local Epidemic and Pandemic of Emerging Viruses”</i>
0930 – 1045	Oral Session IV : Epidemiology
0830 – 0930	Keynote Speaker #5 – Professor Dr. Abdul Aziz Al-Safi <i>“Cupping Therapy in Reducing Cardiovascular Diseases”</i>
0930 – 1100	Oral Session V : Alternative Medicine
1100 – 1130	Poster Presentation (Session IV, V, VI & VII) Coffee-break

CONCURRENT SESSION III

1130 – 1230	Keynote Speaker #6 – Professor Kyung-Sun Kang <i>“Regenerative Medicine: Issues and Updates”</i>
1230 – 1345	Oral Session VI : Regenerative Medicine
1100 – 1200	Keynote Speaker #7 – Asst Comm. of Police Dr Yew Chong Hooi <i>“CSI: Crime Scene Investigation”</i>
1200 – 1315	Oral Session VII : Toxicology & Criminology
1345 – 1430	Lunch-break and exhibit session
1500 – 1600	Poster Judging (Session IV, V, VI & VII) <i>Topic : Epidemiology, Alternative Medicine, Regenerative Medicine & Toxicology and Criminology</i>
1600 – 1630	Closing Ceremony Professor Mohamed Ridza bin Wahiddin (Deputy Rector, Research & Innovation, IIUM) Venue: Grand Ballroom
1630 – 1700	Demonstration Session: Fire & Rescue Dept. Malaysia
1700 – 1800	Certificate Collection Refreshment



List of Speakers

Prof Dr Ahmad Faris Ismail
Professor in Engineering
International Islamic University Malaysia

Prof Abu Bakar Salleh
Professor in Biotechnology
Universiti Putra Malaysia

Dr Montip Gettayacamin
Regional Director for Southeast Asia AAALAC

Prof Wing-Hong Seto
Professor in Microbiology and Infection Control
Queen Mary Hospital, Hong Kong

Prof Dr Ab Aziz Al-Safi Ismail
Professor in Epidemiology of Non-Communicable Diseases,
Diabetes, & Clinical Trial, University Sains Malaysia

Prof Kyung –Sun Kang
Director of Adult Stem Cell Research Centre
Seoul National University

Senior Asst Comm of Police Dr Yew Chong Hooi
Commandant Royal Malaysia Police College
Kuala Lumpur



COLLABORATION RESEARCH



SURFACE MUCUS CHANGES OVERLYING THE TRANSITIONAL MUCOSA OF THE DISTAL COLON IN MALAYSIAN PATIENTS

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Colorectal cancer (CRC), the third most diagnosed cancer throughout the world is steadily rising in the Asian countries. The pre-neoplastic nature of the Transitional Mucosa (TM) adjoining CRC lacks conclusive evidence so far. Pertaining to this, the study of the mucus layer, the functional component of the colonic mucosa overlying the TM is the subject of interest in this research. The normal samples were biopsied from normal subjects by colonoscopy. Ten cases of CRCs of the distal colon who underwent anterior resection were chosen for this study. Three samples were taken 2cms, 5cms and 10cms from the colorectal cancer of the distal colon in the proximal margin. These samples were processed and viewed under the scanning electron microscope (SEM) to look for the changes in the mucus layer. The findings show that the changes were consistently found 2cms from the tumor and only one case showed changes up to 5cms. The statistical tests using SPSS version 18 revealed that there was no association between the surface mucus changes and the age, gender, race, site of tumor, differentiation of tumor and clinical staging of the patients. It was concluded that there was no correlation between the structural and functional changes of the surface mucus overlying the distal colon during carcinogenesis. Furthermore, it can be stated that the functional change may be as a result of the structural change due to a nearby tumor.

Keywords: CRC, surface mucus, colonic mucosa, TM, scanning electron microscope



THE EFFECT OF BODY MASS INDEX (BMI) ON THE PERFORMANCE IN PRAYER BY MUSLIMS: PRELIMINARY REPORT ON A STUDY ON RANGE OF MOTION STUDY OF THE HIP AND KNEE

¹MOHD ARIFF SHARIFUDIN

¹Abmad Afiq Arshad, ¹Muhammad Hafiz Jobari, ¹Muhammad Ali Sajjad Rabimin Affandi, ¹Mai Nurul Ashikin Taib, ²Che Anuar Che Mohamad, ²Rosazra Roslan, ¹Norbafiza Ab Rahman.

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Praying or solah, represent a paramount and fundamental activity of daily living in Muslim community. Muslims need to adopt several postures that require deep flexion of the knee and hip to perform this daily obligation. The intention of this study is to simultaneously obtain normative passive and functional range of flexion data during Muslim prayers in the knee and hip joints of normal Muslim adults. A cohort of Malay men aged between 20 to 30 years was recruited in this cross-sectional study. Passive range of motion and flexion angles of the hip and knee joints in various postures during prayer were measured using a standard goniometer. The difference against existing normative range of motion database available and the influence of various factors formed the core matter of this study. Factors analyzed include body mass index (BMI), length of limbs, abdominal and limb circumferences. 60 participants were recruited for the preliminary phase of this study. The mean (SD) of the passive hip flexion and passive knee flexion were higher compared to other existing normative range of motion database. The BMI demonstrated a significant correlation with the passive range of motion of the knee joint but not statistically proven with the hip joint. The hip and knee flexion arc in this study were from 74.1° to 119.0° and from 3.3° to 119.7° respectively for the young Malay male adults performing prayers. The ROM involved for prayers was more for the knee joint and less for the hip joint as compared to the measured passive ROM. This reflects that a higher knee flexion angle compared to hip flexion is necessary to attain the sitting postures. BMI has a significant linear negative relationship with the knee passive ROM. A unit increase in BMI will have 0.782 units lower of ROM of the knee joint.

Keywords: Joint range of motion, hip articulation, knee articulation, Muslim anthropometry, Muslim prayer



EFFECTS OF PROBIOTICS ON BONE MINERAL CONTENT (BMC)

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Calcium is one of the vital nutrients and plays a key role in many essential biologic processes such as bone mineralization. One of the main sources of calcium is from dairy products, but currently the consumption of milk and milk product is decreasing. Furthermore, not all calcium in the food is absorbed by the body. Thus enhancement of calcium absorption is vital for bone formation. This study investigates the effect of probiotics (*Bifidobacterium longum*, *Lactobacillus helveticus* and their mixture) on calcium bioavailability and bone mineral content. Thirty-five female mature Sprague–Dawley rats aged 10 weeks old, with mean weight of 280-290g were enrolled in this study. The rats were randomly divided into 5 groups; 2 positive and negative controls and 3 intervention groups. Prior to the experiment bilateral ovariectomy (ovx) was performed for 4 groups of the rats to simulate postmenopausal condition for lower mineral absorption. The surgical process and diets are as the following: Sham-ovariectomized (S-ovx), ovx, ovx + *B. longum*, ovx + *L. helveticus*, and ovx + mixture of *L. helveticus* and *B. longum*. The minerals in the bone were measured with bone ash using atomic absorption spectrophotometer (AAS). After 16 weeks of intervention *L. helveticus* (98.5±30.4mg/day), *B. longum* (70.7±4.4mg/day), and the mixture groups (50.3±14.3mg/day) showed increases in calcium absorption compared to the negative control group (46.4±20.1mg/day) and increases in calcium bone mineral content for *L. helveticus* (487.2±2mg/L), *B. longum* (484.9±3.5mg/L), mixture group (484.8±4mg/L) versus negative control (484.1±1.3mg/L). *L. helveticus*, *B. longum* showed the highest increase in calcium absorption and bone mineral content in OVX rats. Hence health care strategy should consider adding probiotics as a functional food to dairy or other food products for the purpose of enhancing minerals including calcium to increase bone mineral content.



A PRELIMINARY STUDY ON THE OCCURRENCE OF SOIL-TRANSMITTED HELMINTHS AMONG STANDARD ONE SCHOOL CHILDREN IN URBAN AND PERIPHERAL AREAS KUANTAN, PAHANG, MALAYSIA

¹**MARDHIAH M.**

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Soil-transmitted helminths or STHs are nematode that can infect human and causes soil-transmitted helminth infections (STHIs). In impoverished areas of the countries around the globe, STHI persists to infect mankind and cause a health burden especially among the school-aged children. These infections are classified as one of the seven most common neglected diseases. The nematodes that are responsible for STHIs are *Ascaris lumbricoides*, *Trichuris trichiuria* and two species of hookworm, namely *Ancylostoma duodenale* and *Necator americanus*. Favorable environment in Malaysia further augment the transmission of STHs. Hence, this epidemiological study is essential to provide latest data pertaining health status due to STHIs. Moreover, high numbers of related studies were done in 1970s and had decreasing since then. Furthermore, because STHIs were closely associated with poverty, poor sanitation and hygiene practice, lack information on STHs was available for the urban areas. Thus, this study aims to determine the occurrence of STHs from the stool of standard 1 school children at Sekolah Kebangsaan Bukit Goh and Sekolah Kebangsaan Bandar Indera Mahkota Utama. The objectives of the study are to detect *A. lumbricoides*, *T. trichiuria* and hookworms, to compare the occurrence of STHs between urban and peripheral areas and to investigate and identify the possible risk factors associated with STHIs. The stool samples obtained were processed by formal ether concentration technique and stained by giemsa and trichrome staining. From the study, generally, *T. trichiuria* was detected as the highest STHs. When the findings were stratified according to location of schools, *A. lumbricoides* and *T. trichiuria* had the highest occurrence in urban and peripheral areas, respectively. In addition, inadequate maternal education, low average family income, and poor hygiene especially did not cutting nails and washing fruits prior to consumption were the factors responsible for the occurrence of STH eggs among the infected children.



PROCESSED SOY SNACK FOR SUPPLEMENTATION TO PREVENT LEUCEMIA FOR GAS STATION ATTENDANT

¹SITI MEI SAROH

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The task demand of petrol worker, especially the operators are very high, they have to work at a long time standing to serve buyers, moreover they get exposure of petroleum for hours and hours. They have to work at the morning, afternoon and at night. Where every employee works every 8 hours per day. Short rest periods and low salaries cause the worker cannot get enough to prevent from disease. Though working at the pump highly at risk for exposure to benzene. Food consumption can affect the metabolism of the body resistance in a toxin, as well as on gasoline containing benzene and lead. Repeated exposure to gasoline without the use of an appropriate mask can increase their vulnerability to toxins from the gasoline. The incidence of gas-exposed population with leukemia growing larger every year, this was due to the presence of benzene which is carcinogenic toxins to the body. This work uses a method of Literature Studies using scientific foundation in the form of journals and reliable books. The solution is providing a healthy food supplementation programs for petrol worker using cheap and reached various snack with soy-based materials. Based Sussi (2008) soy is one of the seeds contain isoflavones, which the isoflavones act as antioxidants and glutathione to prevent benzene bioaktivation non-carcinogenic compound. There will be a lot of variant of soybean product, such as soy milk or in the form of bars with addition ingredient. We expect this supplementation can reduce the number of the carcinogenic effects of benzene can cause leukemia. With a high content of the antioxidant GSH and practicality we expect we can make a significant contribution to improving the health of workers and reduce the prevalence of childhood leukemia gas stations adverse health worker.

Keyword: Processed Soybeans, benzene, petrol worker



THE EFFECTS OF FAMILY DYNAMIC TO PSYCHOLOGICAL ASPECTS OF TRANSSEXUALS AT KUANTAN, PAHANG IN 2012

¹SAMSUL DERAMAN

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The purpose of this paper is to show the relationship of male transsexuals with their family structure as well as the level of depression, anxiety and stress. This paper will highlight that there are strong influence of their family relationships with their psychosocial problems. The general objective for this study is to determine the family values and psychological factors among transsexual community in Kuantan, Pahang. The specific objectives include describing their socio-demographic status, measuring the prevalence of their psychological factors in term of depression, anxiety and stress as well as to measure the family values of transsexuals in terms of total family value, togetherness and harmony, expression, relationships and family dynamic, conflict and centric and lastly religiosity and traditional practice. This study will also describe the association between family values and the psychological factors. The study employs three interview-filled forms which are socio-demographic form, Asian Family Characteristics Scale and Depression Anxiety Stress Scale (DASS 21). Among 40 respondents, 14 of them were depressed (35%), 18 were anxious (45%) and 14 were stressed (35%). For family relationship, 20 of them are having poor total family value (50%). On further analysis, result shows that those who are having poor total family value are 4 times more likely to develop depression and 7 times more likely to develop stress compare to those who are having normal total family value. In conclusion, this study reveals that family values have a significant effect on psychological aspects of the transsexuals.

Keywords: Transsexuals, family value, depression, stress, anxiety



THE PRESENCE OF CRYPTOCOCCAL ANTIGEN IN CLINICAL SAMPLES FROM SUSPECTED CRYPTOCOCCOSIS PATIENTS

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Cryptococcosis is a major opportunistic infection among AIDS patients and cryptococcal meningitis is the most common form of disease associated with a high mortality rate. The incidence of cryptococcosis is higher among AIDS patients in Africa and Southeast Asia, including Malaysia, compared to European countries and the United States. This study describes the detection of cryptococcal antigen from patients' samples that were sent to Mycology Laboratory IMR from 2010 to 2013. Samples for investigation of cryptococcosis were received from 32 hospitals and private laboratories in Malaysia. A total of 232 samples, consisting of 76 cerebrospinal fluids (CSF) and 156 sera were tested for cryptococcal antigen using Latex-Cryptococcus Antigen Test kit (IMMY). Thirty nine samples were positive for cryptococcal antigen, in which six samples were CSF and 33 samples were serum. Six of the positive samples were from HIV positive patients. Twenty-nine (18.6%) out of 156 samples from male patients were positive, while only 10 (13.2%) out of 76 samples from female patients were positive for cryptococcal antigen. From this study, we found a positivity of 16.8% among the samples submitted for investigation of cryptococcosis.

Key words: Cryptococcosis, Cryptococcal antigen, Cryptococcus neoformans, Malaysia.



VARIATION OF VITAMIN B12 LEVELS IN CIRRHOTIC PATIENTS

¹HASNAIN ABBAS DHARAMSHI

¹Abmad Faraz, Muslebuddin Kalar, ¹Farwa Fatima
¹Pakistan

Objective: To determine changes in vitamin B12 plasma levels in patients with chronic cirrhosis and to analyze its association with elevated liver enzymes. Design: Retrospective study. Setting: Cirrhotic patients of Abbasi Shaheed Hospital. Participants: 100 patients admitted for decompensated Cirrhosis including 44 males and 56 females. Variable parameters: They include mean age and vitamin B12, ALT and GGT levels in blood. Results: Vitamin B12 levels were 1249.59 ± 487.01 pg/ml and 1422.28 ± 627.75 pg/ml in males and females respectively. They were found to be positively correlated with the elevation of ALT to be 41.70 ± 10.62 in males and 45.01 ± 13.74 in females and GGT to be 43.86 ± 14.81 in males and 49.75 ± 14.21 in females. Conclusion: Cirrhotic patients suffering from severe hepatocellular damage have their levels of Vitamin B12 elevated in plasma accompanied by a positive association with elevated ALT and GGT plasma levels.

Keywords: Cirrhosis, Vitamin B12, ALT, GGT



LATE FOLLICULAR HYPERPROLACTINEMIA (LF-HPRL) IS NOT A DISEASE

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Prolactin (PRL) is an exceptional hormone of pituitary gland with important implications for normal reproduction as well as for sexual behavior. It increases in the first trimester of pregnancy (physiological hyperprolactinemia). The objective of this study is to evaluate the effectiveness of LF-HPRL as an indicator for early ongoing pregnancy in patients undergoing infertility treatment. One hundred and eleven infertile women were involved in the present study. They were divided into: study group=76 pregnant women and 35 non-pregnant women as a control group. All women in both groups had been treated due to hyperprolactinemia until their PRL levels were normal. Later, after one cycle, both groups had been enrolled in a controlled ovarian hyperstimulation (COS). Their husbands were reproductively fertile. All women with an additional factor of infertility had been excluded. The COS was aimed to get 2-3 mature follicles/women/cycle. During study, the ovulation, pregnancy, abortion, cancelation and live-birth rates were evaluated. No significant differences between the groups regarding age, BMI and baseline hormonal investigation (FSH, LH, LH/FSH, testosterone, estradiol and PRL ($P < 0.03$). The progesterone level at the day 21 of cycle was significantly difference between study and control groups, (4.52 ± 4.91 and 5.36 ± 4.73 , respectively, $P < 0.02$). The serum PRL at the 28 day of ovulation induction cycle was significantly difference between study and control group (28.32 ± 11.89 and 7.53 ± 5.69 , respectively, $P < 0.001$). The ovulation, ongoing pregnancy, life-birth rates were significantly higher in study group in compare to control group ($P < 0.001$). The early abortion and cancelation rates were significantly higher in control in compare to study groups ($P < 0.001$). High level of serum prolactin levels in the late follicular menstrual phase or LF-HPRL in infertile women treated by ovulation induction after complete hyperplactinemic therapy could be used as an indicator for early pregnancy. Treatment of LF-HPRL not recommended.



KNOWLEDGE, ATTITUDE AND PRACTICES (KAP) OF INTESTINAL HELMINTHS AND PROTOZOA INFECTIONS AMONG PARENTS OF SEKOLAH KEBANGSAAN BUKIT GOH AND SEKOLAH KEBANGSAAN SUNGAI TALAM, KUANTAN, PAHANG, MALAYSIA

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Intestinal helminths and intestinal protozoa infections are one of the leading causes of diseases among young people and adults in the world today. Low socio- economic status, overcrowded areas, poor environmental sanitation, inappropriate garbage disposal, lack access to safe water and unhygienic personal habits are among the factors which contribute to the increase number of prevalence in intestinal parasitic infection. The study is crucial and beneficial to provide the latest data and information for actions by government and for appropriate control measures to be determined and undertaken. Hence, this research aimed to evaluate and compare the KAP of intestinal protozoa and helminthes among parents of Sekolah Kebangsaan Bukit Goh and Sekolah Kebangsaan Sungai Talam in Kuantan, Pahang. A cross-sectional study was conducted and a total of 136 parents of school children were selected randomly from both urban and peripheral areas. Sixty eight respondents from Sekolah Kebangsaan Sungai Talam represent the parents of school children in urban area and sixty eight respondents from Sekolah Kebangsaan Bukit Goh represent the parents of school children in peripheral area. In this study, fifty percent of the respondents from Bukit Goh did not know that faeces are the primary source of infection and they have never heard about intestinal parasitic infections. However, the findings showed that there was no significant difference between KAP of intestinal helminths and protozoa infection among parents from both areas in terms of low income and high income. In this study, the income factor did not give any guarantee on the knowledge, attitudes and practices toward the intestinal helminths and intestinal protozoa infections. Awareness to the public regarding the intestinal parasites and good hygiene behavior were needed to expose the public about the intestinal helminths and protozoa infections.



GALACTOGOGUES CONSUMPTION AMONG BREASTFEEDING MOTHERS IN Kuantan, PAHANG

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It is well recognize that breast milk give many benefits to the infants. The best nutrition for early months of growth for normal infants is exclusive breastfeeding as suggested by Canadian Paediatric Society (CPS). Almost all reasons that have been documented for discontinuance of breast milk are perception of insufficient production of milk. In order to increase the amount of milk, many breastfeeding mothers take an effort to take supplement, known as galactogogues which been claimed to increase quality and quantity of breast milk. However, the exact effect of galactogogues is still questionable. This study aims to determine the association between the effects of galactogogues on milk production and socio-demographic data, period of breastfeeding, practice of complementary breastfeeding or exclusive breastfeeding, problem during breastfeeding and frequency of consumption. Besides that, this study also aims to identify the prevalence of most preferred type of galactogogues consumption among mothers in Kuantan, Pahang. Apart from that, it was conducted to determine the association between knowledge and practice of galactogogues consumption among breastfeeding mothers in Kuantan. This is a cross-sectional study and 120 respondents were selected by using purposive sampling. The questionnaire forms were distributed among mothers in Kuantan area which was Taman Tasik Bandar, Indera Mahkota, Pahang and via online survey. The questionnaires consist of 61 questions which divided into four sections. Chi-square test was used to determine the association between effect of galactogogues on milk production and socio-demographic data and parameter in breastfeeding among mothers in Kuantan. Whereas, in identifying the most preferred type of galactogogues consumption, Mc Nemar test was used. Chi-Square test was used to find out the association between knowledge and practice of galactogogues consumption among breastfeeding mothers. The result showed there was a significant association between effect of galactogogues consumption on milk production and period of breastfeed, inadequate breast milk supply and frequency of consumption. Food was most significantly preferred as compared to herb and drug. There was a significant association between knowledge and practice of galactogogues consumption among breastfeed-ing mothers in Kuantan. In conclusion, knowledge of galactogogues consumption among breastfeeding mothers in Kuantan was good and the practice was prevalent among them.



IMAGERY- INDUCED RELAXATION AS A PSYCHOLOGICAL INTERVENTION TOOL IN CHILDREN WITH CANCER

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Psychologically-directed therapies have been shown to be effective in reducing stress and enhance well-being. The objective of this study was to develop an imagery-induced relaxation (IIR) audio in Bahasa Malaysia as an interventional psychological tool and pilot test it to a group of paediatric oncology patients in the hope to improve the patient's well-being as a whole. 18 cancer children were recruited for this study. The imagery-induced relaxation (IIR) tool was developed where face and content validation were obtained via reports from experts. An interventional study was conducted to look at the effect of the IIR audio in modifying the physiological and mood indicators as well as the quality of life score in children with cancer. The quality of life scores were measured using the PedsQL 4.0 Generic Core Scale and PedsQL 3.0 Cancer Module. The physiological relaxation indicators were measured using a self-constructed rating scale. Mood and pain were measured using the Ottawa-Georgia Mood Faces Scale and Wong-Baker Pain analogue scale. Multiple comparisons between the pre and post intervention was analysed with Friedman test with Bonferroni correction to detect the differences in indicators score across over time. There was no significant difference in the quality of life score. However, the differences in all the physiological indicators; calmness of heart beats ($\chi^2 (4) = 21.02, p = <0.001$), feeling of comfortness ($\chi^2 (4) = 24.80, p = <0.001$), perception of no pain ($\chi^2 (4) = 16.20, p = 0.003$) and feeling of perceived strength ($\chi^2 = 17.50, p = 0.002$), mood; stress ($\chi^2 (4) = 17.731, p = 0.001$), sad ($\chi^2 (4) = 13.522, p = 0.009$), anxiety ($\chi^2 (4) = 12.290, p = 0.015$) and anger ($\chi^2 = 16.905, p = 0.002$) and pain ($\chi^2 (4) = 9.882, p = 0.042$) between time (pre and post intervention) were significant. The mean rank for all the indicators showed improvement with time indicating better physiological response, mood and less pain. This study has successfully become a pioneer in developing an imagery induced audio in Bahasa Malaysia, which is feasible and enjoyable by children. The imagery-induced relaxation audio has also shown potential benefit in inducing positive effects on physiological indicators of relaxation, mood and pain in cancer children. Future randomized controlled trials are needed to confirm our findings.

Keywords: Guided-imagery, psychological tool, cancer, children.



***Baccaurea angulata* FRUIT JUICE MODULATES CHOLESTEROL INDUCED ATHEROSCLEROTIC MARKERS IN EXPERIMENTAL RABBITS**

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The aims of this present study were to investigate the potential antioxidant, anti-inflammatory and plaque-reducing activities of *Baccaurea angulata* (BA) fruit as a new anti-atherogenic plant. Twenty five male rabbits of New Zealand strain were randomly assigned to five groups. Rabbits were fed either a standard chow diet (group N) or a high-cholesterol diet (groups CH, C1, C2 and C3). Groups C1, C2 and C3 were also given 0.5 or 1.0 or 1.5ml/kg/day BA whole fruit juice, respectively. BA juice had high antioxidant activity indicated by the increase in the superoxide dismutase (SOD) activity and total antioxidant capacity (TAC), when comparing the C1, C2 and C3 groups with group CH. In the group CH, there was an increase in C-reactive protein (CRP) and interleukin1 (IL-1) levels as compared to C1, C2 and C3 groups. Likewise, BA juice reduced plaque formation in rabbit aortas. Therefore, BA juice is beneficial in preventing atherosclerosis.

Keywords: Antioxidant, anti-inflammatory, atherosclerosis, *Baccaurea angulata*



RETINAL VASCULATURE FRACTAL DIMENSION: WHAT DOES IT MEASURE?

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It has been hypothesized that fractal dimension indirectly measures the density of the blood vessel in a predefined region of interest. However, there is no quantitative evidence to support this hypothesis. The goal of this study was to provide the empirical evidence of fractal dimension as an indirect measure of retinal vasculature density. Right eye retinal images were collected from the baseline visit (January 2009 to June 2012) of Optometry Clinic, International Islamic University Malaysia, Jalan Hospital Campus. Two hundred and one retinal samples of right eye (56.7% females (n=114) and 43.3% males (n=87)) were selected. A computer program, myVessel was used for vessel segmentation. The circular area of approximately 2.6 optic disc radii surrounding the center of optic disc was cropped. The non-vessels fragments were removed. FracLac was used to measure the fractal dimension and vessel density of retinal vessels. There is strong positive correlation between vessel density and fractal dimension ($r = 0.895$, $r^2 = 0.80$, $p < 0.001$). This study suggests that 80% of the variation in vessel density is predicted by the fractal dimension measurement.



***Baccaurea angulata* FRUIT INHIBITS LIPID PEROXIDATION AND INDUCES THE INCREASE OF ANTIOXIDANT ENZYMES ACTIVITIES**

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Baccaurea angulata is an underutilized fruit widely distributed in Borneo Island of Malaysia. The present study was conducted to investigate the effects of *B. angulata* whole fruit (WF), skin (SK) and pulp (PL) juices on malondialdehyde (MDA) levels, antioxidant enzymes (superoxide dismutase, glutathione peroxidase and catalase) as well as total antioxidant capacity (TAC) in rabbits fed high-cholesterol diet. Thirty-six male rabbits of New Zealand strain were randomly assigned to six groups. Rabbits were fed either a standard pellet (group NC) or a high-cholesterol diet (groups HC, PC, WF, SK and PL). Groups WF, SK and PL were also given 1 ml/kg/day *B. angulata* WF, SK and PL, respectively. *B. angulata* juice had high antioxidant activity indicated by a decrease in lipid peroxidation and an increase in the antioxidant enzymes and TAC, when comparing the WF, SK and PL groups with group HC. Therefore, *B. angulata* fruit is beneficial in preventing diseases where oxidative damage is involved, such as cardiovascular diseases.

Keywords: Antioxidant enzymes, *Baccaurea angulata*, Malondialdehyde, Underutilized fruit



STUDY THE RELATION BETWEEN ACCIDENTS, SLEEPINESS AND EXHAUSTION IN INDIAN TEXTILE INDUSTRIAL WORKERS

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Shift work is growing in modern society as an important tool for flexibility of work organization. The aim of this study was to examine the rate of exhaustion and sleepiness around the shift and non-shift workers and its relation to occupational accidents. This was a cross-sectional study on the workers of Indian Textile Industrial Group. They included 148 shift workers as the case and 141 non-shift workers as the control. A multi-part questionnaire including demographic characteristics, Piper Fatigue Scale (PFS) and Epworth Sleepiness Scale (ESS) were applied. The X^2 test and t-test were used to measure differences between variables. The mean of PFS scores in the two groups was significantly different ($p=0.045$), but the difference in the mean of ESS scores was not significant. Shift workers with the reported accident had a higher score on fatigue than shift workers with no accident ($p<0.001$) whereas the difference in the number of accidents in the two groups was not related significantly to the rate of sleepiness. The rate of fatigue or exhaustion and the number of the work accidents was more in the shift workers. Also, fatigue or exhaustion had a stronger relationship with the occupational accidents as compared to sleepiness. It seems that evaluation of exhaustion as compared to sleepiness is a more accurate factor for preventing work accidents.

Keywords: Textile workers, Textile Industry, Shift work, Sleepiness, Exhaustion or Fatigue, Accidents.



TITLE: POSITIVE CORRELATION BETWEEN THE NUMBER OF MUCOSAL GLANDS AND THE THICKNESS OF THE WALL OF THE APPENDIX IN ADULT MALES OF BANGLADESHI POPULATIONS

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Targeting the adult male population of Bangladesh and using post-mortem materials, the present study was aimed to find out any relationship between the number of mucosal glands and the thicknesses of the mucosa at three segmental levels (base, midzone and tip) of human vermiform appendix and to determine whether these findings should influence the clinical implications of appendix. In this cross-sectional observational study thirty adult males (age ranged from 18-67 years) post-mortem appendices and adnexa from Bangladeshi victims of road-traffic accidents were sectioned at the base, midzone and tip stained with hematoxylin eosin (H+E) stain and examined under microscope. Measurements were taken at the base, at the midzone and at the tip of the appendix and the mean of the three measurements were considered as the overall value. The correlation between the thickness of the mucosa and the number of mucosal glands was found out through regression analysis. The mean (\pm SD) of the overall thickness of the mucosa was 764.32 (\pm 272.16) μ m. Significant positive correlation was noted between the thickness of the mucosa at the base and the number of the mucosal glands in a section at the base and between the thickness of the mucosa at the midzone and the number of mucosal glands in a section at the midzone. In addition to being valuable from an anthropological perspective, the findings of this study are expected to help in understanding the prevalence and nature of appendicular pathologies in the Bangladeshi population.



EPIDEMIOLOGY



KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING HEPATITIS AMONG MEDICAL-AND NON-MEDICAL BASED UNIVERSITY STUDENTS

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Hepatitis is still a major public health problem globally, causing morbidity and mortality to hundreds of millions of people in the world (WHO, 2013). Realising this fact, this study aims to compare the knowledge, attitude and practice regarding hepatitis between medical-based and non-medical-based university students. One hundred and twenty students from the universities around the Klang Valley area participated in this cross-sectional study. They were selected using convenience sampling. Data on knowledge, attitude and practice regarding hepatitis were collected by self-administered questionnaire which had been validated prior to the data collection. Likert-scale format used in the questionnaire enables the total score to be computed for each section to be compared between the medical-based and non-medical-based students. The data were analysed by SPSS using Independent Samples *t*-test. Significant difference was found between medical-based and non-medical based students for the total score of knowledge, attitude and practice with the *p*-values of <0.001 for each variable. Knowledge, attitude and practice regarding hepatitis were significantly different between medical-based and non-medical based university students in this study.



MIXING PATTERN ANALYSIS OF HAND, FOOT AND MOUTH DISEASE IN SARAWAK, MALAYSIA

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First outbreak of hand, foot and mouth disease (HFMD) was reported in Malaysia in 1997. Sarawak remain the state with the highest number of reported cases. Children and adults have equal chance of being affected by the disease. This study aims to determine the relevant mixing pattern of HFMD among children and their contact with adults in Sarawak for year 2006 to 2012 based on specific age groups. Homogenous mixing are always assumed among the individuals of a population where all susceptibles are equally at risk of infection. However, in reality the individual mixing pattern may depend on factors such as age, social activities, lifestyle, etc. When exploring the impact of control strategies especially those targeting specific groups of a population, we need to consider the effect of non-random (heterogeneous) mixing patterns. The components of rate at which two specific individuals come into effective contact (β) were estimated using the average numbers of infectious of children and adults in Sarawak population. We solved the equations for the rate of susceptible individuals getting infected (λ) for both children and adults equations in matrix structures to calculate the parameter. The rate at which an effective contact is made between two specific children (for our case children below 7 years old) is very high. This result is supported by the number of HFMD cases that has been reported by Sarawak State Health Department where children aged seven years old and below are the most infected individuals. Intervention methods should be aimed primarily to children of age below 7 years old in order to control the spread of HFMD.

Keywords: Hand, foot and mouth disease (HFMD); mixing pattern; children; age; Sarawak.



THE RELATIONSHIP BETWEEN KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS TUBERCULOSIS AMONG COMMUNITY OF TAMAN SELASIH, KULIM, KEDAH

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Tuberculosis (TB) is ranked by World Health Organization (WHO) as the second killer of infectious disease worldwide after Human Immunodeficiency Virus (HIV) infection (Mokhtar *et al*, 2012). In view of that, this study is carried out to find the relationship between knowledge, attitude and practice towards tuberculosis among community of Taman Selasih, Kulim, Kedah. This is a cross-sectional study involving 102 participants who were selected using convenience sampling. A validated questionnaire using the Likert-scale format was used to gather the related information from participants. The participants were interviewed face-to-face during data collection. Correlation test used using SPSS found no significant association between the total score of knowledge, attitude and practice towards TB among the participants in this study. The r and p -values are 0.024 and 0.812 for knowledge vs attitude, 0.071 and 0.478 for knowledge vs practice and 0.161 and 0.107 for attitude vs practice, respectively. Knowledge and attitude does not affect the practice and similarly attitude was not affected by knowledge towards TB in this study.



PREDICTORS FOR GOOD SEIZURE CONTROL AMONG PATIENTS WITH EPILEPSY ON VALPROIC ACID AT HOSPITAL KUALA LUMPUR

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Valproic acid, a broad spectrum antiepileptic drug (AED), has been used widely in Neurology Clinic, Hospital Kuala Lumpur. Despite therapeutic drug monitoring availability for the assessment of serum drug concentration, the use of this AED often depends on clinical judgement. This study was carried out to determine the prognostic factors associated with favorable seizure outcome in patients who received valproic acid treatment. A retrospective cohort, observational study was conducted in Neurology Clinic, Hospital Kuala Lumpur. Seizure frequency was assessed from medical record, patients' own diary and verified by seizure diary supplied during this study. A total of 242 patients were recruited from January 2011 and followed up for a year. 126 patients with 'good response' (50% or more seizure reduction) were matched with 116 'control' patients (<50% seizure reduction). Possible predictors assessed were patient-related factors, illness-related factors and medication-related factors. Multiple logistic regressions were applied to identify the factors most predictive for 'good response'. Significant prognostic factors associated with good seizure response in patients with epilepsy on valproic acid were age at the initiation of AED [Adjusted OR 0.96, 95% CI (0.920, 0.995), $P = 0.027$], on valproic acid monotherapy [Adjusted OR 4.74, 95% CI (2.258, 9.947), $P < 0.001$], normal MRI/CT-scan [Adjusted OR 5.83, 95% CI (2.507, 13.552), $P < 0.001$], non-smoking [Adjusted OR 3.23, 95% CI (1.099, 9.473) $P = 0.033$] and absence of stress [Adjusted OR 19.98, 95% CI (9.255, 42.764), $P < 0.001$]. This study highlighted the important prognostic factors that were associated with favorable seizure response in patients with epilepsy on valproic acid.



NUTRITIONAL IODINE STATUS AFTER 3-YEAR OF UNIVERSAL SALT IODIZATION IN SARAWAK, MALAYSIA

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Owing to the condition of borderline iodine-sufficiency (median urine iodine concentration(UIC) = 101.9µg/L) as revealed from the 2008 National Iodine Deficiency Disorders (IDD) survey. A mandatory universal salt iodization (USI) was implemented in Sarawak thereafter. The purpose of this study was to perform a secondary data analysis of the Sarawak State IDD survey (2011) to determine the effectiveness of USI in Sarawak after 3 years of mandatory USI. The IDD survey was conducted between Jun 2011 to July 2011 involving 6 divisions in Sarawak (Sarikei, Mukah, Kapit, Sibu, Bintulu and Miri). In each division, three primary schools were selected using population proportionate to size sampling methodology. Subsequently, approximately 30-40 children were randomly selected from each standard (Standard 2 to 4) via systematic sampling. A total of 610 children were included in the survey. Thyroid size was determined by inspection and palpation while iodine excretion level in spot morning urine was measured using in-house micro method. The total goitre rate (TGR) was found to be 0.05% (n=2). The median urinary iodine concentration (UIC) level was 154.2µg/L (optimal) with interquartile range of 92.7-229.8µg/L. Only 11% (n=66) of them had UIC below 50ug/L (insufficient); whilst more than one third of them (n=197) had at least a more than adequate level of UIC. The findings of the present survey indicated that the mandatory universal salt iodization regulation was very effective in improving the iodine level of children in Sarawak. However, this study also revealed the need to have a regular and proper monitoring system on the UIC level in the communities to prevent excessive iodine intake.

Keywords: Universal salt iodization, iodine deficiency disorders, Urinary iodine concentration, Sarawak



BANGLADESH-FACING A DOUBLE BURDEN OF DISEASES

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To exemplify and review the findings associated with double burden of diseases in Bangladesh and recommend measures to be adopted to combat this situation in Bangladesh. Double burden of diseases, a menace mostly in the developed countries, is currently affecting many middle and low income countries (MLIC) including Bangladesh. The inevitability for proper understanding of the need for a joint intervention against both infectious diseases and non-communicable diseases (NCD) has arisen only recently. The reasons for the simultaneous existence of both types of diseases are certain common risk factors like excessive intake of calories and poor health hygiene. The other conditions are the lifestyle choices and genetic predisposition. Information on global & regional prevalence of communicable diseases and non-communicable disease was retrieved from documents available mainly on electronic databases, literature survey, on websites of specialized agencies, & analysis of the existing situation in Bangladesh was also held. The key to control of double burden diseases are primary prevention through promotion of healthy life style is necessary during all phase of life. These interventions should focus on preventing and controlling the risk factors in an integrated manner. Intervention at all levels of society, from communities to governments, private organizations and nongovernmental groups. The approach for sustainable prevention should focus on amplifying awareness of people about a perfect and healthy lifestyle and its consequences. In spite of such a fast growing private sector, Bangladesh does not have a comprehensive health policy with a vision for the totality of the health sector. As a steward for the health system, the Ministry of Health and Family Welfare is yet to come up with an overarching strategic direction for the health sector as a whole encompassing both the public and the private sector



SITUATIONAL ANALYSIS OF HIV/AIDS CONFECTION STD WITH IN KUALA LUMPUR, MALAYSIA, 2013

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In 2013, a total of 134 HIV/AIDS cases and 102 STD cases was register into the Disease Notification System in Kuala Lumpur. Statistic in 2009 shown that 55.2% of new HIV cases were attributed to injecting drugs and 32.0% through sexual transmission (heterosexual and homosexual/ bisexual) (Unggas, Ministry Of Health Malaysia, 2010). STD screening on HIV/AIDS cases has been implemented nationally since 1998. Individuals who are infected with STDs are at least two to five times more likely than uninfected individuals to acquire HIV infection if they are exposed to the virus through sexual contact. In addition, if an HIV-infected individual is also infected with another STD, that person is more likely to transmit HIV through sexual contact than other HIV-infected persons (Wasserheit, 1992). Studies have shown that treating STDs in HIV-infected individuals decreases both the amount of HIV in genital secretions and how frequently HIV is found in those secretions (Fleming, Wasserheit, 1999). Objectives of this study are to describe the epidemiological distribution HIV/AIDS with STD and give recommendations on the current STD screening program. All cases of STD with HIV/AIDS in 2013 from Titiwangsa area were collected from the national notification system and reviewed systematically. Case definition for this study , an adult or children > 18 years old confirmed with STD (positive serology for syphilis or gonococcal infection) and also diagnosed with HIV (serial positive ELISA and PA test for HIV antibody) staying in Kuala Lumpur in 2013. All case was laboratory confirmed. Descriptive epidemiological analysis was done on risk factor and out-come. Total of 20 cases (12.8%) of HIV/AIDS with STD that was notified to Titiwangsa Health Office, Kuala Lumpur in 2013. Majority of the cases was syphilis (94.1%).47% were among the heterosexual, 47% Homosexualand only 5.8% Bisexual. All cases were male with age range from 21 to 48 years old. 58.8% Malays and 35.3% Chinese. 70.6% being diagnosed both disease at the same time, 23.4% has STD prior to HIV and only 5.8% infected with HIV earlier than STD. All cases were given treatment and register in National AIDS Registry. STDs are a marker for behaviours associated with HIV transmission. Syphilis infection was the prominent STD infection among HIV/AIDS in Kuala Lumpur. Majority were male, age of thirtyand of Malay ethnic. Ulcerative STDs such as syphilis can increase risk of acquiring HIV because it disrupts the barriers that provide protection against infections. Since testing and treatment of STD has been an effective tool in preventing the spread of HIV, therefore It is recommended that the current STD screening program be further strengthen in Kuala Lumpur.

Keyword: HIV/AIDS, STD



SPATIO-TEMPORAL MAPPING OF DENGUE DISEASE IN PENINSULAR MALAYSIA

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Dengue disease is a global disease burden and particular endemic in Malaysia. As vaccine is still under-developed, the current interventions focus on vector control. To date, mapping of dengue disease cluster in Malaysia that contribute to better vector control planning are focusing in small area. This is the first spatiotemporal mapping for Peninsular Malaysia. Dengue cases from 2008 to 2010 were obtained from Disease Control Division of Ministry of Health Malaysia and were aggregated at sub-district level for Peninsular Malaysia. Population data were retrieved from Department of Statistic Malaysia to serve as baseline data. Two methods, Software for the spatial and space-time scan statistics (SaTScan) and Bayesian Modeling were used to compare and validate the results. Bayesian modeling smoothed out the clustering area. SaTScan was sensitive at showing more clusters than Bayesian modeling. From both results, most high risk clusters were observed in Selangor and Pulau Pinang implying that more vector control effort needed in these two states. The high risk cluster area can be a focus for dengue control interventions. Bayesian modeling exhibited better clustering result than SaTScan. Hence, Bayesian modeling is recommended to be adopted in the current surveillance for its overall smoothing capabilities.



PEOPLE'S KNOWLEDGE ASSESSMENT ABOUT INFERTILITY AMONG COMMUNITY IN TAMAN BALOK PINE, KUANTAN, PAHANG

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There is a perception that the prevalence of infertility is on the rise since the knowledge about infertility is still inadequate in many parts of the world. Another important source of misinformation that could influence fertility self-care is erroneous belief, e.g. infertility myths or fertility increases by staying healthy. The aim of this study is to assess people's knowledge about fertility and focusing on identifying the type of information needed to educate people about the potential risks for infertility. The research had been investigated in three areas of knowledge namely risk factors associated with infertility (e.g. smoking), beliefs in false fertility myths (e.g. benefits of rural living) and beliefs in the benefits of healthy habits (e.g. exercising regularly). A total of 145-sample size was taken from both genders whether married or unmarried in the average age 18 years old and above. The community-based cross-sectional by using self-administer questionnaires had been conducted. Knowledge scores were range from zero to 100%, that are good knowledge (>75%), the average knowledge (50%-75%) and poor knowledge (<50%). The results demonstrated that the participants were knowledgeable about the risk factors for infertility but were not as knowledgeable at recognizing factors that had on fertility (myths and healthy behaviors), and believed that these factors actually increased a chance for getting pregnant. This study can be conclude that the planners and program managers of healthcare professionals were able to design appropriate strategies for better understanding regarding the knowledge of infertility causes, perception towards infertility especially belief in the myths and also prevent the belief about taking healthy habits will not lead to infertility.

Keywords: infertility, risk factors, false fertility myths, healthy habits



MORBIDITY AND MORTALITY ASSOCIATED WITH TUMOUR-RELATED HINDQUARTER AMPUTATION: A REVIEW OF 23 CASES.

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Hindquarter amputation, the removal of the entire lower limb along with the ipsilateral pelvic bone, is reserved for malignant or aggressive tumours located in the proximal lower extremity. With the advancement in limb salvage surgery (LSS), it is reserved for palliative surgery or when LSS is contraindicated. This report aims to review the morbidity and mortality associated with this procedure in the treatment of pelvic bone and soft tissue tumours. Patients with bone or soft tissue tumour involving the pelvis who underwent hindquarter amputation at any point in their clinical course between year 2000 and 2010 were reviewed. Patients were recruited from a single oncology referral institution. Twenty-three patients were included in this review, consisted of 17 males and 6 females with mean age of 40.1 (range 8 to 79 years old). Ten patients underwent surgery for palliation. Classical type of pelvic resection was performed on 11 patients while others were subjected for modified (6), extended (5) and compound (1) type. Commonest underlying pathology was pelvic osteosarcoma (5 patients). Majority of wounds (47.8%) were primarily closed with posterior myocutaneous flap. There was one perioperative death due to sepsis with lung complications. The average follow-up was 13 months (range 2 to 109 months). Eight patients were still alive on their last follow-up, 9 died due to advanced stage of disease, while 3 died of other causes. Commonest complications observed were wound-related. All patients had poor functional outcome on their recent follow-up. Hindquarter amputation remains an important option with considerable morbidity and is indicated for only minority of far-advanced tumours. It offers a chance of palliation and possibly cure when lesser surgical options have been exhausted.

Keywords: Hemipelvectomy, hindquarter amputation, complications, pelvic tumour



NOCTURNAL SLEEP PROBLEMS AMONG UNIVERSITY STUDENTS FROM 26 COUNTRIES

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Objective: To estimate the prevalence of nocturnal sleeping problems and its associated factors among university students in mainly low and middle income countries. **Design:** Cross-sectional. **Setting:** 27 universities from 26 countries across Asia, Africa and the Americas. **Participants:** There were 20222 undergraduate university students (mean age 20.8, SD=2.8). **Interventions:** N/A **Results:** Overall, 10.4 reported severe or extreme nocturnal sleeping problems (Male: 10.2%; female 10.5%) in the past month. Nocturnal sleeping problems differed by country, from 32.9% in Indonesia to 3.0% in Thailand among Asian countries, from 13.7% in Mauritius to 7.5% in South Africa, and from 11.8% in Jamaica to 6.1% in Columbia in the Americas. In multivariate logistic regression analysis, coming from a poor family background, stress (history of child sexual abuse), poor mental health (depression and PTSD), health risk behaviour (tobacco use, heavy internet use, gambling, skipping breakfast and having sustained an injury), lack of social support and poor academic performance were associated with nocturnal sleeping problems. **Conclusions:** A significant prevalence of past month nocturnal sleeping problems was found. Potential factors associated with the risk for reporting sleeping complaints were identified which may assist in prevention strategies to promote a better quality of sleep.

Keywords: Sleep, young adults, correlates, mental health, health risk behaviour, university students, Africa, Asia, Caribbean, Latinamerica



DETERMINATION OF ACCESS TO MEDICINES FOR CHILDREN LIVING IN POOR HOUSEHOLDS OF PENINSULAR MALAYSIA

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A study on access to medicines for children living in poor households (living on RM100 per capita/month) in Peninsular Malaysia was carried out to determine whether these children can access medicines adequately. A semi-structured interview was conducted with the caregiver to determine the socio-demographical background, access to medicines, knowledge, attitude and practice of the caregiver in obtaining medicines for treatment of fever, asthma and epilepsy. Results from 132 poor households in Peninsular Malaysia containing 435 children aged 12 years old and below showed that almost all (99.3%) were fully immunised. The majority of the children were described as healthy (89.9%) while 44 had illnesses, mentioned as asthma, febrile convulsions, G6PD deficiency, pneumonia, hypothyroidism and tonsillitis. In the month before the interview, 76 caregivers reported that their children were unwell with conditions including respiratory tract infections, asthma exacerbations, skin conditions, fever, hypothyroidism, gastritis and a fractured hand. The caregivers obtained medicines for 71/76 (93.4%) of these conditions. For the remaining 5 unwell children, the caregivers gave traditional medicine or waited for spontaneous recovery. However one disabled caregiver was unable to obtain medicines. Knowledge, attitude and practice among caregivers in obtaining medicine for the unwell children were scored as good. Barriers to accessing medicine included cost, distance and disability. The caregivers had good knowledge on febrile illnesses and asthma but none on epilepsy. However all 132 caregivers will give medicine for epilepsy on doctor's advice. In conclusion, this study suggests that children in hardcore poor households of Malaysia are able to access medicines adequately.

Keywords: children, health, poor households, Peninsular Malaysia



QUALITY OF LIFE AMONG PATIENTS WITH DIABETIC NEUROPATHY PAIN IN HTAA

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The researches related to diabetic neuropathy pain issues are still very limited. The issues had been discussed mostly on the internet, but it is hardly to find the article journal about this issue locally even though the cases of amputation among diabetic patient increasingly until today in this society. Diabetic patients suffering from painful diabetic neuropathy pain (DNP) or more commonly referred to as diabetic nerve pain, often remain untreated. Due to the challenges in diagnosing DNP, patients learn to familiarize to living with their pain. Twenty percent of diabetic patients suffers from this complaint, and the prevalence of this condition continues to rise. The aim of this study is to determine the condition of life among diabetic patients with diabetic neuropathy pain. Pain controlling allows patients with this condition to improve their quality of life. The study is conducted in outpatient setting and medical ward in Hospital Tengku Ampuan Afzan (HTAA), Kuantan, Pahang. A total of 90-diabetic patients were diagnosed with diabetic neuropathy pain symptoms by using the Audit of Diabetes Dependent Quality of Life (ADDQoL) instrument and DN4. The findings showed that diabetic patients with diabetic neuropathy pain have a poor quality of life 90% (n=81) whereas 10% (n=9) respondents are with good quality of life. By identifying the quality of life of diabetic patients with diabetic neuropathy pain, authorities (government and non-government organization- NGO) could take many approaches to the diabetic patients in dealing with this issue by recognizing the personal, public and economic burden of chronic pain and establish chronic pain as a priority public health concern in Asia Pacific.

Keywords: diabetic neuropathy pain, quality of life, diabetic patient, ADDQoL, DN4



EFFECTIVENESS OF A HEALTH PROMOTION APPROACH TO ADDRESSING SELECTED BEHAVIORAL INTENTIONS ON SAFE AND UNSAFE SEXUAL PRACTICES AMONG THREE-WHEELER DRIVERS IN ANURADHAPURA TOWN, SRI LANKA.

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Sexually Transmitted Infections (STI) are of global health concern. In this case Sri Lanka is also not an exception. Evidence shows that, Three-Wheeler Drivers are inter-mediate risk group for STIs in Sri Lanka. Preventive measures used in Sri Lanka to addressing this issue were not shown substantial reduction in the prevalence. On this basis, study was intended to change Behavioral Intention (BI) on selected safe and unsafe sexual practices among three-wheeler drivers through the Health Promotion approach. A quasi-experimental design was used. Intervention (N=50) and control groups (N=44) which were selected from two districts by the means of similar socio-economic background. According to the logical framework, at the beginning enthusiasm of intervention group on sexual well-being was improved. Thereby the provision was taken to discuss about determinants of unsafe practices. Gradually capacitated to design mutually agreed mechanism to address selected determinants and to measure changes. Finally, addressed selected determinants. It was consisted of participatory discussions facilitated with innovative tools. Status of BI was assessed by interviewer administered questionnaire. Data were analyzed using Wilcoxon and Mann-Whitney U tests to detect the significant difference within the group and between groups. Among selected seven BIs, four have changed in significantly with compared to pre and post ($p < 0.05$) of intervention group and five BIs have changed in intervention group with compared to control group ($p < 0.05$). Health Promotion interventions to change BI on safe and unsafe sexual practices among this particular community are effective.



BACTERICIDAL AND BACTERIOSTATIC EFFECTS OF *Baccaurea angulata* FRUIT EXTRACTS ON HUMAN PATHOGENS

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The research application for drugs and food supplements derived from plants extracts have increased in recent years. On the other hand, human resistant pathogenic microorganisms increase worldwide mortality and morbidity. Thus, a systematic investigation was undertaken to screen for antibacterial activity from *Baccaurea angulata*(BA) fruit. The purpose of this study was to explore bacteriostatic and bactericidal effects of methanol, ethanol and aqueous extracts of three parts (whole fruit, fruit skin and berry) of BA against human pathogens including *Streptococcus pneumoniae*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae* using disk diffusion, agar well diffusion and microdilution methods. The fruit extracts showed bactericidal and bacteriostatic activities against both Gram positive and Gram negative bacteria. The highest inhibitory and cidaleffects were found against *Streptococcus pneumoniae* and *K. pneumoniae* at the concentrations of 7.8 and 15.6 µg/mL using microdilution method.



ALTERNATIVE MEDICINE



ANTIMICROBIAL AND CYTOTOXIC ACTIVITIES OF THE LEAVES EXTRACTS OF DISSOCHAETA GRACILIS

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Plants are important sources of natural product that are widely used as herbal medicine because it is known to be effective with less unwanted side effects. *Dissochaetagracilis* which also known as ‘Senduduk’ or ‘Cong Keradak was found to be pharmacologically unexplored and the research was conducted as the thought it is worthwhile to explore it’s potential value. The extraction has been carried out by using soxhlet extraction method with solvent *n*-Hexane, dichloromethane, and methanol successively. The antimicrobial activities of plant extracts were tested against various microbes which were two Gram-positive bacteria namely *Staphylococcus aureus*, and *Bacillus cereus*, two Gram-negative bacteria namely *Pseudomonas aeruginosa* and *Escherichia coli* and two fungi consist of *Candida albicans* and *Aspergillus spp*. Based on the antimicrobial susceptibility result, the disc diffusion test showed that methanol crude extract of leaves of *D. gracilis* inhibit the growth of *B. cereus*, *S. aureus*, and *P.aeruginosa* with zone inhibition measured at 13.67 ± 0.58 , 12.33 ± 1.53 , and 10.33 ± 0.58 , respectively. Meanwhile, the *n*-Hexane, and DCM extracts of *D. gracilis* showed no antimicrobial activity against all microorganisms tested in this study. The minimum inhibitory concentration (MIC) values of methanol extract for *B. cereus*, *S. aureus*, and *P. aeruginosa* were 6.25, 12.5, and 25.0 mg/mL, respectively. The result obtained from minimum bactericidal concentration (MBC) showed that the methanol extract enable to kill the growth of *B.cereus* at 12.5 mg/mL, *S. aureus* at 25 mg/mL and *P. aeruginosa* at 50 mg/mL. In conclusion, *D. gracilis* have a potential to be a good antimicrobial agent against some pathogenic strains of microorganisms and thus further investigation need to be done before it can successfully be used to treat certain infectious disease that infect the human.



ANTIMICROBIAL AND CYTOTOXIC ACTIVITIES OF METHANOL EXTRACT OF *ANISOMELES INDICA*'S LEAVES

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Infectious diseases and cancer still become a significant health problem that causes high morbidity and mortality rate throughout the world. The resistance and adverse side effects of modern antimicrobial and anticancer drugs were still reported to date. Thus, it is highly required to develop alternative therapeutic regimens from natural products of medicinal plants. Medicinal plants have been an important source of healthcare as they contain active substances known as phytochemicals that are useful to treat many diseases. Therefore, the objectives of this study are to investigate the antimicrobial activities of methanol extract of *Anisomeles indica*'s leaves against Gram-positive bacteria (*Staphylococcus aureus* and *Bacillus cereus*), Gram-negative bacteria (*Pseudomonas aeruginosa* and *Escherichia coli*) and fungi (*Candida albicans* and *Aspergillus spp.*), as well as cytotoxic activities on human breast adenocarcinoma (MCF 7) and human non-small cell lung carcinoma (H1299) cell lines. The antimicrobial activities were evaluated using agar disc-diffusion and determination of Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) / Minimum Fungal Concentration (MFC) values. The cytotoxic activity was carried out using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. The agar disc diffusion test showed that the crude extract inhibited *S. aureus* (11.3-21.0 mm) and *B. cereus* (9.7-18.7 mm), while *P. aeruginosa*, *E. coli*, *C. albicans* and *Aspergillus spp.* were not inhibited for the concentration ranged 50-200 mg/mL tested. The MIC and MBC values for *S. aureus* are 12.5 and 25 mg/mL, while for *B. cereus* are 25 and 50 mg/mL, respectively. Cytotoxicity screening results revealed that the plant extract shows no cytotoxic effect against MCF 7 and H1299 cell lines at concentration ranged 6.125-200 µg/mL for 24 hours treatment. In conclusion, screening of methanol extract of *A. indica*'s leaves shows potential antibacterial activities against *S. aureus* and *B. cereus* and no cytotoxic activities against MCF 7 and H1299 cell lines.



ANTIMICROBIAL STUDY OF THE LEAVES EXTRACTS OF *Artocarpus lanceifolius*

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Infectious diseases constitute an arising number of annual deaths recorded worldwide. The world is currently experiencing challenges of increased resistance development against available antimicrobial drugs. Therefore, the search for new antimicrobial drug is urgently needed to reduce the burden of disease globally. Traditional plants have been a prominent source in drug discovery. *Artocarpus lanceifolius* is used in this study as it is known to have many therapeutic values. Thus, the aim of this study is to screen for antimicrobial activity in the leaves extracts of *A. lanceifolius* against selected microorganisms. Extraction is done via Soxhlet apparatus with a series of solvents, *n*-Hexane, ethyl acetate and methanol in sequence of increasing polarity. Antimicrobial properties are evaluated using disc diffusion and broth microdilution method. The obtained results showed that only methanol and ethyl acetate extracts exhibit antimicrobial properties whereas *n*-Hexane possessed no antimicrobial properties. Among the tested microorganisms, only Gram-positive bacteria (*Bacillus cereus* and *Staphylococcus aureus*) were found to be susceptible towards methanol extract (Inhibition zone: 11.33 - 12.33 mm; MIC value: 50 mg/ml; MBC value: 100 mg/ml) and ethyl acetate extract (Inhibition zone: 7.67 – 11.67 mm; MIC value: 50 and 100 mg/ml for *B. cereus* and *S. aureus*, respectively; MBC value: 100 mg/ml). Meanwhile, Gram-negative bacteria (*Escherichia coli* and *Pseudomonas aeruginosa*) and fungi (*Candida albicans* and *Aspergillus spp.*) were found to be not sensitive towards all extracts.



THE STUDY OF CHEMICAL, FIBER AND ANTIOXIDANT PROPERTIES OF HOT AIR DRIED AND FREEZE DRIED FIBER FROM *Baccaurea angulata* FRUIT

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Baccaurea angulata is one of the underutilized fruit, which may have some potential benefits to health. Drying can extend the shelf life and preserve key nutrients of *B. angulata* fiber to be utilised in other medical or commercial products. The effect of two different ways of drying on chemical properties, antioxidant and fiber composition was examined in this study. Fresh *B. angulata* fiber was dried either at 40°C in the oven for four days or at -50°C with freeze dryer for seven days. Moisture was significantly higher in hot-air-dried fiber (9.79±0.01g/100g) in comparison to freeze-dried fiber (8.19±0.04g/100g). Freeze-dried fiber also contained higher ash, 3.99±0.02g/100g. There were no significant differences of total, insoluble and soluble dietary fiber content with different type of drying. Hot-air-dried fiber contained significantly higher lignin, 18.68±0.17g/100g, whereas freeze-dried-fiber preserved greater content of cellulose, 23.39±0.42g/100g and resistant starch, 0.17±0.3g/100g. Both hot-air-dried and freeze-dried fiber retains similar total fructan content, 0.03±0.1g/100g. Freeze-dried fiber also sustained better antioxidant activity showed by significantly lower value IC₅₀ of DPPH and ABTS, 39.78±0.69 mg/ml and 4.98±0.39 mg/ml in comparison to hot-dried fiber. Therefore, freeze drying is a better method of drying in preserving more fiber composition and antioxidant activity.



CYTOTOXICITY AND ANTI-INFLAMMATORY ACTIVITIES OF *Garcinia xanthochymus* EXTRACTS ON CELL LINES

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Natural products have been recognized and utilized by humans in management of disease, injuries and other health problems. This study was conducted to evaluate cytotoxic and anti-inflammatory activities of *Garcinia xanthochymus* extracts on cell lines. Roots and stem barks of plant were extracted using maceration method with *n*-hexane, dichloromethane and methanol successively. Cytotoxic activity of the extracts was tested against MCF-7 breast adenocarcinoma using MTT assay. Anti-inflammatory study was evaluated using RAW 264.7 mouse macrophage cells. Cell viability study of extracts against cell line was first done using MTT assay. Then, chosen safe concentration was used in the nitric oxide production study in LPS-stimulated cells that based on Griess reagent reaction. The result of cytotoxicity study showed that dichloromethane and *n*-hexane extracts of root and stem bark exhibited cytotoxic activity in dose-dependent manner. Meanwhile, for anti-inflammatory study, all root extracts together with stem bark dichloromethane and *n*-hexane extracts reduce NO production in LPS-stimulated cells in dose dependent manner. As conclusion, these finding indicated that *G. xanthochymus* extracts may become interesting candidate for treatment of cancer and inflammation.



ANTI-ATHEROSCLEROTIC CAPACITY OF *Baccaurea angulata* FRUIT IN HYPERCHOLESTEROLEMIC RABBIT

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Non-alcoholic fatty liver disease (NAFLD) and hypercholesterolemia are common independent risk factor for cardiovascular disease (CVD). Therefore, the effect of different doses of *Baccaurea angulata* (BA) whole fruit juice (0, 0.5, 1.0, and 1.5 mL of juice per kg adult rabbits per day) representing negative control (NgC), low, medium and high doses given to high-cholesterol fed rabbits for 90 days was studied. The work was carried out to detect liver steatohepatosis and accumulation of fatty streak in hypercholesterolemic rabbits. The histopathology of the rabbits' liver and thoracic aorta was analyzed. The result was also compared with normal control (NC) group fed commercial pellet only. The result showed that the supplementation of high-cholesterol diet of hypercholesterolemic rabbits with only 0.5 mL BA /kg rabbit per day did not only reduce steatohepatosis, but also significantly ($p < 0.001$) attenuated aortic fatty streak development. Higher BA doses used (1.0 and 1.5 mL/kg rabbit per day) also significantly decreased further the development of hepatic steatohepatosis as well as aortic fatty streaks. Therefore, *Baccaurea angulata* possesses hepatoprotective and antiatherosclerotic potential benefits.



SYNERGISM BETWEEN ANTIBIOTICS AND THE EXTRACT OF SELECTED PROPHETIC MEDICINE TOWARD DIFFERENT TYPES OF BACTERIA

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It is important to find new ways that are effective for the treatment of infectious diseases caused by drug-resistant bacteria such as the usage of plant extracts which have the antibacterial activity together with antibiotics which do provide synergistic effect. The objectives of this study are to evaluate synergism between different types of prophetic medicine and antibiotics towards different bacterial strains and to increase the susceptibility of antibiotic resistant bacteria towards different types of antibiotics with the usage of Prophetic medicine. Three samples of Prophetic medicine had been used such as *Allium Cepa*(Onion), *Aloe Vera* (Aloe) and *Ocimumbasilicum*(Basil) was prepared by freeze drying. Those samples are combined with several types of antibiotics like ampicillin, erythromycin, penicillin, streptomycin and tetracycline and were tested against different types of bacteria which were *Staphylococcus aureus*, *Bacillus cereus*, *Eschericia coli* and *Pseudomonas aeruginosaby* using broth microdilution method in order to determine the minimum inhibitory concentration (MIC). Fractional inhibitory concentration (FIC) was determined in order to know the synergy interaction between the prophetic medicine and antibiotics. The antibiotic penicillin produces synergistic effect when being combined with onion in order to combat the bacteria *S.aureus*, *B.cereus*and *E.coli*. The combination between onion and both ampicillin and erythromycin also have synergism toward overcoming the bacteria *E.coli*. Other than that combination of basil with both ampicillin and penicillin also produces synergistic effect upon combating *B.cereus*while, for aloe it produces synergism when being combined with tetracycline and penicillin in order to combat the bacteria *S.aureus* and *E.coli* respectively. Most of the effect of synergism observed when prophetic medicine was given with the antibiotic penicillin. Hence it can be concluded that only certain Prophetic Medicine can provide synergistic effect with certain types of antibiotic in order to combat a particular bacteria due to their different ways of combating the bacteria and only antibacterial activity of both at the same place will have synergistic effect.



SYNERGY EFFECT OF *Mangifera indica* AND *Morus alba* IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

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The previous studies have indicated that *Morus alba* (MA) have high antioxidant and antiglycation effects in chronic diabetic rats and the *Mangifera indica* (MI) have hypoglycaemic effects in Streptozotocin induced diabetic rats (Khan et al. 1993; Naowaboot et al. 2009). Hence, this research was designed to investigate and evaluate the synergy effect of MA and MI in Streptozotocin-induced diabetic rats compared with Glibenclamide (Gli). Forty males of Sprague Dawley rats were divided to six groups of five diabetic rats; Group I is diabetic-rats treated with Gli, Group II diabetic-rats without treatment, Group III: diabetic rats treated with MA, Group IV diabetic rats treated with MI, Group V diabetic rats treated with MA and MI Group VI normal rats. Diabetic-rats were induced by Streptozocin (STZ) with intraperitoneally injection at dosage of 65mg/kg. Blood plasma was collected via cardiac puncture in all Diabetic-rats for insulin on day 21. The Fasting Blood Glucose Level (FBGL) in rats treated with combination of MA and MI decreased significantly as compared with Gli (17.87 ± 3.96 , $p=0.023$ [MA and MI] and 19.89 ± 3.67 , $p=0.017$ [Gli]). The Body Weight (BW) for group III and IV significantly increased in the early of experiment with the increment mean 11 ± 5 g per rats ($p < 0.05$). The plasma insulin level shown significantly increased in rats treated with combination of MA and MI (0.75 ± 0.25 , $p=0.021$) compared with rats treated with Gli (0.46 ± 0.36 , $p=0.033$) and rats in Group II (0.34 ± 0.4 , $p=0.013$). Our study demonstrated that the synergy effect of MA and MI on STZ induced rats enable to reduce the blood glucose level and increase secretion of insulin from the β cell of islet langerhan of pancreatic cell.

Keywords: *Morus alba*, *Mangifera indica*, Glibenclamide, and Streptozotocin.



ANTIMICROBIAL AND CYTOTOXICITY ACITIVITIES OF *Sterculiaparviflora*

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In this modern world, plants and natural resources are being so significant in various pharmacological and drug research. The search for new antimicrobial and anticancer remedies is among the most prominent research fields nowadays. The aims of the present study are to evaluate the antimicrobial and cytotoxic activity of *Sterculiaparviflora* against the selected microorganisms and breast cancer cell line (MCF-7) respectively. *S. parviflora*'s leaves were extracted with *n*-hexane, ethyl acetate and methanol by using Soxhlet apparatus. At first, the extracts were analyzed for their phytochemical constituents such as alkaloids, flavonoids, saponins, steroids, terpenoids and phenolic. In the antimicrobial screening, the crude extracts were evaluated through disc diffusion and micro dilution methods against two Gram-positive bacteria (*S. aureus* and *B. cereus*), two Gram-negative bacteria (*P. aeruginosa* and *E. coli*) and two fungi (*C. albicanand Aspergillus spp.*). In disc diffusion method, the methanol extract exhibited antimicrobial potency against *S. aureus* and *B. cereus* which ranged within 8 to 10.7 mm of inhibition zone while ethyl acetate only inhibited *B. cereus* ranged within 14.7 to 26.3 mm. The Minimum Inhibitory Concentration (MIC) values of methanol extract against both *S. aureus* and *B. cereus* is 25 mg/mL while 50 mg/mL against *B. cereus* for ethyl acetate. The Minimum Bactericidal Concentration (MBC) values which indicated completely inhibition without visible growth of bacteria is at concentration of 50 mg/mL for methanol extract against both *S. aureus* and *B. cereus* while 100 mg/mL for ethyl acetate extract against *B. cereus*. In cytotoxicity study, MTT assay and tryphan blue exclusion methods were done to assess the percentage of viable cells of MCF-7 cell line after being treated with *S. parviflora* extracts. The results showed that all extracts did not exhibit significant cytotoxic effect on MCF-7 cancer cell line at concentrations of 100, 50, 25, 12.5, 6.25 and 3.125 mg/mL after 24 hours incubation. Moreover, the IC₅₀ values of each extracts also would not be determined due to inability of extracts to reduce the viable cells percentage to be lower than 50%. In conclusion, the *S. parviflora* extracts exhibited potential antimicrobial activity against *S. aureus* and *B. cereus* while possessed no cytotoxic potency against MCF-7 breast cancer cell line.



SCREENING FOR COUMARIN IN MEDICINAL PLANTS *Muraya koenigii*, *Ocimum basilicum* AND *Jasminum sambac*

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Natural coumarins are of great interest due to their widespread pharmacological properties and this makes them attractive for further backbone derivatization and screening them as several novel therapeutic agents. In this study, the presence of coumarin in *Muraya koenigii* leaves, *Ocimum basilicum* leaves, and *Jasminum sambac* flowers, was screened. The samples were sourced locally and then subjected to extraction process using different concentration of methanol and ethanol for optimisation. Presence of coumarin was detected using thin layer chromatography (TLC) by comparing against commercial standards of coumarin. Results were further analysed by measuring the retention factor value (Rf) and estimating coumarin quantitatively using TLC Analyser. It was found that 95% ethanol extraction produced the best yield of coumarin. Derivatives of coumarin found in *Muraya koenigii* includes hydroxycoumarin and xanthotoxin, and in *Ocimum basilicum* includes hydroxycoumarin, psoralen and xanthotoxin, whereas *Jasminum sambac* yielded xanthotoxin only. TLC Analyser showed that the highest concentration of coumarin is contained in *Muraya koenigii* suggesting it as a plant candidate for coumarin-lead compound targeting.

Keywords: coumarin, *Muraya koenigii*, *Ocimum basilicum*, *Jasminum sambac*, thin layer chromatography



MULTIVARIATE CALIBRATION OF FOURIER TRANSFORM INFRARED SPECTRA IN PREDICTING ANTI-DIABETIC ACTIVITY OF *MOMORDICA CHARANTIA* FRUIT

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Momordica charantia or bitter melon is widely used as traditional medicine for diabetic patient. This study developed a statistical model in predicting the alpha-glucosidase inhibitory activity of *M. charantia* fruit based on Fourier Transform Infrared Spectroscopy (FTIR). A total of six different ethanol extracts (0, 20, 40, 60, 80, and 100%) of this plant were prepared. The chemical profiles of the extracts was conducted using FTIR spectroscopy between 4000 and 600/cm at a resolution of 4/cm. Multivariate Data Analysis (MVDA) was developed by correlating the bioactivity and the third derivative FTIR spectra of each individual extract using Orthogonal Partial Least Square (OPLS). The result revealed that the regression coefficient (R²) between actual and predicted α -glucosidase inhibitory activity was high (>0.80), and the standard error of prediction (SEP) and standard error of estimation (SEE) were acceptable. In conclusion, FTIR spectroscopy is a cheap and high-throughput technique that can be used as to predict the α -glucosidase inhibition activity of *M. charantia* fruit .

Keywords: Fourier Transform Infrared, *Momordica charantia*, alpha glucosidase inhibitory activity



THE EFFECT OF *Nigella Sativa* EXTRACT ON MOUSE OOCYTE ACTIVATION

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Female infertility cases have been increased worldwide by several factors including lifestyle. *Nigella sativa* is a well-known medicinal plant which has been used globally for prevention and cure of many diseases. *Nigella sativa* with its active components were thought to be a solution for the infertility problem. Thus in this experiment, the effects of *Nigella sativa* on the number of oocytes and number of fertilized oocytes were investigated. This was carried out by treating 20 Balb/c female mice divided equally into groups of four; i) control group (no treatment given), ii) treated with 25mg/kg per body weight of *Nigella sativa*, iii) treated with 50mg/kg per body weight of *Nigella sativa*, and iv) treated with 75mg/kg per body weight of *Nigella sativa*. The treatments were given daily for five days (estrous cycle) via intraperitoneal (i.p.) injection. Then, they were sacrificed and oocytes were obtained, followed by *in vitro* fertilization process. Total number of oocytes obtained was calculated and total number of fertilized oocytes was recorded. As a result, the mean and standard deviation for control group for number of oocytes collected is 13.6 ± 15.49 , for group 2 it was 7.40 ± 10.14 , group 3 5.20 ± 4.97 and group 4 6.8 ± 5.97 . While for total number of fertilized oocytes; control group resulted with 5.40 ± 5.46 , group with 3.20 ± 4.44 , group 3 1.20 ± 1.64 while group 4 1.40 ± 1.52 . Therefore, it is concluded that *Nigella sativa* supplementation did not indicate any significant difference ($p > 0.05$) in the effect of different doses of *Nigella sativa* with total number of oocytes produced as well as the total number of fertilized oocytes. It was concluded that *Nigella sativa* did not increase the number of oocytes and the number of fertilized oocytes produced in mice.



STABILITY TESTING OF OIL-IN-WATER (O/W) EMULSION OF *Syzygium aromaticum* (CLOVE)

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Extract of *Syzygium aromaticum* (Clove) is a lipophilic substance with low solubility in aqueous solution. As this may compromise the handling of the extract, bioavailability and bio-absorption, a drug delivery system is formulated. Briefly, dried flower buds of cloves were grounded into a fine dry powder and macerated in absolute ethanol solvent for 48-hr duration with intermittent shaking at room temperature. The extracts of the cloves were filtered before evaporated by rotary evaporation method in order to isolate the solvent from the extracts. Reduced pressure (200 Mbar - 75 Mbar) and temperature (60°C) at 90 revolutions per minute (rpm) were used during the rotary evaporation. An oil-in-water (O/W) emulsion system was prepared for drug delivery of the extracted cloves by mixing various surfactants; Tween 80, Tween 20 and Span 20 to emulsify the clove oil in the aqueous phase. Initial screening was done on the prepared formulations with centrifugation at 3000rpm for 3mins to detect for any phase separation in these formulations which is a sign of instability. New obtained formulation of oil-in-water emulsion of the cloves (no phase separation) which consisted of 34.48% distilled water (aqueous phase), 34.48% clove oil (oil phase), 27.59% Tween 20 (surfactant) and 3.45% Tween 80 (surfactant) was tested for its stability. The stability of the emulsion was tested at different storage conditions - 8°C (in refrigerator), 25°C (in temperature-controlled room) and 40°C (in oven) for 24-hr, 48-hr and 72hr. Their stability evaluation consisted of: organoleptic characteristics, centrifugation tests, particle size measurements, microscopic observation, pH determination and freeze-thaw (F/T) cycle tests. Results showed that the O/W emulsions samples kept at 8°C displayed good stability over 72-hr of observation period.

Keywords: *Syzygium aromaticum*, emulsion, stability



EVALUATION OF ANTIOXIDANT, TOTAL PHENOLS AND FLAVONOIDS CONTENT AND ANTIMICROBIAL ACTIVITIES OF *Artocarpus altilis* (BREADFRUIT) OF UNDERUTILIZED TROPICAL FRUIT EXTRACTS

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Artocarpus altilis (breadfruit) pulp, peel and whole fruit were extracted with various solvents such as hexane, dichloromethane (DCM) and methanol. The extracts were examined for their antioxidant activity using the stable 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging test. IC₅₀ was ranged from 55±0.89 to 4851±1.00 µg/ml. In the β-carotene bleaching assay, the antioxidant activity was 90.02±1.51% for the positive control (Trolox) and 88.34±1.31% for the pulp part of the fruit methanol extract. The total phenolic content of the crude extracts was determined using the Folin-Ciocalteu procedure. Methanol pulp part demonstrated the highest phenol content value of 6570.74±1.14 mg GAE/g of dry sample. While the total flavonoid content was determined using the aluminium chloride colorimetric assay, the highest value of 2545.01±0.91 mg QE/g was indicated by the pulp part of the fruit methanol extract. The antimicrobial activity of the crude extracts was tested using the disc diffusion method against pathogenic microorganisms: *S. aureus*, *S. epidermidis*, *B. cereus*, *S. typhimurium*, *E. coli*, *K. pneumoniae* and *C. albicans*. Methanol extract of the pulp part was recorded to have the highest zone of inhibition against Gram-positive and Gram-negative bacteria. The MIC and MBC/MFC for the extracts were also determined using the microdilution method, ranging from 4000-63 µg/ml against pathogenic microbes. The MBC/MFC values varied from 250 to 4000 µg/ml. A correlation between antioxidant activity assays, antimicrobial activity and phenolic content was established. The results show that the various parts of *A. altilis* fruit extracts promising antioxidant activities have a potential bioactivity due to high content of phenolic compounds.

Key words: *Artocarpus altilis*, antioxidants, DPPH, antimicrobial, MIC and MBC/MFC



ANTIDIABETIC STUDY OF *Vernonia amygdalina* AQUEOUS EXTRACT

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Vernonia amygdalina has a long history in traditional practices in treating diabetes mellitus. Traditionally, fresh leaves of *V. amygdalina* has been eaten either raw or squeezed into juices in order to treat diabetes mellitus. This study aims to evaluate the effect of aqueous extract of *V. amygdalina* leaves on lipid profiles, blood glucose level and plasma insulin level in streptozotocin (STZ) induced diabetic rats. Crushed powder of dried leaves of *V. amygdalina* weighing 25 g were extracted in 250 ml of distilled water at $60^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for 72 hours. Twenty male Sprague Dawley rats were divided equally into 4 groups; 1) normal rats (control group), 2) diabetic induced rats (diabetic control), 3) diabetic induced rats treated with 150 mg/kg of body weight (BW) of metformin and 4) diabetic induced rats treated with 50 mg/kg BW of *V. amygdalina* aqueous extract. Body weight was recorded weekly and blood glucose level was measured in three days of interval. Treatment was given twice daily at 9 am and 4 pm, for 28 days. On day 29, after overnight fasting, the rats were euthanized with 200 mg/kg BW of pentobarbital and blood was collected from cardiac puncture. The blood samples were centrifuged to obtain blood serum for evaluation. Dried leaves of 25 g *V. amygdalina* gave a total yield percentage of 33.1%. Result of body weight and relative organ weight of liver, heart and kidney showed no significant differences between each group. No abnormalities or gross lesions of organs were observed in each group. Diabetic induced rats treated with *V. amygdalina* aqueous extract significantly reduced blood glucose level as compared to other diabetic induced rats. Significant decrease in triglycerides, HDL cholesterol and fasting blood glucose level, and significant elevation in total cholesterol/HDL ratio level were observed in diabetic induced rats treated with *V. amygdalina* aqueous extract. Despite that, the mean insulin absorbance of diabetic induced rats treated with *V. amygdalina* aqueous extract were not significant as compared to the diabetic induced rats treated with metformin. This shows that *V. amygdalina* did not act in order to increase or regulate insulin secretion. The action of *V. amygdalina* aqueous extract may be due to the phytoconstituents present in this medicinal plant that helps in enhance glycolysis and glycogenesis that can lead to blood glucose lowering, which eventually maintain blood glucose level. Hence, this finding showed that the aqueous extract of *V. amygdalina* leaves have antidiabetic property.

Keywords : *Vernonia amygdalina*, diabetes mellitus, streptozotocin, lipid profiles, insulin



EVALUATION OF ANTI-DIABETIC PROPERTIES OF *Cosmos caudatus* KUNTH LEAVES IN OBESE-DIABETIC INDUCED RAT USING METABOLOMICS APPROACH

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Diabetes mellitus prevalence is increasing rapidly worldwide. It is resulted from the combination of impaired insulin secretion with reduced insulin sensitivity of the target tissues. The objective of this study is to evaluate metabolites profile in the serum of rats in different conditions (healthy, diabetes, *Cosmos caudatus* and metformin treated) using NMR based-metabolomics approach. The 80 % ethanol extract of *C. caudatus* was force fed to diabetic rats. Streptozotocin was used to induce the obese rat to become diabetic (ob-db). Rats were divided into four groups: healthy rat, ob-db treated with 300 mg/kg metformin and ob-db treated with 200 mg/kg of *C. caudatus*. The NMR spectrum of serums were statistically calculated using multivariate data analysis to discriminate the groups and to identify the metabolites responsible for discrimination. Glucose level which was elevated in diabetic rats can be reduced to the normal range after metformin and *C. caudatus* treatment. Interestingly metformin caused elevation of ethanol, lactate and alanine which were not observed in *C. caudatus* treated rats. Other significant metabolites which have been identified were glucose, ethanol, alanine and lactate. This study suggested that *C. caudatus* has potential for the treatment of diabetes.

Keywords: Diabetes, *Cosmos caudatus*, Metformin, ¹H-NMR, Rat



ASSESSMENT OF ANTIOXIDANTS IN COLD WATER EXTRACTS FROM MIXED SPICES FORMULATION

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Spices used in food delicacies are also used for medicinal purposes. Spices are considered a rich source of antioxidants. Flavonoids and Phenolic acids are the major phenolic (antioxidants) found in spices. There is a continuous exposure to free radicals hit and if they are not destroyed/removed may cause a serious damage to the immune system of the body. This in turn may make the body to suffer from infection and various non-communicable diseases. The interaction of reactive oxygen species (ROS) with the cellular DNA is considered the driving mechanism for all these physiological disorders. Phenolic antioxidants have a potent capacity to neutralize these ROS in order to protect the cellular DNA. Due to this reason this study focuses on phenolic acids and flavonoids present in the selected spices. Four spices ginger, onion, cloves and lemongrass were purchased from the local market and were washed and weighed. They were freeze dried and then ground to fine powder. Later they were mixed together in equal percentage to form a formulation. This formulation was then extracted with water at room temperature and the extract was termed as cold water extract. This extract was used to determine the total phenolic content of the said formulation by using Folin- Ciocalteu method and Aluminium chloride complex forming assay was used to determine total flavonoid content by using Ultraviolet Spectrophotometer. The tested formulation of four spices showed a high phenolic and flavonoid content. The total phenolic content of the said formulation was determined as 2.04 ± 0.2 mg/g of freeze dried sample. Whereas the flavonoid content was determined as 0.28 ± 0.1 mg/g of freeze dried sample. From the findings of this study it could be concluded that the formulated spices contain a high phenolic and flavonoid content and their use in diet could produce significant health promoting effects.

Keywords: Spices, antioxidants, phenolic content, flavonoid content



EFFECT OF *Baccaurea angulata* FRUIT JUICE ON SERUM LIPID PROFILE, RENAL AND LIVER FUNCTION TESTS OF NORMAL AND HYPERCHOLESTEROLEMIC RABBITS

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Consumers' preference and acceptability for naturally processed, additive-free, safe and yet palatable products are unprecedented. The consumption of dietary antioxidants capable of preventing cardiovascular diseases particularly atherosclerosis. This study was thus carried out to evaluate the antioxidant property of *Baccaurea angulata* fruit juice on serum lipid profile, which is known to be closely associated with many cardiovascular diseases. Thirty-five white New Zealand male rabbits were randomly divided into seven groups (n=5). Four groups (I, II, III and IV) were fed with 1% cholesterol diet and 0, 0.5, 1.0 and 1.5g of juice per kg of rabbit respectively, while the other three groups (V, VI and VII) were fed with normal rabbit pellet and 0, 0.5 and 1.0g of juice per kg of rabbit respectively for 13 weeks. The serum total cholesterol (TC), triglyceride (TG), low density lipoprotein cholesterol (LDL-C) and high density lipoprotein cholesterol (HDL-C) were determined at 0 and 13th week. Liver and renal function tests of the serum were also evaluated using kits. The administration of *Baccaurea angulata* to groups of hypercholesterolemic rabbits for 13 weeks lowered their serum TC, TG and LDL-C respectively, while the serum HDL-C level was raised after 12 weeks of treatments. Additionally, the intervention with *Baccaurea angulata* also showed improved renal function, reduced serum ALT and AST levels. *Baccaurea angulata* fruit has remarkable hypocholesterolemic and cardioprotective potential.

Keywords: *Baccaurea angulata*, lipid profile, liver function test, hypercholesterolemic rabbits



SCREENING OF POLYAMINES IN SELECTED MALAYSIAN MEDICINAL PLANTS

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Polyamines are aliphatic compounds that have many functions in the body. The imbalance of polyamines in the body could lead to several diseases such as cancer. The concentration of polyamines is tightly regulated via polyamine metabolic pathway. As one of the sources of polyamines is through diet intake, it is crucial to obtain information on polyamines content in the food and natural source medicine. This study was carried out to screen the polyamines namely putrescine (PUT), spermidine (SPD), and spermine (SPM) in selected Malaysian medicinal plants, which are *pegaga* (*Centella asiatica*), *pecah beling* (*Strobilanthes crispus*), *kesum* leaves (*Polygonum minus*), red spinach (*Amaranthus gangeticus*) and graviola (*Annona muricata*) by using HPLC analysis. Putrescine was found in all samples except in fresh *C. asiatica*. Putrescine was detected significantly highest in fresh *P.minus* leaves extraction (2984.86 ± 4.88 nmoles/g) compared to other samples. The lowest spermidine was found in *A.muricarata* extract juice (0.58 ± 0.06 nmoles/mL). The highest concentration of spermine was found in fresh *S. Crispus* leaves extract with 77.61 ± 16.31 nmoles/g followed by fresh *A.gangeticus* leaves extract (109.55 ± 1.55 nmoles/g) and fresh *P.minus* leaves extract (235.31 ± 4.15 nmoles/g). The overall finding of the study indicated that *A.muricata* extract juice contained low level of total polyamines (6.53 nmoles/mL) followed by fresh *C.asiatica* leaves extract (143.20 ± 14.36 nmoles/g) which had intermediate level. Fresh *S.crispus* leaves extract (218.77 ± 24.37 nmoles/g), fresh *A.gangeticus* leaves extract (387.49 ± 24.37 nmoles/g) and fresh *P.minus* leaves extract (3465.67 ± 16.32 nmoles/g) contained high concentration of total polyamines. The results obtained from the studies could be useful for future work regarding on the effects of polyamines in Malaysian medicinal plants at cellular and physiological levels.



ANTIFUNGAL EFFECT OF MALAYSIAN NEEM LEAF EXTRACT ON SELECTED FUNGAL SPECIES OF PATHOGENIC OTOMYCOSIS IN IN-VITRO CULTURE MEDIUM

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Azadirachta indica (neem) has been used for a long time in agricultural and alternative medicine. Neem had been proved effective against certain fungi that could infect human body. This pilot study aims to demonstrate the antifungal effect of Malaysian neem leaf extracts on *Aspergillus niger* and *Candida albicans* in aqueous and alcohol neem. This is a laboratory-controlled prospective study, Universiti Sains Malaysia. The powder form of Malaysian neem leaf was prepared. Later, the powder form of alcohol and aqueous extracts was diluted with sterile water to establish five different concentrations of 50 g/ml, 25 g/ml, 12.5 g/ml, 6.25 g/ml and 3.125g/ml. Then, the extract was repeatedly tested on Sabouraud Dextrose Agar (SDA) suspended with *Candida albicans* and *Aspergillus niger* respectively. Well diffusion method was used and zone of inhibition was measured. Growth of *Aspergillus niger* and *Candida albicans* were inhibited in both alcohol and aqueous extract concentrations. The minimum inhibitory concentration (MIC) of Malaysian neem aqueous extract against *Candida albicans* was 11.91 g/ml, neem ethanol extract against *Candida albicans* was 5.16 g/ml, neem aqueous extract against *Aspergillus niger* was 7.73 g/ml and neem ethanol extract against *Aspergillus niger* was 9.25 g/ml. Statistical analysis showed that the antifungal activity of *Candida albicans* is better in alcohol neem than aqueous extract ($p < 0.001$) but aqueous neem extract is better than alcohol extract ($p < 0.001$) for *Aspergillus niger*. Malaysian neem has significant antifungal effect towards *Aspergillus niger*, best in aqueous extract and towards *Candida albicans*, was best in alcohol extract.



REGENERATIVE MEDICINE



DETECTION OF SPERMATOGONIAL STEM CELLS IN NON-OBSTRUCTIVE AZOOSPERMIC PATIENT USING IMMUNOFLUORESCENCE STAINING OF GFR ALPHA-1 AND INTEGRIN BETA-1 AS THE SPECIFIC PROTEIN SURFACE MARKERS

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Spermatogonial stem cells (SSCs) are the basis of male reproduction and spermatogenesis. SSCs can be enriched by selection with an antibody against cell-surface markers. Previous study found that several specific cell surface markers expressed on mouse and rat SSCs. Therefore, we applied that concept on human SSCs specifically in azoospermic patient. We aimed to observe the propagation activity of SSCs and detect integrin beta-1 and GFR alpha-1 as the protein surface markers. The SSCs were cultured in basic human embryonic stem cell (bHESC) culture media for short-term (21 days) and long-term (49 days). The detection of integrin beta-1 and GFR alpha-1 was done by using immunofluorescence staining and observed under immunofluorescence microscope. There was no detection of integrin beta-1 and GFR alpha-1 on short-term culture. In contrast, there was detection of integrin beta-1 and GFR alpha-1 on long-term culture. This finding indicates the potential and ability of these cells for infertility treatment, cell replacement therapy and tissue regeneration.



DERIVATION OF FIBROBLASTS CELLS FROM PRIMARY MOUSE EMBRYONIC FIBROBLASTS (PMEF) AND OPTIMIZATION OF CULTURE SYSTEM

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In established culture systems, primary mouse embryonic fibroblasts (PMEF) are commonly used as feeder cells to preserve the growth of stem cells in undifferentiated state. PMEF will produce growth factors that support undifferentiated growth of stem cells. Commonly, PMEF are simply purchased by many labs from commercial sources for feeder layers. The main purpose of this research is to derive fibroblast cells by using PMEF. The propagating levels of PMEF were observed by passaging these cells until 5 passages. Besides that, the stability of PMEF was analyzed by using immunofluorescence staining of specific protein marker of fibroblasts. Anti-Reticular Fibroblasts and Reticular Fibres antibody (ER-TR7) was used for primary antibody while for secondary antibody, Goat Anti-Rat IgG H&L (FITC) was used. Then, these cells were counterstained by using DAPI (4'6-Diaminido-2-Phenylindole). The results showed a reduction in propagation and proliferative rate PMEF from passage 1 until passage 5. These results can be associated with an aging process at cellular level due to loss of some factor necessary for cell survival or because its rate of duplication is less than that of the cell.



IDENTIFICATION OF POTENTIAL SERUM BIOMARKERS TO DIFFERENTIATE PAPILLARY THYROID CARCINOMA FROM BENIGN THYROID GOITRE

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An increasing incidence of thyroid diseases has been reported worldwide. However, diagnosis is still inconclusive and many patients have been subjected to unnecessary thyroidectomy. The present study was performed to screen for proteins of altered abundance in serum samples of patients with papillary thyroid carcinoma (PTC; n=10) compared to those with benign thyroid goitre (BTG; n=20) using gel-based proteomics. All patients were recruited from the Surgery Unit of the University of Malaya Medical Centre, with consent and in accordance to a protocol approved by the Medical Ethics Committee. When the serum samples were subjected to 2-dimensional gel electrophoresis and image analysis, four protein spots showed significant differences in their abundances by more than 1.5-fold ($p < 0.01$) between the two groups of patients. These spots were subsequently identified by LC-MS/MS as apolipoprotein AIV (APOA IV; 2 isoforms), leucine-rich alpha-2-glycoprotein 1 (LRG1) and alpha-1-B glycoprotein (A1BG). PTC patients apparently demonstrated higher amounts of two isoforms APOA IV and LRG1 but lower levels of serum A1BG compared to those with BTG. These proteins may be used as complementary biomarkers to effectively discriminate BTG from PTC, and thus avoid unnecessary thyroidectomy of patients with benign tumours, although further validation on clinically representative populations is required.



CHEMOPREVENTIVE EFFECT OF *PUNICA GRANATUM* IN HUMAN LUNG CARCINOMA A549 CELLS

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Lung cancer is the most common type of cancer which the mortality rate increases year by year. Therapeutic drug could not control the progression of cancer effectively as it is contributing to the side effects. An alternative strategy such as chemoprevention using natural product should be investigated. *P. granatum* is one of the prophetic foods which has a potential to be a chemopreventive agent. Polyamine plays an important role in the proliferation phase and the viability of the cells. In cancer cells, the intracellular polyamine present in increased concentration. The polyamine metabolism in cancer cells shows a good potential site for chemoprevention. This study is aimed to evaluate the chemopreventive effect of the pomegranate on the growth of human lung carcinoma A549 cells. The cytotoxicity test had been conducted by using MTT assay while the effect of pomegranate juice on A549 cancer cells growth were evaluated by trypan blue exclusion assay. The protein and polyamine content were quantified using Lowry assay and HPLC, respectively. The result showed that various concentrations of pomegranate juice treatment range from 0.0 to 3.0% had resulted a dose dependent inhibition of A549 cell growth. The inhibitory concentration, IC₅₀ value, at which 50% inhibition of cell growth was observed, was 0.8% after 48hr exposure and 1.5% after 72hr and 96hr exposure. At the concentration of 1%, inhibition of growth was observed by showing decreased in cell number and protein content. From the results, the protein content of A549 cells treated with 1% of the pomegranate juice was lower compared to the untreated A549 cells. At 96 hour, total polyamine content was lower compared to the controls. This preliminary study shown that, the pomegranate juice could inhibit the proliferation of A549 cancer cells. Hence, it could be a good strategy to prevent or slow the growth of cells.



IN VIVO CTCF AND YB-1 INTERACTION WITH AP-1 SITE OF MATRIX METALLOPROTEINASE 13 GENE PROMOTER IN HUMAN MALIGNANT MELANOMA CELL LINE

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Malignant melanoma is the most serious tumour among many types of skin cancers in terms of local invasiveness and mortality rate. The molecular mechanism of tumour invasion & metastasis starts with the destruction of extracellular matrix components by special class of enzymes called matrix metalloproteinase (MMP). Many MMPs including all collagenases contain AP-1 DNA binding sites in their gene promoters, and they are transcriptionally regulated via this site. CTCF & Yb-1 transcription factors are among the many proteins, which can bind specifically to this AP-1 site. The Protein – DNA interaction of CTCF and YB-1 proteins with the AP-1 site of MMP-13 gene promoter was evaluated through use of Chromatin immune precipitation assay. In this method the cells line were cross-linked by the use of formaldehyde to generate in vivo cross-links between CTCF or YB-1 with the AP-1 site & then the DNA sequences that were cross-linked with the above proteins were selectively enriched and the reversal of cross-linking reaction permitted the recovery and quantitative analysis of the immune precipitated DNA by PCR. This study showed that there was no interaction between CTCF or YB-1 proteins on the Ap-1 site of MMP-13 gene promoter. The sample of lysate from the cell line did show the AP-1 sequence among other DNA fragments & both CTCF and Yb-1 proteins were successfully isolated from the lysate by the use of specific antibodies but the cross linking reaction showed that these proteins did interact with other DNA fragments but not with the Ap-1 site of MMP-13 gene.



INHIBITORY EFFECTS OF BOILED *Lawsoniainermis* (HENNA) LIQUID IN LUNG CANCER CELLS (A549)

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Chemotherapy is the common treatment used to handle cancer cases. Since the drugs used in chemotherapy act on human body by damaging high proliferating cells, normal cell for instance bone marrow, hair follicles and gastrointestinal mucosa which undergoes high rates of cell division are most susceptible. It also produces common side effects like neutropenia, anorexia, diarrhea and many others. In recent study, *Lawsoniainermis* or henna can become one of the potential natural therapies to treat common cancer cells (Pradhan *et al.*, 2012). Many studies had explored the properties of henna for its scientific components by extracting certain compound but did not associate the usage of all components of henna in one study. This study was carried out with the aims to observe the pattern of A549 cells growth before and after being treated with henna and to determine the inhibitory effects of boiled henna liquid in human lung adenocarcinoma epithelial cells (A549). To compare the A549 cell growth before and after the addition of henna, cell number and protein content of the culture were analyzed. Boiled liquid of henna was used so that all of the components would be extracted in the liquid. MTT assay, trypan blue exclusion method and Lowry assay were employed to identify the inhibitory effects of boiled henna, to obtain the standard growth curve and to assess the protein content respectively. The result revealed that henna has the ability to inhibit the growth of A549 cells by showing an IC₅₀ value of 5% after 24 hours exposure and 2% after 48 and 72 hours exposure. The growth curve obtained showed a significant difference in inhibition of A549 cell growth after been exposed to henna compared to untreated A549 ($p < 0.05$). The protein content had a moderate correlation with cell number after being treated with boiled henna ($r^2 = 0.4966$). In conclusion, the findings revealed that henna has cytotoxic effects against A549 cell lines. This basic study will help in providing scientific justification for the use of this prophetic medicine in treating cancer.

Keywords: *Lawsoniainermis*, henna, inhibitory effects, MTT assay, A549



INTEGRIN ALPHA-6 (ITA6) AND CD9 SPECIFIC PROTEIN SURFACE MARKERS DETECTION OF SPERMATOGONIAL STEM CELLS (SCCs) IN AZOOSPERMIC PATIENT USING IMMUNOFLUORESCENCE STAINING

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Spermatogonial stem cells (SSCs) are classified as a unique adult stem cells that have capability to propagate, differentiate and transmit genetic information to the next generation. Human SSCs can resolve the male infertility problem. Therefore, this study aims to propagate SSCs in-vitro with a presence of growth factor and detect the existence of SSCs using specific protein cell surface markers. The sample was derived from non-obstructive azoospermic (NOA) patient. Integrin alpha 6 (ITA6) and CD9 could be the specific protein cell surface markers for immunofluorescence detection of SSCs during the culture. The disassociation of SSCs was done by trypsin. Specific culture in serum-free medium with added growth factor bFGF was performed to support self-renewal division. This undifferentiated protocol was performed for 49 days and cell were analyzed on day 1, 7, 14, 21 and 49 through the expression of ITA6 and CD9 in the entire testicular stem cells culture system. Human SSCs were started to aggregate and form colonies after 14 to 21 days in specific culture, then, the cells were successful expanding and stable in duration of 49 days. The ITA6 and CD9 were positively expressed the SSCs on day 49 of culture. Human testicular stem cells could be obtained from human testicular tissue by a simple digestion, culturing and propagation method for long-term in vitro condition. The propagation of these cells confirmed by specific protein surface markers ITA6 and CD9, during culture period. This approach of culturing human SSCs from testicular biopsy suggested this study is closer to clinical purpose in future.



SKELETAL MALFORMATIONS IN FETUS FROM RODENTS FED *FICUS DELTOIDEA* AQUEOUS EXTRACT DURING THE LATE GESTATION PERIOD

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Ficusdeltoidea has been used for ages in Malay medicine and currently is heavily commercialized into health products. However, there is no strong evidence regarding its effects on the fetus if consumed during late pregnancy. Thus, this study was conducted to determine its possible teratogenic effects in rat fetuses by feeding the aqueous extract of *Ficusdeltoidea* to pregnant *Sprague dawley* rats. Twenty four pregnant rats were distributed among 4 different groups, of 6 rats each which consist of positive control group (fed retinylpalmitate), negative control group (distill water) and the extract at doses of 5 and 10 ml/kg/day. The rats were fed respectively according to their group during the late gestation period (days 8 to 15 of pregnancy). Maternal body weight was recorded throughout pregnancy and any signs of toxicity were noted. The rats were sacrificed on Day 21 of pregnancy. The fetuses were then collected, body weight taken, processed and stained with Alizarin Red. The skeletal malformations of the fetuses were observed using Dino Capture Microscope. Data collected showed a significant ($p < 0.05$) reduction in maternal body weight during the pregnancy. Mothers fed with a high dose of the extract have smaller size fetuses which was statistically significant ($p < 0.05$) as compared to other groups. However, the dams do not show any signs of toxicity. In addition, fetuses from all groups showed no signs of external malformations. Observation by using Dino Capture Microscope showed numerous skeletal malformations in fetuses fed with the extract. Characteristic malformations included dumbbell shaped and split vertebrae, wavy ribs, supernumerary ribs and split sternbrae among others. The results showed that feeding of *Ficusdeltoidea* aqueous extract to rats during the late gestation period causes skeletal malformations suggesting the possible teratogenic effects of the plant.

Keywords: *Ficusdeltoidea*, teratogenic effects, skeletal malformations, late gestation period



INHIBITORY EFFECTS OF ASIATIC ACID ON TUMOUR NECROSIS FACTOR- α -INDUCED INFLAMMATION IN HUMAN AORTIC ENDOTHELIAL CELLS

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Asiatic acid (AA), one of the pentacyclotriterpenes isolated from *Centella asiatica* (pegaga) exhibits potent anti-inflammatory properties *in vivo* and *in vitro*. Inflammation plays a vital role in atherogenesis demonstrated by a rise in endothelial permeability and expressions of cellular adhesion molecules (CAM). Tumour necrosis factor- α (TNF- α) is a proinflammatory cytokine that is actively involved in the progression of atherosclerosis causing impairment to the endothelial barrier function. The anti-inflammatory activity of AA was investigated in TNF- α -induced human aortic endothelial cells (HAEC) that closely mimics the early stage of atherogenesis. Cell viability was assessed by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay in response to 10 to 200 μ M AA treatments. AA (10 μ M, 20 μ M, 30 μ M, and 40 μ M) and TNF- α (10 ng/ml) were selected for all the following assays. Effect of AA on TNF- α -induced increased endothelial permeability was investigated by using *in vitro* vascular permeability assay. The fluorescence intensity of leaked fluorescein-isothiocyanate dextran (FITC-D) was measured using a fluorescence microplate reader (Infinite M200 TECAN, Mannedorf, Switzerland). CAM expression was determined through a quantitative detection of human soluble forms CAM by flow cytometry. Human Adhesion 6plex Kit FlowCytomix with fluorescent bead immunoassay based analyte detection was used to measure the fluorescence intensity as an indicator of CAM expression. Data were analyzed using one-way ANOVA followed by Tukey post hoc test. The MTT assay showed that AA had no cytotoxic effect to HAEC up to 50 μ M concentration. AA, at 20 to 40 μ M, significantly suppressed endothelial hyperpermeability ($89.07 \pm 3.31\%$, $57.45 \pm 14.37\%$, $61.20 \pm 8.66\%$ respectively) ($P < 0.05$) while AA at 10 μ M ($131.63 \pm 3.44\%$) was ineffective in reducing hyperpermeability. Intercellular adhesion molecule-1, E-selectin, vascular CAM-1 and platelet endothelial CAM-1 were significantly suppressed by 10 to 40 μ M of AA ($P < 0.05$). These findings suggest that AA might prevent early atherogenesis by exhibiting anti-inflammatory effect on TNF- α treated HAEC through suppressions of endothelial hyperpermeability and CAM expression.

Keywords: Asiatic acid, atherogenesis, endothelial permeability, cell adhesion molecules



THE USE OF POLY (LACTIC-CO-GLYCOLIC ACID) AND FIBRIN SCAFFOLDS FOR ARTICULAR CARTILAGE TISSUE ENGINEERING

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Damage and degeneration of articular joints is a major health concern. Left untreated, it may cause serious disability and loss of function. The field of cartilage tissue engineering which aims to restore, repair and regenerate injured articular cartilage has evoked numerous interest for improving cartilage functionality. Previously, the use of Poly (Lactic-co-Glycolic Acid) or PLGA and fibrin scaffolds indicated some potential for in vitro cartilaginous tissue formation. The cells used were adult progenitor or committed cells isolated from mature cartilage - the chondrocyte. For this study, the aim was to evaluate the formation of in vitro cartilaginous construct using bone marrow mesenchymal stem cells or BMSCs-seeded on PLGA with or without fibrin scaffold. With the approval of Research Ethical Committee, aspirated rabbit's BMSCs were processed and cultured in the commercially available chondrogenic media. The resulted mononuclear cells were expanded to obtain sufficient cell number for three dimensional (3-D) construct formation. Macroscopic evaluation, histological evaluation, cell proliferation assay and sulphated glycosaminoglycan (sGAG) analyses were performed at each time point of 1, 2 and 3 weeks of in vitro culture. After 3 weeks, the BMSCs/PLGA/fibrin constructs showed a reduction in terms of size. The cells were noted to segregate mainly on the outer part of the construct instead of migrating towards the inner part of the construct. However the BMSCs/PLGA/fibrin construct exhibited higher cell viability, higher sGAG content and better extracellular matrix compound in concert with the positive GAG accumulation than the BMSCs/PLGA without fibrin construct. Although the histology results showed lack of cartilaginous histo-architecture, PLGA/fibrin seeded with BMSCs indicated a potential to develop as functional tissue engineered cartilage which could facilitate and improve the life quality of patients suffering from joint diseases. At the moment, gene expression studies are being carried out to evaluate the expression of specific cartilaginous markers in BMSCs-seeded on PLGA with or without fibrin.

Keywords: articular cartilage, tissue engineering, Poly (Lactic-co-Glycolic Acid) PLGA, fibrin, bone marrow mesenchymal stem cell



WHARTON'S JELLY-DERIVED MESENCHYMAL STEM CELLS (WJMSC) INHIBIT PROLIFERATION OF HUMAN UMBILICAL VEIN ENDOTHELIAL CELLS (HUVEC) IN TUMOURAL ANGIOGENESIS MODEL

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Current update has revealed the dual pro- and anti-angiogenic effect of mesenchymal stem cells. The promotion of new blood vessels growth was demonstrated in non-tumoural condition while in tumorigenic environment, modification of the tumour vasculature that results in inhibition of tumor growth was observed. As the real effect of stem cells on tumor angiogenesis remains controversial, this study was performed with the aim to investigate the angiogenic effect of stem cells by using WJMSC, HUVEC and MCF7 indirect co-culture model. Indirect (non-contact) co-culture model of; stem cells in tumoural angiogenesis (WJMSC+MCF7:HUVEC), non-tumoural angiogenesis (WJMSC:HUVEC), and tumoural angiogenesis (MCF7:HUVEC) was established using transwell methods. The difference in HUVEC count was compared in these 3 models on day 3 and 6. Culture of HUVEC alone was treated as control. The results showed a reducing pattern of HUVEC count in tumoural angiogenesis model with stem cells compared to tumoural model without stem cells by 39.64%. In contrast, HUVEC count in non-tumoural angiogenesis model showed an increasing pattern by 1.91% compared to control. We suggest that WJMSC also have selective angiogenic promoting effect in non-tumoural condition but in tumoural environment, an opposite effect was observed. Hence, WJMSC inhibitory effect on stem cells in tumoural angiogenesis model suggestive of the anti-tumour property.



TOXICOLOGY & CRIMINOLOGY



AN ASSESSMENT OF INDOOR AIR QUALITY (IAQ) AND ITS RELATION TO MICROBIAL CONTAMINATION AT DIFFERENT TYPES OF LABORATORY SETTINGS

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Indoor air pollution is contributed by inorganic gases, airborne particulate matters and microbial contamination which commonly come from insufficient air-conditioning systems, crowded buildings and limited number of air vents in commonly used of indoor microenvironment including laboratory. Laboratory usually refers to a room or building equipped with chemicals and biological agents for scientific experimentation and research. Due to its own indoor hazards and its cause of health implications, it is an urge to assess and to understand the physical IAQ characteristics in the laboratory and the variables affecting the degree of exposure to occupants. This study will be achieved by determination of the three aims. The first concern is to assess and to compare the physical IAQ characteristics and airborne pollutants including particulate matters and gaseous pollutants between the different laboratory settings within the same building. The second concern is to identify microbial contaminants via bacterial counts and scientific bacterial-kits species identification. The third concern is to correlate the relationship of physical IAQ characteristics, airborne pollutants and microbial contaminants within and between the laboratory settings. The physical IAQ characteristics and airborne particulate matters were measured by using anemometer and DustMate respectively. Surface Air System Indoor Air Quality (SAS IAQ) was used to capture the microbial contaminants and further laboratory analysis was done for bacterial counting and identification. The scientific method protocol and standard reference limits were compared based on Industrial Code of Practice on Indoor Air Quality (2010) regulated by the Department of Occupational Safety and Health (DOSH). This study demonstrated the common bacterial species available in the environment with poor IAQ and the significant relationship between physical characteristics, airborne pollutants and microbial contaminants between the different types of laboratory settings. These parameters level and concentration (such as airborne PM, $\mu\text{g}/\text{m}^3$ and bacterial counts, CFU/ m^3) were also exceeded the standard limits regulated by the DOSH.



AN ASSESSMENT OF INDOOR AIR QUALITY (IAQ) AND ITS RELATION TO MICROBIAL CONTAMINATION AT DIFFERENT TYPES OF LIBRARY SETTINGS

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Indoor air quality (IAQ) inside a building can be represented by the physical IAQ characteristics, airborne pollutants and microbial contamination. One of the commonly used buildings in academic settings is library. This type of indoor microenvironment setting is the place where people spent more time indoors to gain extra knowledge. Library contains huge collection of books where in a certain time these books can undergo biodeterioration process. This biological reaction can disturb and heighten the existence of airborne particulate matters and microbes in the air of the library and thus cause health implications to occupants. Due to this, it is an urge to assess and to understand the physical IAQ characteristics in the library. The first objective is to assess and to compare the physical IAQ characteristics and airborne pollutants including particulate matters and gaseous pollutants between the different library settings. The second objective is to identify microbial contaminants via bacterial counts and scientific bacterial-kits species identification. The third objective is to correlate the relationship of physical IAQ characteristics, airborne pollutants and microbial contaminants within and between the library settings. This study was carried out at three different libraries, which are UMP Gambang, UIA Kuantan and UMP Pekan. The physical IAQ characteristics and particulate matter (PM) monitoring were assessed by using IAQ Meter and DustMate respectively. Surface Air System IAQ (SAS IAQ) was used to collect the airborne microbes. The microbial contamination was further assessed and identified in the laboratory by using API 20E and API 20 Strep while SPSS was used to analyze the relationship of physical IAQ characteristics, airborne pollutants and airborne microbial contaminants. The scientific method protocol and standard reference limits were compared based on Industrial Code of Practise on Indoor Air Quality (2010) regulated by the Department of Occupational Safety and Health (DOSH). The common types of bacteria present in the indoor air of libraries were identified. This study demonstrated the significant relationship of physical IAQ characteristics, airborne pollutants and airborne microbial contaminants between the different types of library settings. These parameters level and concentration (such as airborne PM, μgm^{-3} and bacterial counts, CFU/m^3) were also exceeded the standard limits regulated by the DOSH.



KNOWLEDGE AND ATTITUDE OF UNDERGRADUATE STUDENTS CONCERNING GANGSTERISM IN MALAYSIA

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Gangsterism appears to be a severe problem in Malaysia and this has led to the increase of fear among members of society and the victim of the crimes itself. Recent media portrayals of gang turf wars have amplified the level of fear. As of 2013, there are 40,313 registered members of 49 illegal organizations in Malaysia who are actively involved in criminal activities. The purpose of the study was to determine whether undergraduate students have a good understanding regarding gangsterism in Malaysia as crime avoidance or crime prevention measures. Self-administered questionnaires on knowledge and attitude were distributed. The survey was cross-sectional and administered to 126 undergraduate students of Universiti Sains Malaysia via convenient sampling. Descriptive and inferential results indicated that the sample had weak knowledge regarding gangsterism. Their attitudes were largely reminiscent of *laissez faire*. In this paper, we discuss the findings and possible reasons for the sample responses. This paper also provides recommendations on resolving the levels of knowledge and attitude towards gangsterism. This result is beneficial to students and members of the public in terms of proactive crime avoidance and prevention.

Keywords: Crime, Gangsterism, Malaysia, Undergraduate Students, Victim



KNOWLEDGE AND ATTITUDE OF UNDERGRADUATE STUDENTS CONCERNING COMMERCIAL CRIMES IN MALAYSIA

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Recent statistics has shown that the number of commercial crimes reported in Malaysia has been declining in the last four years. However, the amount of lost faced by the country appears to be increasing year by year and this has badly affected the country's economy. This study covers all types of commercial crime such as forgery, breach of trust, cybercrime, loan sharks, VCD/DVD piracy, love and insurance scams and other fraudulent cases. The aim of this research was to determine a group of undergraduate students' knowledge about commercial crimes and their attitude towards these crimes. A cross-sectional design using self-administered questionnaires was applied for data collection. The sampling frame consisted of 126 undergraduate students from School of Health Sciences, Universiti Sains Malaysia who were selected using convenience sampling method with predetermined selection criteria. The quantitative data were analysed using descriptive and inferential statistics. Results indicated that most undergraduate students have fair level of knowledge but weak attitude towards commercial crimes. This paper reports and discusses the findings and suggests some recommendations on how to improve the knowledge of commercial crime among youth and their attitude towards commercial crime in order to prevent them from becoming a potential victim in the future. It is anticipated that the findings herein would be highly beneficial for pro-active crime prevention purposes.

Keywords: Attitude, Knowledge, Commercial Crime, Undergraduate Students, Malaysia



A LEGIONELLA OUTBREAK AT A HOSPITAL IN KUALA LUMPUR

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Legionnaires' disease was first described by Fraser et al following an outbreak of pneumonia among participants of the American Legion Convention, Philadelphia in 1976. It was caused by *Legionella pneumophila* which commonly found in aquatic environment. Notification was received on 26th July 2013 from a hospital on five cases with lab positive Legionella among patient admitted in General Intensive Care Unit. On further questioning, there were another 23 cases were tested positive with three related deaths giving fatality rate of 12%. An immediate investigation was done which aimed to determine the occurrence of the outbreak in the hospital, the epidemiological description, the source of infection and immediate prevention and control activities. It is a retrospective cohort study of previous 28 confirmed cases and a cross-sectional study on patients and health care workers from six affected wards. Laboratory investigations were done which includes blood and urine samples from symptomatic respondents and water and swab samples from the cooling tower, misting devices and water dispensers. A total of 264 patients and 216 health care workers were examined and 49 of them (attack rate 10.2%) were defined as cases. Blood and urine samples revealed 5 out of 49 (10.2%) samples were found positive for Legionella giving the total number of cases were 33 with six related deaths. Water samples from the cooling tower 2, 3 and 5 which is located opposite the affected wards and a water dispenser showed positive for *Legionella pneumophila Serogroup 1* and 2. In conclusion, there was an outbreak of Legionella involving 30 patients and 3 health care workers in a hospital from Mac until July 2013. The sources of infection were from the cooling towers and water dispenser in the ward. The hospital was instructed to manually clean both of the source and regular maintenance of the cooling towers.

Keywords: Legionellosis, hospital, cooling tower



PRELIMINARY ASSESSMENT OF WOMEN CRIMEVICTIMIZATION IN KELANTAN

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Crime victimization is considered as a global healthcare and social problem. Global figures and relevant international literature depict women as being victim-prone. However, literature of women crime victimization in Malaysia appears infrequent and insufficient. In order to lead research in the area of women crime victimization, this paper sought to identify incidents and experiences of crime victimization among Kelantanese women. Data was collected by using across-sectional methodology. Self-administered survey forms were distributed and collected among Kelantanese women who attended two crime prevention programmes in Kota Bharu and Tumpat, Kelantan in September and October of 2014. In total, 172 Kelantanese women voluntarily participated. In the survey, respondents were asked to indicate their experiences with crime victimization. They were also asked about crime in general. The results are discussed based on the prevalence of crime, their understanding about crime, types of crime experienced, and the association between demographic variables and experience of victimization. The findings have highlighted occurrences of crime victimization among women in Kelantan. The results shed light on the need to further study women's crime victimization for the purpose of crime prevention. The empirical knowledge herein benefits the public, law enforcers and academic researchers.

Keywords: crime, women crime victimization



AN ASSESSMENT OF INDOOR AIR QUALITY (IAQ) AND MICROBIAL CONTAMINATION IN SERVING FOOD VIA WATER MIST AEROSOL AT PUBLIC RESTAURANTS

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Indoor air quality (IAQ) problems are acknowledged as crucial risk factors for human health in most countries. Contamination of microbes and emissions of airborne pollutants such as particulate matters (PM) and gaseous pollutants from various sources like natural and human-caused can be a factor that contributes to poor air quality. , the indoor air quality in restaurants has become a matter of public concern recently, as people are more aware that restaurants may contain harmful indoor air pollutants. Unfortunately, there are only few studies intended to characterize and compare indoor levels of air pollutants identified in restaurants and little data is available on the general understanding of indoor air quality at restaurant. A study to assess and to compare the physical IAQ characteristics and airborne pollutants between different types of restaurant settings; to identify microbes isolated in the presence and absence of water mist system; to analyse bacterial counting within and between the different restaurant settings; and to determine the relationship of physical IAQ characteristics and airborne microbes contaminants was performed at different types of public restaurants in central town Kuantan. The two different buildings were selected based on the homogenous nature of business as well as its similar location within heavy traffic area in Kuantan town. On top of that, the application of water mist aerosol was also observed within the period of IAQ monitoring. The physical IAQ characteristics and airborne particulate matters were measured by using anemometer and DustMate respectively. Surface Air System Indoor Air Quality (SAS IAQ) was used to capture the microbial contaminants and further laboratory analysis was done for bacterial counting and identification. The scientific method protocol and standard reference limits were compared based on Industrial Code of Practice on Indoor Air Quality (2010) regulated by the Department of Occupational Safety and Health (DOSH). This study demonstrated the common bacterial species available in the environment via water mist application within the building. This study also indicated the common bacterial species accessible within poor air quality environment and the notable relationship between physical IAQ characteristics, airborne pollutants and microbial contaminants in different types of restaurant settings.



FIXED DOSE DRUG COMBINATIONS IN INDIA-A TO Z ANALYSIS

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Fixed Dose Drug Combinations (FDCs) are defined by the World Health Organization as a combination of two or more active ingredients in a fixed ratio of doses. To be useful a FDC should be of known efficacy and rationality. This study was carried out to analyse the Fixed Dose drug Combinations (FDCs) in the pharmacological systems of musculoskeletal drugs, antimicrobial agents and vitamins and minerals. All the FDCs available in India were analyzed quantitatively. The FDCs available in the three above mentioned systems were in addition were also analyzed qualitatively and for their cost. In all the pharmacological drug systems, there were more than 1,000 individual drugs. These drugs were present in more than 3,500 Fixed Dose drug Combinations (FDCs). Vitamins and minerals had the presence of maximum number of FDCs followed by musculoskeletal system and antimicrobial agents. In musculoskeletal system scientific evidence was available for only a few (<5%) of these FDCs whereas in the system of antimicrobial agents scientific evidence was available for only 3.7% of FDCs. In vitamins and minerals, there were 27 individual drugs and the number of FDCs was more than 25 times the number of individual drugs. Majority of the FDCs had more than five constituents. Almost 30% FDCs had presence of banned constituents and scientific evidence was present only for < 1% FDCs in this class. The rationality score ranged from very low for most of the FDCs of vitamins and minerals to intermediate for FDCs of musculoskeletal system. The FDCs in antimicrobial system had scores on the higher side. Majority of FDCs in these three systems were cheaper as compared to their individual constituents. This study shows that the number of FDCs available in the Indian market is very high. Scientific evidence for most of these FDCs is lacking and a significant fraction of these FDCs are either banned or contain banned constituents. The rationality score for the existing FDCs ranges from low to high. However the FDCs offer a pharmacoeconomic advantage to the patients.



HOTEL RESTAURANT SHUT OVER POSSIBLE LINK WITH FOOD POISONING CASES

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Outbreak of food poisoning among 458 participants Malaysia Diabetes Association Conference that held from 14th to 16th June 2013 at one of the Hotel in Kuala Lumpur. Participants are from all over Malaysia, consisting of Physician, Medical Officers, Nurses, Pharmacist, Dietetics and civilians who are members of the Malaysian Diabetes Association. This is a case control study. Definition of case: Individuals who attended conference and eat at the Hotel Restaurant on 14th and 15th June 2013 to experience one of the symptoms such as abdominal pain, fever, diarrhea, vomiting, nausea starting from 15th June 2013 @ 15:00 pm. Study done involving 162 cases (80 cases and 82 controls). Out of the 80 cases involved, the attack rate was 51.4% and 7.6% in the ward. 39% of whom are aged 30-39 years followed by 20-29 years (23.7%) and 40-49 years (18.6%). The majority of cases were women, 62 (75.6%) and Malays (72.2%), followed by India (13.0%) and Chinese (12.4%). Distribution by symptom as nausea (27.5 %), vomiting (15.3 %), diarrhea (98.8 %), stomach ache (92.5%) and fever (53.1%). The epid curve showed the onset of the epidemic first began on June 15 @ 10:00 am and the final onset on 20th June 2013 @ 3:00 am. The incubation period is 1 hour minimum and maximum incubation period is 43 hours. The average incubation period is 10 hours. Epidemic curve shows the source of the infection is "common source". Analysis of food eaten showed the highest rate of attack food is chicken gelantin (43.2 %), followed by chicken curry and roti jala. The causes of poisoning are Salmonella spp and sources are chicken-based dishes are served on 15th June 2013 (galantine chicken and curry chicken). Other factors contributing to outbreaks of food poisoning are the processes involved in the preparation of food, which is not in accordance with the temperature for storage of frozen chicken inner and cooking and food preparation is not sufficient cause cross contamination and growth of this organism in the food. Environment is not hygienic environment where positive samples showed coliform bacteria contamination environment. Preventive and control measures have been taken to prevent the recurrence of similar incidents.



A TREND ANALYSIS OF COMMERCIAL CRIMES IN MALAYSIA

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Crimes committed without violence have often been neglected or underestimated. Crimes such as cyber-crime scams, corporate fraud, forgery, money laundering and illegal money lending although not directly causing physical harms to human, can ruin victims economically thus affecting their personal, familial and social wellbeing. The Royal Malaysia Police (RMP) classified these types of crime as Commercial Crime. The focus of this study was to determine whether commercial crimes in Malaysia have come to an alarming level and provide information beyond prevalence rates. Based on the lack of structured information, this trend analysis sought to discern longitudinal patterns underlying the incidences of commercial crimes throughout Malaysia between the years 2008 and 2013. An archival time series analysis from police records was performed. Relevant information was obtained with permission, from the RMP; regarding various types of commercial crimes. Analyses were conducted for type of commercial crime, year, state, and amount of loss. From the RMP records, the categories of commercial crime for this study were: criminal breach of trust, cheating, fraudulent deeds and dispositions of property, cyber-crime, forgery, money laundering, counterfeiting currency and loan sharking. In total, 123,004 cases were reported in the six year duration throughout Malaysia with a total loss of RM7,656,679,203.86. In general, commercial crimes in Malaysia occurred in a fluctuating pattern. The highest number of commercial crimes were recorded in the year 2009 (24,590 cases) followed by the year 2010. Three most common types of commercial crimes recorded were fraud, criminal breach of trust and fraudulent deeds and dispositions of property. Selangor had the highest recorded cases (28,704 cases) followed by Johor and Kuala Lumpur whilst Perlis had the lowest recorded cases (1,084 cases). The discussion focuses on the worrisome trend and implications for commercial entities. Several proactive crime prevention strategies are offered that may reduce incidents and amount of loss incurred.

Keywords: commercial crimes, criminal breach of trust, fraud, fraudulent deeds, trend analysis



MOLECULAR BIOLOGY



CYTOTOXIC, ANTI-INFLAMMATORY AND ADIPOGENIC EFFECTS OF SELECTED FLAVONOIDS ON CELL LINES

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Naturally-occurring flavonoids have tremendous potential for producing of new therapeutic agents that provide many benefits to mankind. This study focused on the evaluation of the in vitro cytotoxic, anti-inflammatory and adipocyte differentiation effects of the selected flavonoids which were inophyllum D, calanone, and isocordataoblongic acid from *Calophyllumsymingtonianum* as well as morelloflavone from *Garciniaprainiana* on MCF 7 human breast cancer cells, RAW 264.7 macrophages and 3T3-L1 pre-adipocytes respectively. The cytotoxicity study on MCF 7 human breast cancer cells was conducted by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. Meanwhile, the study of anti-inflammatory effects in RAW 264.7 macrophages and adipogenic effects on 3T3-L1 pre-adipocytes were conducted through nitrite determination assay and induction of adipocyte differentiation respectively. In the cytotoxicity study, inophyllum D was the only compounds that exhibited significant cytotoxic effect against MCF 7 human breast cancer with IC₅₀ of 84 µg/mL. Further, all the compounds have shown anti-inflammatory effects in lipopolysaccharide (LPS)-induced RAW 264.7 macrophages with inhibition of nitrite concentration as compared to the positive control. Besides, all the compounds in the range of the tested concentrations also produced adipogenic effects on 3T3-L1 pre-adipocytes and this may suggest that they exhibited potential anti-hyperglycemic property which mimicking the insulin action. Thus, this study may provide significant implication in the discovery of the potential of these selected flavonoids as alternative anti-cancer, anti-inflammatory and anti-hyperglycemic drugs.



DETECTION OF β HCG EXPRESSION OF FROZEN EMBRYO IN EARLY CLEAVAGE CELLS AS PREDICTIVE MARKER AT BLASTOCYST STAGE DEVELOPMENT

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Expression of β HCG mRNA in early cleavage cell stages is important in predicting embryo viability at blastocyst stage of development. Embryo viability is crucial for IVF treatment to be succeeded in terms of increment of embryo implantation and pregnancy rate, since pregnancy failure is in high percentage. Henceforth, indication of embryo development from one cell stage to another cell stage of embryo development is needed. The aim of this study is to evaluate the significant association of β HCG expression with early cell stage cleavages and its relationship as predictive marker at blastocyst stage of development. This study reports the usage of Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) procedure in assessing β HCG mRNA expression at different cell stages in frozen normal embryos which there were 2- to 4-cell stage and 5- to 10-cell stage categories. Result gained showed there were no expressions of β HCG obtained at 2- to 4-cell stage category in contradiction with 5- to 10-cell stage category. Correlation between β HCG mRNA expression in early cell stage cleavages and blastocyst development were analysed descriptively by referring and comparing other studies done by Hansis et al. (2002), Hansis et al. (2004) and Stephen *et al.* (2013) in turn showed negative result of β HCG mRNA expression in 2- to 4-cell stage category is in contradiction with production of β HCG molecule which might be due to some limitation. In short, detection of β HCG expression of frozen embryo in early cleavage cells can be used as predictive marker at blastocyst stage development.



QUANTITATIVE PROTEIN EXPRESSION STUDIES OF MALAYSIAN BROILER AND ORGANIC CHICKEN SKIN

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Antibiotic treatment is a great demand in animal farming since it could be used to treat disease and to increase growth in animal but this has raised a major concern regarding antibiotics resistance and its residue that could lead to toxicity. Two types of chicken skin samples, which are broiler (B) and organic chickens (O), were examined by using proteomic strategy. The purpose of this study is to analyze and compare the protein expression of chicken skin between broiler and organic chicken. Chicken skin was pounded in the presence of liquid nitrogen to a fine powder and was homogenized in extraction sample buffer. The supernatant was used to determine protein concentration in two types of chicken samples by Bradford assay. Then, the protein samples were examined by using SDS-PAGE and further resolved by using two-dimensional gel electrophoresis (2-DGE). The gels were viewed using GS-800™ Calibrated Densitometer (Bio-Rad) and analysed by using PD Quest 2D Analysis software (Bio-Rad). The protein spots in 2-DGE matched to ExPASy SWISS-2DPAGE database as reference to determine protein type that were expressed. Results showed that the mean value of protein concentrations in broiler chicken and organic chicken skin were 3.1633 µg/µL and 3.8149 µg/µL respectively. From the result of 2-DGE, protein spotted on gel at pH 5.10 with Mw 45 996 Da and pH 4.87 and Mw 18 573 Da was predicted as ATP synthase subunit beta and translationally-controlled tumor protein and found in different intensity between both samples and respectively. A sharpen spot on pH 7.15 with Mw 22 380 Da, was present on broiler chickens while absent on organic chicken skin sample, was predicted as Superoxide dismutase proteins. In conclusion, there were various differences of protein expression detected in skin sample between broilers and organics chicken.



THE IDENTIFICATION OF VASA GENE EXPRESSION THAT INVOLVE IN GERMLINE DEVELOPMENT FROM TESTIS BIOPSY OF AZOOSPERMIC PATIENT AT IUM FERTILITY CENTER

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The expression product of *VASA* gene is widely conserved germ line marker and participates in the development regulation of reproductive system. Aim: To detect the expression of *VASA* in human spermatogonia, and to compare *VASA* expression between azoospermic patient and normozoospermic man. Ejaculated spermatozoa were collected from normozoospermic man by masturbation, and testicular biopsy of patient with non-obstructive azoospermia by TESE. Testicular cells were isolated and cultured in supplemented knockout DMEM medium. Presence of spermatogonia was determined by reverse transcriptase polymerase chain reaction (RT-PCR) for spermatogonial marker which is vasa. *VASA* mRNA was expressed in the ejaculated spermatozoa. No vasa expression was detected in spermatogonial-like stem cell's culture. We thus speculate that lower *VASA* expression during spermatogenesis might be associated with the abnormal differentiation of primordial germ cells or spermatogonia cells that lead to male infertility, and *VASA* could be used as a molecular marker for the diagnosis of male infertility.



IN VITRO OF ANTI-TUMOR PROMOTING EFFECTS OF BIOACTIVE FRACTIONS FROM *Annona muricata* LEAVES ON RAJI CELLS

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Significant increment of global cancer rates through the years has prompted the chemoprevention based on natural products as an alternative in the development of anticancer drugs. One of the renowned Malaysia's herbs called *Annona muricata* has been widely used traditionally against various condition and illnesses. Several *Annona* species had exhibited promising cytotoxicity against various cancer cell lines. One of the Annonaceous acetogenins called annonacin is the promising antitumor that is found only in the plant family of Annonaceae. This study was aimed at determining the anti-tumor promoting effects of various fractions extracted from *Annona muricata* leaves ethanolic extract, in vitro. Crude ethanolic extract of *A.muricata* leaves (AME) and it's fractions separated from the extract, namely hexane (AMH), dichloromethane (AMD) and methanol (AMM) fractions, respectively, were subjected to inhibition of Epstein-Barr virus early antigen (EBV-EA) activation assay induced by the tumor promoter 12-O-tertadecanoylphorbol 13-acetate (TPA). In prior, [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] (MTT) assay was performed to determine the IC₅₀ of the crude extract and fractions against Raji cancer cells. Cytotoxicity study revealed highest IC₅₀ in AME and AMM (>50 ug/ml), followed by AMH (22.07 ug/ml) and 4.68 ug/ml for AMD. Furthermore, at highest concentration (500 ug/ml) moderately active inhibitory effect on the EBV-EA induction using Raji cells was observed in AMH (63.8 ± 9.32%) followed by AMD (52.3 ± 3.04%) and AMM (52.1 ± 5.03%). AME showed only weakly active (32.3 ± 4.02%) inhibitory effects against EA activation. The present findings reported cytotoxicity and anti-tumor promoting effect of the crude leaves extract and its bioactive fractions of *Annona muricata*. Further investigations on *in vivo* studies are needed to confirm the properties.



HUMAN CUMULUS CELLS (CCs) GREMLIN 1 GENE EXPRESSION IN ASSESSMENT OF OOCYTE QUALITY

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The identification of *GREM1* in human cumulus cells (CCs) as a marker is needed for an additional criterion in morphological oocyte evaluation to improve the efficiency of prediction for single embryo transfer. The study of *GREM1* gene transcription had arisen as it plays important role in signaling for follicular development and ovulation. Therefore, the main objectives of this preliminary study are to investigate the expression of gremlin 1 (*GREM1*) in human CCs and to study the pattern of *GREM1* expression in relation to oocyte and embryo quality. A preliminary study was performed on CCs derived from four different patients that undergo IVF and ICSI treatment. Semi-quantitative data was obtained from the amplification products of Polymerase Chain Reaction (PCR) for analysis *GREM1* expression. The results shown that *GREM1* was expressed in grade 3 oocytes, whereas, *GREM1* was absent in grade 4. This showed that the expression was influenced by oocyte quality. Hence, the measurement of *GREM1* expressions in CCs would reliably complement the morphological evaluation providing a useful tool for selecting competence oocytes with greater chances to be fertilized especially in ART.



DETECTION OF $P16^{INK4a}$ (P16) METHYLATION IN DIFFUSE LARGE B-CELL LYMPHOMA USING METHYLATION-SPECIFIC PCR

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Diffuse large B-cell lymphoma (DLBCL) is an aggressive malignancy of non-Hodgkin lymphoma, mostly involve lymph nodes. It is the most common lymphoma among adult with median age 70 years. *p16* is a tumour suppressor gene (TSG) which inhibits cyclin-dependent kinase thus inactivates Rb protein and blockade G1 phase. Silence of *p16* induced by DNA methylation epigenetically has been reported as one of the factors toward DLBCL occurrence with varying percentages. Loss of *p16* protein causes unregulated cell division which may lead to cancer. In this study, we aim to identify the presence of *p16* methylation in DLBCL. DLBCL samples were obtained from two study groups; Kelantan and Pahang states. Methylation-specific PCR (MSP) was utilized to detect *p16* methylation using specific primers in 39 formalin-fixed paraffin embedded tissues samples. The PCR products were then visualized on 2% agarose gels. 14 of 34 (41%) samples are found to have *p16* methylation. There was no *p16* methylation detected in five normal thyroid samples. *p16* gene methylation has been detected in almost half of our samples. This could provide data of gene methylation in DLBCL among Malaysian. Thus, more studies should be carried out for further investigation.

Keywords: methylation, lymphoma, *p16*, methylation-specific PCR



IDENTIFICATION GENE EXPRESSION OF HYALURIC ACID SYNTHASE 2 (HAS2) IN HUMAN CUMULUS CELL AS A MARKER FOR OOCYTE QUALITY

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Nowadays, the criteria for oocyte selection is based on morphological criteria but it is generally acknowledge that its reliability requires further improvement. The relationship between cumulus cell function and oocyte developmental competence indicates that analysis of cumulus gene expression is a potential non-invasive method to aid oocyte selection. The aim of this study is to investigate whether HAS2 expression in cumulus cell can become useful marker for oocyte quality. Cumulus was isolated from 4 patients and the expression of HAS2 was analyzed by using RT-PCR. Patient 1 has grade 4 oocyte quality meanwhile patient 2, patient 3 and patient 4 have grade 3 oocyte quality. HAS2 were expressed in grade 3 oocyte quality. There is no expression of HAS2 in grade 4 oocyte quality. This shows that HAS2 was expressed in good quality oocyte. Result indicates that the expression of HAS2 in cumulus cell would reliably complement the morphological evaluation providing a useful marker for oocyte quality.



IDENTIFICATION OF *BRCA1* TUMOR SUPPRESSOR GENE EXPRESSION AS A DNA REPAIR GENE FROM FROZEN CLEAVAGE EMBRYO CELL AT IUM FERTILITY CENTRE

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BRCA1 is known as the essential tumor suppressor gene in human that will express a protein which called breast cancer type 1 susceptibility protein. It has two main functions which are repaired the damaged DNA and also induced the apoptotic mechanism to eliminate the cell when mutation DNA could not be repaired. In this study, the entire embryo samples which been used were assess and considered as Grade 1 embryo according to embryo grading provided by IUM Fertility Centre. This study will be done specifically to identify the expression of *BRCA1* from frozen embryo cleavage and also to find out the relationship between fragmentation rates of embryo with patterns of *BRCA1* gene expression. The RNA from cleavage embryo was extracted and was tested by Reverse-Transcriptase Polymerase Chain Reaction (RT-PCR) and gel electrophoresis to identify the *BRCA1* gene expression. The results shown that *BRCA1* gene expressions were expressed in frozen cleavage embryo. Furthermore, the statistical analysis revealed that there is no significant difference among of fragmentation degrees in grade 1 embryo.



HIGH VALUE ADDED PRODUCTS FROM HAEMATOCOCCUS PLUVIALIS; ASTAXANTHIN FOR HUMAN HEALTH AND NUTRITION

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Microalgae are a highly diverse group of photosynthetic, microscopic organisms that play a key role as a food source and they have been used as a nutrient rich food and medicine for thousands of years. Microalgae contents have been proven to have health benefits to human. Algaetech has taken this opportunity to develop a new innovative technology named Algae Integrated Management System (AIMsysTM) for the commercialization of the Haematococcus Pluvialis for primary production of Astaxanthin for human health products. The Carotenoids pigment Astaxanthin has important applications in the Nutraceuticals, cosmetics, and food and feed industries. Haematococcus Pluvialis is the richest source of natural Astaxanthin. It is now evident that the antioxidant potential of Carotenoids can significantly reduce free radicals and oxidative stress to help the body maintain a healthy state. Until recently, there hasn't been a concentrated form of Astaxanthin available as a dietary supplement. Haematococcus Astaxanthin supplementation is beneficial for human health as it have a strong antioxidant activity and its possible role in health conditions in several tissues in the human body.

Keywords: Haematococcus Pluvialis, Astaxanthin, Carotenoids, Algae Integrated Management System