### LIST OF PUBLICATIONS AND ABSTRACTS YEAR 2014

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Outcomes from the International Survey Informing Greater Insights in Opioid Dependence Treatment (INSIGHT) project.

Adrian Octavian Abagiu1, Zrinka Cavar2, Pinhas Dannon3, Philip George4, Boguslaw Habrat5, Zubeida Mahomedy6, Petr Popov7, Riza Sarasvita8, Diah Setia Utami9, and Andrej Kastelic10.

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4International Medical University, Kuala Lumpur, Malaysia
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6General Psychiatry Dual Diagnosis Unit: Substance Dependence, Life Riverfield Lodge Hospital, Gauteng, South Africa
7Department of Addictology, First Faculty of Medicine, Charles University in Prague, General University Hospital in Prague, Apolinarska, Czech Republic
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9Center for Treatment of Drug Addiction, University Psychiatric Hospital, Ljubljana, Slovenia

Abstract

Aims: The International Survey Informing Greater Insights in Opioid Dependence Treatment (INSIGHT) study evaluated the implementation of opioid dependence treatment across different countries to assess treatment delivery, quality of care and outcomes.

Methods: A questionnaire-based survey was used to gather data in nine countries across Central and Eastern Europe, South Africa and South-East Asia, from patients with opioid dependence receiving medication-assisted treatment (MAT), healthcare professionals (HCPs) who cared for opioid-dependent patients and opioid users not receiving MAT.

Findings: There was substantial variation between countries, but overall results suggest that several aspects of MAT can be improved, such as access to treatment (conditions to start or remain in treatment), quality of care (availability/awareness of treatment options and appropriate medication dosing) and treatment outcomes (on-top use, misuse and diversion).

Conclusions: This analysis highlights key priorities that should improve the quality of opioid dependence care and access to treatment. These priorities include: acknowledging opioid dependence as a chronic medical condition requiring long-term treatment; recognition by policymakers of the cost-effectiveness of treatment; making available, to those who want them, psychosocial interventions and educating HCPs to prescribe the safest, least divertible forms of medications available at optimal doses in order to reduce opioid use, misuse and diversion.

Keywords: International survey, medication-assisted treatment, opioid dependence treatment, outcomes, patients, physicians, quality of care, treatment access.

**Early effect of hydroxychloroquine therapy: Relationship between cumulative dose and retinal thickness.**

Puneet Agarwal¹, Yuk Hei Wong², Esha Dasgupta³, Renu Agarwal⁴, Bethel Indira Livingstone⁵, Srinivasan Ramamurthy⁶, and Gun Suk Chyn⁷.

¹Department of Ophthalmology, International Medical University, Jalan Rasah, Seremban, Malaysia, ²School of Medicine, International Medical University, Kuala Lumpur, Malaysia, ³Department of Medicine, International Medical University, Jalan Rasah, Seremban, Malaysia, ⁴Faculty of Medicine, Brain and Neuroscience Communities of Research, Universiti Teknologi Mara, Shah Alam, Malaysia, ⁵Department of Ophthalmology, Hospital Tuanku Ja'afar, Seremban, Malaysia, ⁶School of Pharmacy, International Medical University, Kuala Lumpur, Malaysia, and ⁷Department of Medicine, Hospital Tuanku Ja'afar, Seremban, Malaysia

**Abstract**

**Background:** Hydroxychloroquine (HCQ) is widely used for long-term treatment of autoimmune diseases such as rheumatoid arthritis. However, its long-term use is known to be associated with visual changes due to retinal damage. Retinal damage associated with long-term HCQ therapy is preventable if the drug is discontinued early when the patients are still asymptomatic. In view of contrasting reports from previous studies, we investigated the association of prolonged HCQ therapy with retinal thickness in macular area.

**Methods:** This study included 48 patients on long-term HCQ therapy and 38 healthy controls. All subjects underwent examination for corrected visual acuity, fundus photography, visual fields and SD-OCT for retinal thickness.

**Results:** Visual acuity, visual fields, fundus photography and SD-OCT did not reveal changes consistent with diagnosis of established HCQ retinopathy in any of the subjects from HCQ group. Retinal thickness in central, parafoveal and perifoveal areas did not show significant differences between HCQ and control groups. However, we observed negative correlation between cumulative dose and retinal thickness in the parafoveal area ($p = 0.003$) and perifoveal areas ($p = 0.019$) but not in the central area.

**Conclusions:** Correlation of cumulative dose with retinal thickness in parafoveal and perifoveal areas and not the central area is in accordance with the late appearance of HCQ-induced bull's eye retinopathy. Hence screening of asymptomatic patients using OCT seems to be of great importance for early detection of retinal changes.

**Keywords:** Cumulative dose, hydroxychloroquine, OCT, retinal thickness.
Pathogenetic role of magnesium deficiency in ophthalmic diseases

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³Department of Ophthalmology, IMU Clinical School, International Medical University, Jalan Rasah, Seremban, Malaysia

Abstract
Magnesium is one of the most important regulatory cation involved in several biological processes. It is important for maintaining the structural and functional integrity of several vital ocular tissues such as cornea, lens and retina. The magnesium content of lens, especially in its peripheral part, is higher than that in aqueous and vitreous humor. Magnesium has also been shown to play critically important role in retinal functions. Magnesium plays significant role as a cofactor for more than 350 enzymes in the body and regulates neuroexcitability and several ion channels. Membrane associated ATPase functions that are crucial in regulating the intracellular ionic environment, are magnesium-dependent. Moreover, the enzymes involved in ATP production and hydrolysis are also magnesium-dependent. Magnesium deficiency by interfering with ATPase functions causes increased intracellular calcium and sodium and decreases intracellular potassium concentration. Such ionic imbalances in turn alter the other cellular enzymatic reactions and form the basis of the association of magnesium deficiency with ophthalmic diseases such as cataract. In presence of magnesium deficiency, an imbalance between mediators of vasoconstriction and vasorelaxation may underlie the vasospasm, which is one of the pathogenic factors in primary open angle glaucoma. Furthermore, magnesium deficiency is also a contributing factor in increased oxidative stress and inducible NOS stimulation that can further contribute in the initiation and progression of ocular pathologies such as cataract, glaucoma and diabetic retinopathy. In this paper we review the association of disturbances of magnesium homeostasis with several ophthalmic diseases.

Keywords: Magnesium, Potassium, Calcium, Cataract, Glaucoma, Diabetic retinopathy, Ocular surface, Retina.

Newer targets for modulation of intraocular pressure: Focus on adenosine receptor signaling pathways

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²International Medical University, IMU Clinical School, Department of Ophthalmology, Jalan Rasah, Seremban, Malaysia

Abstract

Introduction: The homeostatic role of adenosine in regulating intraocular pressure (IOP) is now widely recognized, and hence, the drugs targeting adenosine receptors have become the focus of investigation. In this review, we summarize the adenosine receptor signaling pathways, which could be potential therapeutic targets for the management of glaucoma.

Areas covered: This review presents a brief summary of the current hypotheses explaining the increased resistance in the trabecular meshwork outflow pathways and the role of adenosine in regulating the outflow pathway resistance. The intraocular distribution of adenosine receptor subtypes and their structure is described. The adenosine receptor signaling pathways, including activation of adenylyl cyclase, phospholipase–inositol triphosphate–diacylglycerol and phosphatidylinositol-3-kinase and their link to MAPK pathways leading to changes in gene transcription are discussed in detail. The literature search for this review was done using PubMed using several key words such as adenosine, receptors, signaling pathways, trabecular meshwork, ciliary body, IOP, G proteins, GPCR, adenylyl cyclase, phospholipase C, ERK1/2 and MAPKs.

Expert opinion: Besides adenosine receptor agonists and antagonists, drugs targeting intracellular signaling molecules, such as Ras proteins, small GTPase (Rho), Epac-specific cAMP analogs and Rap and Raf-targeted therapies may be useful strategies in regulating IOP.

Keywords: adenosine receptors, G proteins, intraocular pressure, mitogen-activated protein kinase pathways.
Liposomes in topical ophthalmic drug delivery: An update

Renu Agarwal1,2, Igor Iezhitsa1,2,3, Puneet Agarwal4, Nurul Alimah Abdul Nasir1,2, Norhafiza Razali1,2, Renad Alyautdin1, and Nafeeza Mohd Ismail1,2.

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3Research Institute of Pharmacology, Volgograd State Medical University, Volgograd, Russian Federation, and
4Department of Ophthalmology, IMU Clinical School, International Medical University, Jalan Rasah, Seremban, Malaysia

Abstract

Topical route of administration is the most commonly used method for the treatment of ophthalmic diseases. However, presence of several layers of permeation barriers starting from the tear film till the inner layers of cornea make it difficult to achieve the therapeutic concentrations in the target tissue within the eye. In order to circumvent these barriers and to provide sustained and targeted drug delivery, tremendous advances have been made in developing efficient and safe drug delivery systems. Liposomes due to their unique structure prove to be extremely beneficial drug carriers as they can entrap both the hydrophilic and hydrophobic drugs. The conventional liposomes had several drawbacks particularly their tendency to aggregate, the instability and leakage of entrapped drug and susceptibility to phagocytosis. Due to this reason, for a long time, liposomes as drug delivery systems did not attract much attention of researchers and clinicians. However, over recent years development of new generation liposomes has opened up new approaches for targeted and sustained drug delivery using liposomes and has rejuvenated the interest of researchers in this field. In this review we present a summary of current literature to understand the anatomical and physiological limitation in achieving adequate ocular bioavailability of topically applied drugs and utility of liposomes in overcoming these limitations. The recent developments related to new generation liposomes are discussed.

Keywords: Cationic liposomes, immunoliposomes, stealth, topical drug delivery, transcorneal.
Mechanisms of angiotensin converting enzyme inhibitor-induced IOP reduction in normotensive rats

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²Department of Ophthalmology, IMU Clinical School, International Medical University, Seremban, Negeri Sembilan, Malaysia

Abstract
Angiotensin converting enzyme inhibitors (ACEIs) have been shown to lower intraocular pressure (IOP). Since, the ACEIs cause increased tissue prostaglandin levels, we hypothesized that the mechanisms of ACEI-induced IOP reduction have similarity with those of prostaglandin analogs. The present study investigated the involvement of matrix metalloproteinases (MMPs) and cytokine activity modulation as the underlying mechanisms of ACEI-induced ocular hypotension. The IOP lowering effect of single drop of enalaprilat dehydrate 1% was evaluated in rats pretreated with a broad spectrum MMP inhibitor or a cytokine inhibitor. Effect of angiotensin receptor blocker, losartan potassium 2%, was also studied to evaluate involvement of angiotensin II receptor type 1 (AT1) in IOP lowering effect of ACEI. Topical treatment with single drop of enalaprilat resulted in significant IOP reduction in treated eye with mean peak reduction 20.3% at 3h post-instillation. Treatment with losartan resulted in a peak IOP reduction of 13.3%, which was significantly lower than enalaprilat, indicating involvement of mechanisms in addition to AT1 blockade. Pretreatment with a broad spectrum MMP inhibitor or a cytokine inhibitor significantly attenuated the enalaprilat-induced IOP reduction with mean peak IOP reduction of 11.2% and 13.6% respectively. The IOP-lowering effect of enalaprilat seems to be attributed to reduced angiotensin II type 1 receptor stimulation and modulation of MMP and cytokines activities.

Keywords: Angiotensin converting enzyme inhibitor, Enalaprilat, Intraocular pressure, Matrix metalloproteinase, Tumor necrosis factor-alpha, Angiotensin II type 1 receptor blocker.

Comprehensive implementation of the International Caries Detection and Assessment System (ICDAS) in a dental school and university oral health centre: A stepwise framework


School of Dentistry, International Medical University, Bukit Jalil, 57000 Kuala Lumpur, Malaysia

Abstract
ICDAS (the International Caries Detection and Assessment System) is a new approach to the detection and classification of dental caries, starting with the stage showing the earliest visual changes.

Methodology: This article describes the implementation of the ICDAS at the School of Dentistry, International Medical University, and Kuala Lumpur, Malaysia in a step-by-step systematically planned process. Beginning with the setting up of a Task Force in 2011 for the evaluation and preparation of the training resources and the running of exploratory training exercises, it finally culminated in carrying out training workshops for the entire staff and students. After the internal processes had been completed, an international expert (KE) was invited to evaluate the process and conduct another workshop using the resources developed within the University, including a reference set of carious teeth. The overall time taken was one and a half years.

Conclusions: The implementation of the ICDAS has been comprehensively set into motion within the context of our local curriculum and oral healthcare delivery arrangements. However, this will be an ongoing process with further quality assurance measures being required clinically together with the continuing training of new staff. Sharing this ‘framework’ of the ICDAS implementation process should considerably ease the path and reduce the time period of future implementations by other dental teaching institutions.

Keywords: ICDAS; dental caries; implement; school; Malaysia; challenges; framework; classification; faculty training.

The health professionals’ right to refuse: Is it good, bad or ugly?

Keivan Ahmadi¹,², Syed S. Hasan²,³ and Keihan Ahmadi⁴.

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Abstract
The literature is replete with cases in which the health professionals have refused to provide care to their patients; where in some cases such professionals have received disciplinary actions against them for not fulfilling their professional duties. [1–4] However, the health professionals should have the right to refuse to provide care to their patients, for whatsoever reason, without being disparaged or disqualified. A health professional who fails to balance between personal partiality and professional impartiality, upon being compelled to provide care, might provide care with the quality, one could argue, that might not be the high-quality patient care. Our attention needs to be redirected to the basics of professionalism and its institutionalization within self, [5–7] where the pinnacle of professionalism ensues from the interest in provision of service to the patient, while ruminating about one’s own personal preferences. [6] The personal and the professional preferences are under constant change. For example, the professional preferences could be changed under the direct or indirect influence of the profession, professional bodies or the peers. [8, 9] Professions favor some traits of professionalism such as tactic knowledge, certain routines and adaptabilities over the other because of the economic profitability. [9] As a result of this, a sense of selectivity is imposed on the health professionals to render those favored services to their clients. Moreover, a health professional may make a decision that is influenced by the actions of a reputable peer, as the decisions made by the professionals are neither routinized nor predictable. [9] From a global view, a (wrong) decision making and its enactment by a health professional could be multidimensional and could be linked with (1) the profession; (2) the peers; (3) the clients; (4) the training; and (5) the health professional’s own morals. [10] Henceforth, if any action has to be taken to reinstitute professionalism, it should be multidimensional and should reasonably address all of the abovementioned contributing factors.

**Adverse drug reactions and quality of life in HIV/AIDS patients: Advocacy on valuation and role of pharmacovigilance in developing countries**

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**Abstract**

**Background:** Evolution of ART treatment of HIV/AIDS presents challenges for patients and health-care professionals, and thus measures of quality of life (QOL) is imperative to maximize outcomes. Similar to other chronic illnesses, HIV patients face challenges in adherence to their medications and experience side effects affecting their overall well-being, a primary outcome of HIV/AIDS treatment.

**Discussion:** Adverse drug reactions (ADRs) are widely accepted as one of the most significant factors affecting the treatment outcomes which often pose negative impact on patients’ quality of life. This becomes more evident in the treatment of chronic illnesses such as HIV & AIDS, where ADRs are often accountable for issues like non-adherence, which may not only affect the patients’ confidence on ARVs but can eventually affect the whole outcome of the treatment. There is no doubt about the effectiveness of interdisciplinary approach in managing chronic illnesses and a greater role of pharmacist is regarded as one of the key factors in optimizing drug treatment and handling issues related to drug therapy. However disparities among developed and developing health care system is posing challenges in handling medication related issues in developing world.

**Summary:** Indeed, to use medications effectively, we need to understand more precisely the realities of toxicity and the effect of these toxicities on clinical outcomes. Pharmacists are well known for their importance and effectiveness in optimizing medication therapy which in turns impact positively on patients’ quality of life.

**Keywords:** HIV & AIDS, Health related quality of life, adverse drug reactions.

**Anti-retroviral therapy and incidence of adverse drug reactions among cohort of Malaysian HIV/AIDS patients**

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**Abstract**

**Background:** Adverse drug reactions (ADRs) affect patients' compliance and health related quality of life. HIV patients face challenges in adherence to their medications and experience side effects affecting their overall well-being, a primary outcome of HIV/AIDS treatment.

**Methods:** Four hundred and forty three Malaysians with a known diagnosis of HIV/AIDS, using Antiretroviral Therapy (ART) for at least past three months, were invited to participate in this study. The data were analyzed using the Statistical Package for Social Sciences (SPSS®) version 18 and STATA IC® version 12.

**Results:** About 44% (n=194) of total 443 HIV patients reported ADR, among them 131 (67.5%) were male while 63 (32.4 %) were females. Weight loss (12.6%), lipodystrophy (12.4%), peripheral neuropathy (12%), itchiness (11.7%) and skin problems (8.6%) were frequently found ADRs. Almost similar numbers of patients experienced ADRs who were combivir based (21.7%) and other drug therapy (22.1%) and this translated insignificant association between type of therapy and ADRs. However the poor CD4 counts (OR 1.72, 95% CI: 1.04 — 2.86), and poor viral suppression (OR 1.87, 95% CI: 1.04 — 3.36) did increase the odds of experiencing adverse drug reactions.

**Conclusion:** Uninformed and unpredictable ADRs may lead to non-adherence, poor health related quality of life and refusal to take medications which can ultimately affect the outcomes of HIV program. This poses a great necessity for optimizing pharmacovigilance services by addressing areas that require more attention.

**Keywords:** HIV & AIDS, Adverse Drug Reactions, anti-retroviral therapy.
Family context and khat chewing among adult Yemeni women: A cross-sectional study

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Abstract
Khat chewing is associated with unfavourable health outcomes and family dysfunction. Few studies have addressed the factors associated with khat chewing among Yemeni women. However, the family and husband effects on chewing khat by women have not been addressed. This study aimed to determine the prevalence of khat chewing among Yemeni women and its associated factors, particularly husbands and family factors. A cross-sectional study was conducted among 692 adult Yemeni women in the city of Sana’a in Yemen using structured “face to face” interviews. Mean (±SD) age of women was 27.3 years (±6.10). The prevalence of chewing khat by women was 29.6%. Factors associated with chewing khat among women were chewing khat by husbands (OR = 1.8; 95% CI: 1.26, 2.53), being married (OR = 2.0; 95% CI: 1.20, 3.37), frequent family social gatherings (OR = 1.5; 95% CI: 1.06, 2.10), high family income (OR = 1.57; 95% CI: 1.12, 2.21), larger house (OR = 1.63; 95% CI: 1.16, 2.31), and age of women (OR = 0.64; 95% CI: 0.44, 0.92). It is concluded that khat chewing by women in this study was significantly associated with family factors and with khat chewing by their husbands. Urgent action is needed to control khat chewing particularly among women.

**The role of psychosocial and belief factors in self-reported cigarette smoking among university students in Malaysia**

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**Abstract**

This study aimed to explore factors associated, specifically belief factors, with self-reported tobacco smoking status. A sample of 300 students was recruited from a private university in Malaysia. Data was collected using a pre-tested self-administrated questionnaire that investigated various factors including socio-demographics, socio-economic status, smoking behavior and beliefs on tobacco smoking. The main tobacco use in this study sample was cigarettes and the estimated prevalence of self-reported cigarette smoking was 10.3%. In bivariate analysis, self-reported cigarette smoking was significantly associated with socio-demographic, behavioral factors and faculty of study (P<0.05). In multivariate modeling, being male and a non-medical student, did not exercise, having a smoker father and brother or sister, suffering from financial difficulties and having the belief that smokers had more friends, all had statistically significant associations (P<0.05) with self-reported cigarette smoking. Social and interpersonal factors were associated with self-reported cigarette smoking status. A comprehensive health model focusing on changing the social norms of parent and sibling tobacco smoking and students’ beliefs, alongside nurturing skills of dealing with stressful situations, warrant implementation.

**Keywords:** financial difficulties, friendship, physically inactive, social modeling, tobacco.
Evaluation of psychometric properties of the Malay version perceived stress scale in two occupational settings in Malaysia

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Abstract

Background: The 10-item version of Perceived Stress Scale (PSS-10) is a widely used tool to measure stress. The Malay version of the PSS-10 has been validated among Malaysian Medical Students. However, studies have not been conducted to assess its validity in occupational settings.

Aim: The aim of this study is to assess the psychometric properties of the Malay version of the PSS-10 in two occupational setting in Malaysia.

Subjects and Methods: This study was conducted among 191 medical residents and 513 railway workers. An exploratory factor analysis was performed using the principal component method with varimax rotation. Correlation analyses, Kaiser-Meyer-Olkin, Bartlett's test of Sphericity and Cronbach's alpha were obtained. Statistical analysis was carried out using statistical package for the social sciences version 16 (SPSS, Chicago, IL, USA) software.

Results: Analysis yielded two factor structure of the Malay version of PSS - 10 in both occupational groups. The two factors accounted for 59.2% and 64.8% of the variance in the medical residents and the railway workers respectively. Factor loadings were greater than 0.59 in both occupational groups. Cronbach’s alpha co-efficient was 0.70 for medical residents and 0.71 for railway workers.

Conclusion: The Malay version of PSS-10 had adequate psychometric properties and can be used to measure stress among occupational settings in Malaysia.

Keywords: Factor structure, Malaysia, Occupational, Perceived stress scale, Psychometric properties, Validity.

**Concurrent validity of the Malay version of Perceived Stress Scale (PSS)**

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**Abstract**

**Objective:** This study aimed to assess the concurrent validity of the Malay version of the Perceived Stress Scale (PSS-10) PSS-10 item.

**Methods:** A cross-sectional study was conducted among all students in a medical faculty in Malaysia. The questionnaire included three parts; socio-demographic correlates, PSS-10 and the validated Malay version of Depression Anxiety and Stress Scale-21 item (DASS-21). Spearman's correlation coefficient was used in the analysis.

**Results:** Stress subscale of DASS -21 correlated positively with the total score of PSS-10 ($r = +0.50$, $p<0.001$), positively with the negative subscale of PSS-10 ($r = +0.36$, $p<0.001$) and negatively with the positive subscale of PSS-10 (perceived coping) ($r = -0.33$, $p<0.001$).

**Conclusion:** The Malay Version of PSS-10 has fair correlation with the stress subscale of DASS-21. This confirmed the concurrent validity of this scale, which further strengthened the previous evidence that the Malay version of PSS-10 was a valid tool to measure stress in Malaysian university students.

**Keywords:** Malay, Version, Stress, Medical, Students, Psychological Distress.
The chemical, heavy metal and microbial quality of well water in an urbanised village in the Klang Valley

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Abstract

Background: The public health issue of consuming groundwater is a major concern because people often extract groundwater directly from the aquifers either through wells or boreholes without treating it with any form of filtration system or chlorine disinfection. Based on the Malaysian National Drinking Water guidelines the current study was designed to provide a better understanding on the variable factors that are influencing the quality of well-water in an urbanised village in Malaysia. Well water quality assessment of heavy metals, chemicals, microbial and physical parameters were carried out for Sungai Buloh Village in the Klang Valley to ensure it was safe for human consumption.

Materials and Methods: Water samples were collected from wells at four sites (Sites A, B, C, D), a river and a tap inside a house in Sungai Buloh village. Soil was sampled from the riverbed and area surrounding the wells. Samples were collected every two months over a one year duration from all sites. The water samples were processed and examined for viruses, coliforms and protozoa as well as for heavy metal contaminants.

Results: The turbidity and colour ranged in the average of 0.57-0.13 Nephelometric Turbidity (NTU) and 4.16-5.00 Total Conjunctive Use (TCU) respectively for all sites except Site C. At Site C the turbidity level was 2.56 ± 1.38 NTU. The well-water was polluted with coliforms (1.2 to 2.4 x 10³ CFU/100 ml) in all sites, *E. coli* (0.12 - 4 x 10² CFU/100 ml CFU/100 ml) and *Cryptosporidium* oocysts (0.4 cysts/100 ml). All the heavy metals and chemical parameters were within the Malaysian Guidelines’ limits except manganese. The average pH ranged from 5.44 - 6.62 and the temperature was 28 ºC.

Conclusion: In summary, the well water at Sungai Buloh is considered unsafe for consumption due to pollution. Therefore the major thrust will be to provide better quality of drinking water to the residents of the village.

Keywords: well water, microbial, heavy metal, chemical, urbanised village, public health.
Rodents and disease – The never ending problem

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Abstract

Rodents are hardy animals and can usually survive in any environment. However changes in the environment can affect their survival. In a 30-year study it was found that some dominant species in an arid environment had their population drastically affected by extreme climate conditions. These extreme weather events affected the rodent’s survival, distribution and advantage in that environment leading to reorganisation of the population structure. This shows the vulnerability of population dynamics of a dominant species when it is exposed to extreme conditions such as floods or any other natural disasters. Rodent distribution and disease transmission has been seen to have a clear link with changes in climatic conditions. In the United States of America there have been many outbreaks of rodent borne diseases that show a link to climatic changes; a good example is the 1992-1993 Four-Corners Outbreak of the Korean Haemorrhagic Fever. The rodent population increased dramatically during this period due the El-Nino effect on the climate. The resultant heavy rainfall led to good harvest, increase in rodent numbers, invasion of buildings and an environment suitable for disease transmission. Indiscriminate land clearing for cultivation has resulted in the creation of new niches for vectors of dangerous diseases such as the Argentine Haemorrhagic Fever and the Korean Haemorrhagic Fever. For instance, barns used for grain storage will become infested with rodents and the resulting urine from infected animals will contaminate the environment within and farm workers will be exposed to the pathogens resulting in the disease. In different countries different rodent species are involved in the transmission of this disease. Apodemus agrarius (striped field mouse) in Korea is the vector for Hantaan Fever with Renal Syndrome (HFRS), and bank voles (Myodes glareolus) for the European hantavirus (Puumala virus). However the natural host for the Korean Haemorrhagic Fever in many countries including Malaysia is Rattus norvegicus. Massive land conversion for cultivation is a major problem contributing to increase in rodent population. The natural ecological habitats of rodent species in forests must be managed well as the impact of climatic conditions on population diversity in disturbed environments can be drastic if not addressed adequately in time. Buffer zones must be created between land schemes and forests to control movement of commensal species into the forest habitat. Climate changes do have an impact on rodents as seen when predators of rodents are reduced in number due to extreme climatic conditions such as droughts but rodents are able to survive. However rains that favour the increase of the predators such as the owl, snake and coyote also have the same impact on rodents. Drastic change in the climatic patterns does impact biodiversity globally. Therefore there is a need for practical approaches to deal with issues arising from climate change. Competition among species may be mutual or antagonistic resulting in changes in population of dominant species. These may have an impact on rodent population and their role in disease transmission. Population of rodents can explode due to climate conditions that support plant growth such as that seen for the flowering of bamboo in Myanmar. The rodents especially Rattus rattus sp. became a pest and destroyed crops resulting in food shortage for thousands of people. The increase of alien rodent population such as Rattus norvegicus on some islands has resulted in extinction of many endemic species of birds, small mammals, reptiles, invertebrates, and plants. A wide spectrum of diseases is spread by these rodents. Their infected droppings and urine are the
route by which many of these diseases are spread. Diseases such as the bubonic plague, leptospirosis, murine typhus, salmonellosis and rat-bite fever are some of the major ones. The Ministry of Health Malaysia recently reported 62 deaths and 1,418 cases of infection due to leptospirosis. The two species of rodents commonly found in the Malaysian habitat are *Rattus norvegicus* (port rat) and *Rattus rattus diardi* (house rat). Therefore disease transmitting rats have become a serious problem. The increase in the population of rodents in many countries is attributed to poor sanitation, inadequate waste management processes, over-crowding and poor planning of urban centres. Statistics from the relevant authorities in Kuala Lumpur and Penang show that rodents are an ever occurring problem and they must be constantly under surveillance for proper control. It is clearly evident that all known measures are never enough to solve this problem. Therefore authorities must always ensure there are good practices of hygiene, control programmes for destruction of breeding grounds, as well as good and efficient disposal of food waste and rubbish. If these measures are not implemented aggressively by a local authority or other relevant federal agencies, than the rodents will keep winning the race and good health will be held to ransom. There are ever increasing reports on the incidence of leptospirosis and salmonellosis. The compromised environmental conditions will trigger the outbreak of many such diseases. Poor living conditions will always attract rodents that carry pathogens of human health importance. To overcome this problem, good management practices governed by legislation must be put in place. For the control of spread of disease by ground dwelling mammals, we need more studies as current data only favours large cities. Knowing the habitat and behaviour of rodents in cities of any size will give a better footing for implementation of appropriate measures for control.

**Keywords:** Rodents, climate and diseases.

**Ecstasy: Applications of health promotion model and its effectiveness in socioeconomic deprivation area**

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**Abstract**

Ecstasy or “E” is common name for chemical 3,4 methylenedioxymettamfetamine or in short MDMA. MDMA also has various street names of “Adam”, “XTC”, “M”, “AKA” and beans. MDMA falls into the class of drug called “ring substituted amphetamine”. MDMA originated as a precursor to another drug that was a failed trial for blood clotting agent and was synthesized in 1912 by Merck Pharmaceuticals in Germany. In the 1970s, MDMA was used legally by US psychotherapists to aid counseling in disturbed interpersonal relationships. However in 1985, due to increased street abuse and hence USA declared ecstasy as illegal substance. In the UK, all amphetamine-related compounds were classified as illegal substances under an amendment to the Misuse of Drug Act in 1977. Ecstasy usually available in white or off-white tablet form and can be taken orally, through nasal insufflation routes and making bombs out of cigarette paper. Typical dose for first time user is 75-100 mg but can increase gradually up to 200 mg due to development of tolerance. Effects last approximately 4-6 hours. Ecstasy is often been misused as it can enhance mood, bring forth euphoria, improved self-acceptance, reduction in fear and defensiveness. Pharmacists are the fundamental healthcare professionals who are responsible for utilizing the health promotion models and theories as well as constantly updating and applying their knowledge of drugs in reducing prevalence of ecstasy abuse especially at socioeconomic deprived area.

**Keywords:** Ecstasy, Methylenedioxymentamfetamine, MMDA, TTM.
Global pathway, current condition and challenges in the management of dengue

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Abstract

Dengue is still a danger to communities around the world. Number of deaths resulting from dengue fever sharply are rising every year. As yet, there has been no confirmed medical cure or vaccine for dengue fever. So, prevention is still a question mark from the medical point of view. But, proper awareness and certain preventive methods are very effective as opposed to vaccination and other medications. This article mainly outlines the background of dengue and its implications in Malaysia. The fight against the spread of dengue is a constant one, especially in all the tropical countries.

Keywords: Dengue fever, vaccination, global impact, challenges in dengue.

**Polyurethane wood adhesive from palm oil-based polyester polyol**

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**Abstract**

Polyurethane (PU) adhesives for wood bonding were prepared from palm oil-based polyester polyol in a solventless condition that reduces the risk of volatile organic compounds to human health and the environment. The polyester polyol was synthesized from epoxidized palm olein prior to reacting with polymeric 4,4'-methylene diphenyl diisocyanate (pMDI) and toluene 2,4-diisocyanate (TDI) to produce wood-bonding PU adhesives. The effect of glycerol cross-linker, dibutyltin dilaurate catalyst and NCO/OH ratio on lap shear strength and pot life of the PU adhesives were studied. The green strength of the PU adhesives was achieved on day 4 for TDI-based adhesives and day 5 for pMDI-based adhesives. The newly formulated PU adhesives have superior chemical resistance in cold water, hot water, acidic medium and alkaline medium by only showing light deterioration (2–8%) in lap shear strength. The PU adhesives prepared from pMDI exhibited higher lap shear strength and thermal stability as compared to adhesives prepared from TDI adduct. Both adhesives have improved mechanical performance (two folds higher in lap shear strength) as compared to commercial wood bonding adhesives.

**Keywords:** palm oil-based adhesive, polyurethane adhesive, vegetable oil-based polyol, solventless adhesive.

**Synthesis of palm oil-based polyester polyol for polyurethane adhesive production**

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**Abstract**

Palm oil-based polyester polyol is synthesized by ring opening reaction on epoxidized palm olein by phthalic acid. The reaction is carried out in a solvent free and noncatalyzed condition with the optimal reaction condition at 175°C for 5 h reaction time. The physical state of the product is a clear bright yellowish liquid with low viscosity value of 5700–6700 cP at 25°C and pour point of 15°C. The chemical structure and molecular weight of the polyester polyol were characterized by FTIR, ¹H-NMR, ¹³C-NMR, and GPC. The optimal polyol with molecular weight of 36,308 dalton and hydroxyl value of 78.17 mg KOH/g sample was reacted with polymeric 4,4′-methylene diphenyl diisocyanate (pMDI) at isocyanate index of 1.3 to produce polyurethane adhesive. The lap shear strength of the polyurethane adhesive showed two times higher than the commercial wood adhesives.

**Keywords**: polyesters, polyurethanes, adhesives.

Association of genotypes and haplotypes of multi-drug transporter genes ABCB1 and ABCG2 with clinical response to imatinib mesylate in chronic myeloid leukemia patients

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Abstract

The introduction and success of imatinib mesylate (IM) has become a paradigm shift in chronic myeloid leukemia (CML) treatment. However, the high efficacy of IM has been hampered by the issue of clinical resistance that might due to pharmacogenetic variability. In the current study, the contribution of three common single nucleotide polymorphisms (SNPs) of ABCB1 (T1236C, G2677T/A and C3435T) and two SNPs of ABCG2 (G34A and C421A) genes in mediating resistance and/or good response among 215 CML patients on IM therapy were investigated. Among these patients, the frequency distribution of ABCG2 421 CC, CA and AA genotypes were significantly different between IM good response and resistant groups (P = 0.01). Resistance was significantly associated with patients who had homozygous ABCB1 1236 CC genotype with OR 2.79 (95%CI: 1.217–6.374, P = 0.01). For ABCB1 G2677T/A polymorphism, a better complete cytogenetic remission was observed for patients with variant TT/AT/AA genotype, compared to other genotype groups (OR = 0.48, 95%CI: 0.239–0.957, P = 0.03). Haplotype analysis revealed that ABCB1 haplotypes (G1236G2677C3435T) was statistically linked to higher risk to IM resistance (25.8% vs. 17.4%, P = 0.04), while ABCG2 diplotype A34A421 was significantly correlated with IM good response (9.1% vs. 3.9%, P = 0.03). In addition, genotypic variant in ABCG2 421C>A was associated with a major molecular response (MMR) (OR = 2.20, 95%CI: 1.273–3.811, P = 0.004), whereas ABCB1 2677G>T/A variant was associated with a significantly lower molecular response (OR = 0.49, 95%CI: 0.248–0.974, P = 0.04). However, there was no significant correlation of these SNPs with IM intolerance and IM induced hepatotoxicity. Our results suggest the usefulness of genotyping of these single nucleotide polymorphisms in predicting IM response among CML patients.

Keywords: ABCB1, ABCG2, Chronic myeloid leukemia, Imatinib mesylate, Single nucleotide polymorphisms.

**Mother’s mental preparedness for pregnancy: The affecting factors and its effect on birth outcomes**

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**Abstract**

**Background:** Increased maternal anxiety level has been reported to have detrimental effects on the physical outcome of pregnancies such as not achieving vaginal births. This study thus aims to determine the level and factors affecting mental preparedness among mothers with normal pregnancies and its correlation with birth outcomes.

**Methods:** Three hundred healthy mothers above 37 weeks of gestation in the early stage of labour were assessed for their level of mental preparation before birth process and outcomes after births which include general feeling (euphoria), ability to withstand labour pain and bonding with the new born. The successfulness of vaginal birth and other data on factors affecting mental preparation were also collected.

**Results:** The level of mental preparedness was found good in 78% of the mothers, mainly determined by their socioeconomic status, family support and personal ability to adjust to changes. Age (p= 0.048), parity (0.00) and income (0.01) were found to influence mental preparedness significantly. Race, occupation, education level and marital status are however not significantly related. Poor mental preparedness is associated with greater pain during labour. A correlation analysis also found a positive relationship between the level of mental preparation and mental outcomes following birth in these mothers but it did not significantly influence the mode of delivery.

**Conclusion:** Mental preparation before birth seems to have an effect on mental outcomes of mothers following birth process. It is vital that mothers of the younger age group with no previous obstetric experience be given more attention in preparing them mentally before they face the painful birth process.

**Keywords:** Affecting factors, pregnancy, mental preparedness, factors, birth outcome.
Alcoholism among adolescent students of Tadong in East Sikkim

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Abstract

Background: Adolescents often indulge in alcohol consumption either on peer pressure or for enjoyment. A few studies were conducted on alcoholism among adolescent students in Indian settings.

Materials & Methods: A Cross-sectional study was conducted during January-March 2005 for three months on 226 adolescent students in the age group of 15 to 18 years belonging to two senior secondary schools in Tadong area of East Sikkim. Simple Random Sampling Technique was applied after obtaining informed written consent for the selection of respondents. A pre-tested interview schedule was used to study the association between Knowledge, Attitude and Practice in relation with alcoholism. CAGE questionnaire was used to assess alcohol abuse. The collected data were tabulated and analysed by using the statistical package SPSS (Statistical Package for Social Sciences) version 10.0 for Windows. Findings were described in terms of proportions.

Results & Conclusions: In this study, stress reduction, relaxing effect and mere pleasure were considered by the participants to be the major reasons for alcohol consumption. Though 66.4% of respondents were found to consume alcohol regularly, 33.3% of them wanted to give up the habit. Among the regular alcohol consumers who had developed alcohol abuse (68%), majority (65.3%) felt the need to cut down on drinking while 58.7% felt guilty about drinking.

Keywords: Alcohol, Abuse, Adolescent, Alcoholism, Questionnaire.
Validation of feedback questionnaire on Flipped Classroom (FC) activity

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Abstract

Background: Using technology, lectures are now moved out of the classroom and delivered online as a means to provide interaction and collaboration. Flipped classroom (FC) is a modern instructional method to engage students in learning process by replacing the didactic lectures. In this study, a feedback questionnaire was developed to study the perception of participants on flipped classroom activities.

Objective: To determine the reliability of a feedback questionnaire for monitoring flipped classroom activity on Complementary Medicine Module in undergraduate Pharmacy programme.

Materials and Methods: In this cross-sectional study, a flipped class was conducted on a group of 112 students of B. Pharm Semester 5 programme. The topic selected was popular herbal remedies of the complementary medicine module. A feedback questionnaire, based on five-point Likert scale, was developed to monitor flipped classroom activity. Flipped class was conducted with audio and video presentation in the form of a quiz using ten One Best Answer (OBA) type of multiple choice questions. Audience response was captured by using web-based interaction with Poll Everywhere. Feedback was obtained from every participant at the end of flipped classroom activity and debriefing was done.

Results: Randomly selected 112 complete responses were included in final analysis. There were 47(42.0%) male and 65(58.0%) female respondents. The test-retest reliability of the feedback questionnaire (kappa statistics) from the pilot study was found to be k=0.94. The overall Cronbach’s alpha of the final version of flipped classroom feedback questionnaire was 0.912.

Conclusion: The evidences from this study suggest that this feedback questionnaire is a valid teaching-learning tool for monitoring flipped classroom activities during the delivery of Complementary Medicine Module in undergraduate Pharmacy programme.

Keywords: Feedback, Pharmacy, Complementary, Medicine, Flipped, classroom, poll.

**Correlates of low birth weight: A hospital-based study from Gangtok, India**

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**Abstract**

**Background:** Low birth weight is the single most important factor that determines the chances of child survival. A recent annual estimation indicated that nearly 8 million infants are born with low birth weight in India. The infant mortality rate is about 20 times greater for all low birth weight babies.

**Methods:** A matched case–control study was conducted on 130 low birth weight babies and 130 controls for 12 months (from August 1, 2007, to July 31, 2008) at the Central Referral Hospital, Tadong, East District of Sikkim, India. Data were analyzed using the Statistical Package for Social Sciences, version 10.0 for Windows. Chi-square test and multiple logistic regression were applied. A *P* value less than .05 was considered as significant.

**Results:** In the first phase of this study, 711 newborn babies, borne by 680 mothers, were screened at the Central Referral Hospital of Sikkim during the 1-year study period, and the proportion of low birth weight babies was determined to be 130 (18.3%).

**Conclusion:** Multiple logistic regression analysis, conducted in the second phase, revealed that low or middle socioeconomic status, maternal underweight, twin pregnancy, previous history of delivery of low birth weight babies, smoking and consumption of alcohol during pregnancy, and congenital anomalies had independent significant association with low birth weight in this study population.

**Keywords:** preterm, intrauterine growth, retardation, multiple logistic regression.

**Visual impairment and depression**

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**Abstract**

Depression can occur regardless of the level of visual impairment. However, it remains unclear why some people with visual impairment experience co-morbid depression. This retrospective review study was conducted to address this issue. Majority of the available clinical evidence indicated that there exists a strong association between depression and visual impairment. However, these evidences were poor in nature due to their relatively small sample size and cross-sectional study designs. Hence, it is important to prospectively investigate the development, progression and persistence of depression in the visually challenged individuals. An early assessment of vision-specific distress is essential among those in need of early intervention in eye care or rehabilitation settings to identify those at risk of depression. It is also important to examine the distinction or overlap between depression and vision-specific distress. Depression is least likely to be screened and recognized by the primary physicians among individuals with visual impairment. As compared to them, the eye specialists and rehabilitation staff may be best health care personnel to undertake this activity.

**Keywords:** Evidence, co-morbid, vision-specific, distress, prevention.

**A tool for decision-making in norm-referenced survey questionnaires with items of ordinal variables**

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**Abstract**

In order to arrive at a conclusion, setting up a cut-off point is necessary for opinion-based questionnaires on health care utilization, facilitating factors, barriers and also for assessing Knowledge, Attitude and Practice. This study has demonstrated on how to formulate a tool for decision-making in Norm-referenced survey questionnaires and readjust their cut-off points to incorporate the population variation for items containing ordinal variables. This procedure will help the researchers to perform finer adjustments in the cut-off values of any Norm-referenced survey instrument based on the local population data and in situations where no gold-standard instrument is available for comparison.

**Keywords:** Point, cut-off, reliability, item, analysis, Cronbach’s alpha, correlation.

**A tool for decision-making in norm-referenced survey questionnaires with items of continuous variables**

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**Abstract**

Setting up a cut-off point is necessary for opinion-based questionnaires on health care utilization, facilitating factors and barriers to arrive at a conclusion and also for assessing Knowledge, Attitude and Practice. This study and shows how to formulate a tool for decision-making in Norm-referenced survey questionnaires and readjust their cut-off points to incorporate the population variation for items containing continuous variables. This procedure will help the researchers to perform finer adjustments in the cut-off values of any Norm-referenced survey instrument based on the local population data and in situations where no gold-standard instrument is available for comparison.

**Keywords:** Point, Cut-off, Reliability, Item, Analysis, Cronbach’s alpha, Correlation.

**Musculoskeletal symptoms and orthopaedic complications in pregnancy: Pathophysiology, diagnostic approaches and modern management**

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**Abstract**

Low back pain is a common musculoskeletal symptom in pregnancy that can present as lumbar pain or pelvic girdle pain, with significant physical and psychosocial implications. Pelvic girdle pain is more prevalent and results in greater disability than lumbar pain. It is possible to distinguish between these two conditions from a detailed history based on the site of the pain, its intensity, disability and pain provocation tests. Management of low back pain in pregnancy is conservative, with physical exercise for lumbar pain and minimising activities that exacerbate pain, analgesics and bed rest for pelvic girdle pain, as well as avoiding abduction beyond the pain-free zone in labour. There is evidence that stabilising exercises in patients with pelvic girdle pain postpartum have a beneficial effect. Other treatment modalities that have been shown to be safe and effective include pelvic belts, transcutaneous electrical nerve stimulation, spinal manipulative therapy, acupuncture and complementary therapy with yoga. Other orthopaedic complications in pregnancy such as carpal tunnel syndrome, pubic symphysis rupture, transient osteoporosis and osteonecrosis are usually self-limiting with a satisfactory outcome. However, a lack of awareness and failure to recognise these complications can result in long-term morbidity. Knowledge of the preoperative diagnostic investigations, surgical approaches and intraoperative positioning of the mother to avoid gravid uterus compression is vital in orthopaedic emergencies such as lumbar disc herniation, cauda equina syndrome, fractures and acute compartment syndrome of the lower limb to ensure a safe maternal and fetal outcome and to prevent serious disability. Pregnancy is not contraindicated in women with preexisting orthopaedic complications such as kyphoscoliosis and total hip arthroplasty as there is no evidence to suggest increased maternal or fetal risks.

**Keywords:** Pelvic girdle pain, low back pain, carpal tunnel syndrome, cauda equina syndrome, term follow-up, symphysis pubis, stabilizing exercises, disability index, relaxin levels, 3rd trimester.
Bilal S, Doss J, Cella D, Rogers S. Quality of Life associated factors in head and neck cancer patients in a developing country using the FACT-H&N. Journal of Cranio-Maxillo-Facial Surgery, 2014; Published online. DOI: http://dx.doi.org/10.1016/j.jcms.2014.11.024. (IF: 2.597; SCI IF: 2.098; H-Index: 49; Tier: Q1).

Quality of Life associated factors in head and neck cancer patients in a developing country using the FACT-H&N

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Abstract
Health-related quality of life (HRQoL) associated factors are vital considerations prior to treatment decision-making for head and neck cancer patients. The study aimed to identify potential socio-demographic and clinical prognostic value of HRQoL in head and neck cancer patients in a developing country. The Functional Assessment of Cancer Therapy - Head and Neck (FACT-H&N)-V4 in Urdu language was administered among 361 head and neck cancer patients. Data were statistically tested through multivariate analysis of variance (MANOVA) and regression modeling to identify the potentially associated factors. Treatment status, tumor stage and tumor site had the strongest negative impact on patients HRQoL, with a statistically significant decrement in FACT summary scales (effect size >0.15). Moderate associated factors of HRQoL included treatment type, marital status, employment status and age (effect size range 0.06 - 0.15). Weak associated factors of HRQoL with a small effect size (>0.01 - 0.06) included tumor size and type, gender, education level and ethnicity. This study reports 12 socio-demographic and clinical variables that have a significant impact on HRQoL of head, and neck cancer patients, and that should be considered during treatment decision-making by multidisciplinary teams and also in future HRQoL studies conducted in other developing countries.

Keywords: Health-related quality of life, head and neck cancer, FACT-H&N, clinical associated factors, socio-demographic associated factors, effect size.

**In vitro antibacterial effects of Cinnamomum extracts on common bacteria associated with wound infections with emphasis on Methicillin - Resistant Staphylococcus aureus**

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**Abstract**

*Ethnopharmacological relevance:* *Cinnamomum* species have been widely used in many traditional systems of medicine around the world. In the Malaysian Traditional System of Medicine, the leaves, stem bark and stem wood of *Cinnamomum iners*, *Cinnamomum porrectum*, *Cinnamomum altissimum* and *Cinnamomum impressicostatum* have been used to treat wound infections.

**Aim of Study:** To study the antibacterial effects of *C. iners*, *C. porrectum*, *C. altissimum* and *C. impressicostatum* against common bacteria found in would infections with primary focus on methicillin - resistant *Staphylococcus aureus* (MRSA).

**Materials and Methods:** The crude extracts from the leaves, stem - bark and stem - wood of *C. iners*, *C. porrectum*, *C. altissimum* and *C. impressicostatum* were obtained using sequential extraction with hexane, ethylacetate, methanol and water. The volatile oils were obtained by hydro-distillation. The antibacterial activities of extracts were investigated using disk diffusion assays and broth microdilution assays.

**Results:** The volatile oils obtained from the stem - bark of *C. altissimum*, *C. porrectum* and *C. impressicostatum* have shown significant antibacterial activity against a wide range of Gram positive and Gram negative bacteria including MRSA. A few test extracts have shown better activity against MRSA as compared to Methicillin Sensitive *Staphylococcus aureus* (MSSA). Amongst all the test extracts, *C. impressicostatum* stem - bark water extract produced the largest inhibition zone of 21.0 mm against MRSA while its inhibition zone against MSSA was only 8.5 mm. The minimum inhibitory concentration (MIC) of this extract against MRSA was 19.5 μg mL⁻¹ and the corresponding minimum bactericidal concentration (MBC) was 39.0 μg mL⁻¹.

**Conclusions:** This study has scientifically validated the traditional use of *Cinnamomum* species in treating wound infections. Of high scientific interest was the observation that the antibacterial effect of *C. impressicostatum* stem - bark crude water extract against MRSA was significantly higher than its effect against MSSA suggesting that the extract contains a compound(s) with higher specific neutralising activity against the drug resistance markers of MRSA.
Keywords: Antibacterial effect, *Cinnamomum*, wound pathogens, Malaysian Traditional System of Medicine, methicillin resistant *Staphylococcus aureus* (MRSA).

**Alteration of glucose lowering effect of glibenclamide on single and multiple treatments with fenofibrate in experimental rats and rabbit models**

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**Abstract**

**Objective:** Diabetes mellitus is a syndrome of multiple etiologies. Both type 1 and type 2 diabetes lead to multiple abnormalities of lipid and lipoprotein metabolism. The aim of this investigation was to study the influence of fenofibrate on the blood glucose lowering effect of glibenclamide.

**Materials and Methods:** Glibenclamide (0.45, 0.23 mg/kg) and fenofibrate (18.1, 9.38 mg/kg) was treated to normal, diabetic rats, and normal rabbits. Blood samples were collected at various time intervals and were analyzed for blood glucose levels using a glucometer.

**Results:** Co-administration of fenofibrate with glibenclamide significantly elevated the blood glucose reduction exhibited by glibenclamide.

**Conclusion:** The results obtained from single and multiple dose treatments clearly demonstrated the existence of drug-drug interaction at the dose tested in animal models. Hence, this investigation would serve as a preclinical evidence for the effect of fenofibrate on the therapeutic efficacy of glibenclamide.

**Keywords:** Blood glucose, diabetes, drug interaction.
Does honey improve cough symptoms in children with upper respiratory tract infections?

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Abstract
Madam Tan brings in her 3-year-old son, John, with 2-day history of cough and runny nose. She describes the dry cough as moderately severe and estimates approximately 10 - 15 episodes per hour. The cough occasionally disturbs John’s sleep. He has no significant past medical history for respiratory system medical history and has been healthy. Also, he has no fever. On examination, he looks alert and afebrile. His physical examination findings are normal except the slight runny nose. John had the similar cough 1 year ago, which was treated with diphenhydramine. Madam Tan had noted that John was somnolent after taking the medicine. She heard from her friend that honey is effective in reducing cough symptoms. Madam Tan asks your opinion regarding treating John with honey.

**Comparative evaluation of effectiveness of desensitizing agents in dentin tubules occlusion using scanning electron microscopy**

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**Abstract**

**Background:** Dentine hypersensitivity (DH) occurs on exposed dentine and is dependent on the patency of dentinal tubules. This study compared the effectiveness of red propolis extract (RPE), calcium sodium phosphosilicate (Novamin) and arginine-calcium carbonate (ACC) in occluding dentine tubules.

**Methods:** Eighty dentine discs from extracted human molars were randomly divided into four groups (n = 20): Group 1 – RPE; Group 2 – Novamin; Group 3 – ACC; Group 4 – saline. The discs were etched with 37.5% phosphoric acid and treated with the test agents. Ten treated discs from each group were then exposed to 6% citric acid challenge. The extent of tubule occlusion was assessed using scanning electron microscopy (SEM). Three blinded assessors scored each SEM image on the degree of tubule occlusion. Differences in occlusion were tested using ANOVA and Tukey adjustment.

**Results:** Discs treated with ACC demonstrated more tubule occlusion, followed by RPE and Novamin, and were greater in statistical significance when compared to discs treated with saline. Following acid challenge, RPE treated discs maintained more occlusion, followed by ACC and Novamin.

**Conclusions:** All three agents demonstrated tubule occlusion. Although ACC showed more occlusion following treatment, RPE demonstrated a higher degree of occlusion following acid challenge.

**Keywords:** Arginine-calcium carbonate, calcium sodium phosphosilicate, dentine hypersensitivity, red propolis extract, scanning electron microscopy.
Effects of propylene glycol alginate and sucrose esters on the physicochemical properties of modified starch-stabilized beverage emulsions

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Abstract
This study was conducted to investigate the effect of main emulsion components namely, modified starch, propylene glycol alginate (PGA), sucrose laurate and sucrose stearate on creaming index, cloudiness, average droplet size and conductivity of soursop beverage emulsions. Generally, the use of different emulsifiers or a mixture of emulsifiers has a significant (p < 0.05) effect on the response variables studied. The addition of PGA had a significant (p < 0.05) effect on the creaming index at 55 degrees C, while PGA-stabilized (PGA1) emulsions showed low creaming stability at both 25 degrees C and 55 degrees C. Conversely, the utilization of PGA either as a mixture or sole emulsifier, showed significantly (p < 0.05) higher cloudiness, as larger average droplet size will affect the refractive index of the oil and aqueous phases. Additionally, the cloudiness was directly proportional to the mean droplet size of the dispersed phase. The inclusion of PGA into the formulation could have disrupted the properties of the interfacial film, thus resulting in larger droplet size. While unadsorbed ionized PGA could have contributed to higher conductivity of emulsions prepared at low pH. Generally, emulsions prepared using sucrose monoesters or as a mixture with modified starch emulsions have significantly (p < 0.05) lower creaming index and conductivity values, but higher cloudiness and average droplet size.

Keywords: soursop beverage emulsion; propylene glycol alginate; sucrose esters; emulsion components; physicochemical properties.
The effect of prime emulsion components as a function of equilibrium headspace concentration of soursop flavor compounds

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Abstract

Background: Perceptions of food products start when flavor compounds are released from foods, transported and appropriate senses in the oral and nose are triggered. However, the long-term stability of flavor compounds in food product has been a major concern in the food industry due to the complex interactions between key food ingredients (e.g., polysaccharides and proteins). Hence, this study was conducted to formulate emulsion-based beverage using natural food emulsifiers and to understand the interactions between emulsion compositions and flavor compounds.

Results: The influences of modified starch (x1), whey protein isolate (x2), soursop flavor oil (x3) and deionized water (x4) on the equilibrium headspace concentration of soursop volatile flavor compounds were evaluated using a four-component with constrained extreme vertices mixture design. The results indicated that the equilibrium headspace concentration of soursop flavor compounds were significantly (p < 0.05) influenced by the matrix and structural compositions of the beverage emulsions. Interface formed using modified starch and whey protein isolate (WPI) proved to be capable of inhibiting the release of volatile flavor compounds from the oil to the aqueous phase. Modified starch could retard the overall flavor release through its hydrophobic interactions with volatile flavour compounds and viscosity enhancement effect. Excessive amount of modified starch was also shown to be detrimental to the stability of emulsion system. However, both modified starch and WPI showed to be a much more effective barrier in inhibiting the flavor release of flavor compounds when used as individual emulsifier than as a mixture.

Conclusions: Overall, the mixture design can be practical in elucidating the complex interactions between key food components and volatile flavor compounds in an emulsion system. These studies will be useful for the manufacturers for the formulation of an optimum beverage emulsion with desirable emulsion properties and desirable flavor release profile.
Keywords: Mixture design, Modified starch, Whey protein isolate, Soursop beverage emulsion, Polysaccharide-protein interactions.

**Prevalence and risk factors of hypertension in Myanmar: A systematic review and meta-analysis**

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**Abstract**

Hypertension (HPT) is the most common condition seen in primary care that can lead to health consequences and death if not detected early and treated appropriately. This study aimed to synthesize the prevalence, awareness, and control of HPT, and investigate the risk factors for HPT in Myanmar. We performed a meta-analysis of observational studies. Relevant studies were searched in electronic databases. The methodological quality of the included studies was assessed in 3 domains: selection bias, measurement bias, and bias related to data analysis. The overall prevalence and proportions was calculated using random-effect model of DerSimonian–Laird method. To identify the risk factors for HPT in Myanmar, we entered the ratio measures of the (adjusted) effect as a log odds ratio (OR) and the standard error of the log OR using generic inverse-variance weighting method. For stability of results, we performed leave-one-study-out sensitivity analysis by omitting individual studies one at a time from the meta-analysis. Seven studies (n=420, 901) were included in this analysis. Overall prevalence of HPT in Myanmar was 22% (95% confidence interval (CI): 14%–31.7%, I²: 99.6%), stratified as 21.5% (95% CI: 14.1%–29.9%, I²: 98.7%) in men and 22.7% (95% CI: 10.8%–34.6%, I²: 99.5%) in women. Overall, prevalence of HPT increased with an advancing age of the participants. The proportions of awareness and controlled HPT were 55% (95% CI: 43%–67%, I²: 97.7%) and 11% (95% CI: 6%–15%, I²: 93.8%), respectively. A weak but significant association was observed between HPT and alcohol drinking (summary OR: 1.38, 95% CI: 1.14%–1.65, I²: 0%) and smoking (summary OR: 1.32, 95% CI: 1.0%–1.74, I²: 50%). In sensitivity analysis, when a study that made confirmation of HPT by the former World Health Organization criteria was dropped, the prevalence increased to 26% (95% CI: 20.8%–32.1%, I²: 98.1%). HPT was considerably prevalent in Myanmar, while the levels of awareness and controlled HPT were low. Health promotion strategy tailored to the education on modifiable risk factors and establishment of blood pressure screening in primary health care context would be of immense value. Upcoming well-powered studies, using the standardized research design and covering more regions of the country are recommended.

**Is Plasmodium vivax malaria a severe malaria?: A systematic review and meta-analysis**

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**Abstract**

**Background:** *Plasmodium vivax* is one of the major species of malaria infecting humans. Although emphasis on *P. falciparum* is appropriate, the burden of vivax malaria should be given due attention. This study aimed to synthesize the evidence on severe malaria in *P. vivax* infection compared with that in *P. falciparum* infection.

**Methods/Principal Findings:** We searched relevant studies in electronic databases. The main outcomes required for inclusion in the review were mortality, severe malaria (SM) and severe anaemia (SA). The methodological quality of the included studies was assessed using the Newcastle-Ottawa Scale. Overall, 26 studies were included. The main meta-analysis was restricted to the high quality studies. Eight studies (n = 27490) compared the incidence of SM between *P. vivax* infection and *P. falciparum* mono-infection; a comparable incidence was found in infants (OR: 0.45, 95% CI:0.04–5.68, I²:98%), under 5 year age group (OR: 2.06, 95% CI: 0.83–5.1, I²:83%), the 5–15 year age group (OR: 0.6, 95% CI: 0.31–1.16, I²:81%) and adults (OR: 0.83, 95% CI: 0.67–1.03, I²:25%). Six studies reported the incidences of SA in *P. vivax* infection and *P. falciparum* mono-infection; a comparable incidence of SA was found among infants (OR: 3.47, 95%:0.64–18.94, I²:92%), the 5–15 year age-group (OR: 0.71, 95% CI: 0.06–8.57, I²:82%). This was significantly lower in adults (OR: 0.75, 95% CI: 0.62–0.92, I²:0%). Five studies (n = 71079) compared the mortality rate between vivax malaria and falciparum malaria. A lower rate of mortality was found in infants with vivax malaria (OR: 0.61, 95% CI: 0.5–0.76, I²:0%), while this was comparable in the 5–15 year- age group (OR: 0.43, 95% CI: 0.06–2.91, I²:84%) and the children of unspecified-age group (OR: 0.77, 95% CI: 0.59–1.01, I²:0%).

**Conclusion:** Overall, the present analysis identified that the incidence of SM in patients infected with *P. vivax* was considerable, indicating that *P. vivax* is a major cause of SM. Awareness of the clinical manifestations of vivax malaria should prompt early detection. Subsequent treatment and monitoring of complications can be life-saving.

**A meta-analysis of efficacy and tolerability of buprenorphine for the relief of cancer pain**

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**Abstract**

This study aimed to synthesize available evidence on the analgesic efficacy of buprenorphine in treating cancer pain and related adverse effects. We searched electronic databases for randomized controlled trials, assessing the efficacy of buprenorphine, regardless of delivery system. The primary endpoints were patient-reported ‘pain intensity’ and ‘pain relief’. Statistical heterogeneity among included studies was assessed with the I2 test. The summary relative risk (RR) and 95% CI were derived, if two or more studies reported the similar outcome. Sixteen RCTs (n = 1329) with buprenorphine were included: 8 transdermal (TD), 5 sublingual (SL), 2 intramuscular injection (IM) and 1 subcutaneous infusion (SC) studies; with both SL and IM routes being assessed in one study. Only a few studies reported the same outcome in a similar way, creating difficulty for pooling of the outcome data. Many studies had a high risk of bias. In 2 studies (n = 241), the ‘global impression change’ was significantly different between TD buprenorphine and the combined placebo and morphine (RR 1.35, 95% CI 1.14-1.59; I2: 42%); the ‘number-needed-to-treat’ (NNT) was 4.9 (95% CI: 3.1-10.9). In 2 studies (n = 331), ‘requirement for rescue SL buprenorphine’ was comparable between TD buprenorphine and placebo (RR 1.25, 95% CI 0.71-2.18; I2: 40%). In 2 studies (n = 141), ‘incidence of nausea’ was less in TD buprenorphine (RR: 0.38, 95% CI: 0.2-0.71, I2: 0%, NNT: 9.3, 5.6-28.5). Due to the small number of participants in a small number of studies, the results of the present review provide insufficient evidence to position adequately the use of buprenorphine in treatment of cancer pain. Large multicenter RCTs that compare TD buprenorphine with standard analgesic treatment is needed to position TD buprenorphine in the therapeutic armamentarium of cancer pain treatment.

**Keywords:** Buprenorphine; Efficacy; Randomized controlled trials; Meta-analysis.

**Comparative assessment of the interfacial soft and hard tissues investing implants and natural teeth in the macaque mandible**

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**Abstract**

**Objectives:** The aim of this study was to conduct a comparative qualitative and quantitative assessment of the interfacial soft and hard tissues investing implants and natural teeth.

**Materials and methods:** The test sample consisted of six adult healthy male *Macaca fascicularis* with three-unit splinted crowns, each crown supported by an Ankylos screw-shaped titanium implant. These implants were placed in the mandibular premolar-second molar region, one side by an immediate-loading (IL) and the other by delayed-loading (DL) protocol. The animals were sacrificed after 3 months of functional loading. Another two monkeys with natural dentition served as controls. Nondecalcified sections were prepared for assessment of optical intensities (OI) under a confocal laser scanning microscope.

**Results:** In both the test (IL and DL) and control, the soft tissue complexes demonstrated a highly fluorescent keratinized layer and diminished cytoplasmic and enhanced membranous fluorescence in the remaining epithelium. Peri-implant mucosa was further characterized by an intense fluorescence at the junctional epithelium-implant interface and in the stromal mononuclear infiltrate. Connective tissue contact and periodontal ligament were weakly fluorescent. In hard tissues, a high fluorescence was observed in peri-implant woven bone and along the implant-bone interface. Mean OI was significantly higher in peri-implant woven bone than around teeth (*P* < 0.05). In the remaining soft and hard tissue complexes, no significant differences in mean OI between the test and control were observed (*P* > 0.05).

**Conclusions:** Present findings suggest that peri-implant woven bone is highly mineralized, while the peri-implant and gingival mucosa share structural similarities.

**Clinical relevance:** Optical intensities of interfacial tissues investing implants and teeth are related to their biological properties.

**Keywords:** Dental implant, Interfacial tissues, Natural teeth, Optical intensity.
Clinical audit teaching in record-keeping for dental undergraduates at International Medical University, Kuala Lumpur, Malaysia

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Abstract
This study investigated the impact of clinical audit training on record-keeping behavior of dental students and students’ perceptions of the clinical audit training. The training was delivered to Year 4 and Year 5 undergraduates at the School of Dentistry, International Medical University, Kuala Lumpur, Malaysia. It included a practical audit exercise on patient records. The results were presented by the undergraduates, and guidelines were framed from the recommendations proposed. Following this, an audit of Year 4 and Year 5 students' patient records before and after the audit training was carried out. A total of 100 records were audited against a predetermined set of criteria by two examiners. An email survey of the students was also conducted to explore their views of the audit training. Results showed statistically significant improvements in record-keeping following audit training. Responses to the email survey were analyzed qualitatively. Respondents reported that the audit training helped them to identify deficiencies in their record-keeping practice, increased their knowledge in record-keeping, and improved their record-keeping skills. Improvements in clinical audit teaching were also proposed.

Keywords: Malaysia; clinic management; clinical audit; clinical education; dental education; patient records; record-keeping.

**Malignant and noninvasive skin tumours in renal transplant recipients**

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**Abstract**

**Background:** Transplant recipients require immunosuppression to prevent graft rejection. This conveys an increased risk of malignancy, particularly skin tumours. There is a need for up-to-date data for the South of England.

**Method:** Pathology records were reviewed for 709 kidney transplant recipients on immunosuppression at our hospital from 1995 to 2008. Skin tumours were recorded/analysed.

**Results:** Mean age at transplant was 46 years. Mean length of follow-up was 7.2 years and total follow-up was 4926 person-years. 53 (7.5%) patients (39/458 (8.5%) males and 14/251 (5.6%) females) developed ≥1 skin malignancy. Cumulative incidences of 4.0%, 7.5%, and 12.2% were observed for those with <5, <10, and ≥10 years follow-up, respectively. The rate was 45 tumours per 1000 person-years at risk. Additionally, 21 patients (3.0%) only had noninvasive tumours. 221 malignant skin tumours were found: 50.2% were SCCs, 47.1% BCCs, and 2.7% malignant melanomas. Mean years to first tumour were 5.8. Mean number of tumours per patient was 4, with mean interval of 12 months.

**Conclusions:** Despite changes in transplantation practice during the time since the last data were published in this region, these findings are similar to previous studies. This adds to the evidence allowing clinicians to inform patients in this region of their risk.
Antifungal effectiveness of various intracanal medicaments against *Candida albicans*: An ex-vivo study

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Abstract

**Background:** To investigate the antifungal activity of propolis, triple antibiotic paste (TAP), 2% chlorhexidine gel and calcium hydroxide with propylene glycol on *Candida albicans*-infected root canal dentinal tubules at two different depths (200 μm and 400 μm) and two time intervals (day 1 and 7).

**Methods:** A total of 90 extracted human teeth were sectioned below the cementoenamel junction and the apical part of the root to obtain 6 mm of the middle third of the root. The root canal was enlarged to an internal diameter of 0.9 mm using Pesso Reamer size no. 2 (Mani®, UT, Japan), followed by canal irrigation and autoclaved. The specimens were infected for 21 days with *C. albicans*. Then, the specimens were divided into five groups prior to placement of intracanal medicaments. Group 1 (propolis), Group 2 (triple antibiotic paste), Group 3 (2% chlorhexidine Gel), Group 4 (calcium hydroxide with propylene glycol), and Group 5 (sterile saline as negative control). At the end of 1 and 7 days, dentine shavings were collected at two depths into the dentinal tubules (200 μm and 400 μm), and the total numbers of colony forming units were calculated for assessing the remaining vital viable fungal population. The values were analysed statistically using non-parametric Kruskal-Wallis and Mann–Whitney-U tests to compare the median reduction of *Candida albicans* between all intracanal medicaments. Probability values of *P* < 0.05 were set as the reference for statistically significant results.

**Results:** The reduction in number of colony forming units was statistically significant in all groups compared to the control group (sterile saline), except propolis at day 1 (400 μm depth).

**Conclusion:** Propolis was less effective than triple antibiotic paste, 2% chlorhexidine gel and calcium hydroxide with propylene glycol against *C. albicans* on day 1 at 400 μm deep inside the dentinal tubules, but equally effective after 7 days at both depths.

**Keywords:** Antifungal, *Candida albicans*, Endodontics, Ex-vivo, Medicaments.

**Potential targets by pentacyclic triterpenoids from Callicarpa farinosa against methicillin-resistant and sensitive Staphylococcus aureus**

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**Abstract**

The evolution of antibiotic resistance in *Staphylococcus aureus* showed that there is no long lasting remedy against this pathogen. The limited number of antibacterial classes and the common occurrence of cross-resistance within and between classes reinforce the urgent need to discover new compounds targeting novel cellular functions not yet targeted by currently used drugs. One of the experimental approaches used to discover novel antibacterials and their in vitro targets is natural product screening. Three known pentacyclic triterpenoids were isolated for the first time from the bark of *Callicarpa farinosa* Roxb. (Verbenaceae) and identified as α-amyrin [3β-hydroxy-urs-12-en-3-ol], betulinic acid [3β-hydroxy-20(29)-lupene-28-oic acid], and betulinaldehyde [3β-hydroxy-20(29)-lupen-28-al]. These compounds exhibited antimicrobial activities against reference and clinical strains of methicillin-resistant (MRSA) and methicillin-sensitive *S. aureus* (MSSA), with minimum inhibitory concentration (MIC) ranging from 2 to 512 μg/mL. From the genome-wide transcriptomic analysis to elucidate the antimicrobial effects of these compounds, multiple novel cellular targets in cell division, two-component system, ABC transporters, fatty acid biosynthesis, peptidoglycan biosynthesis, aminoacyl-tRNA synthetases, ribosomes and β-lactam resistance pathways are affected, resulting in destabilization of the bacterial cell membrane, halt in protein synthesis, and inhibition of cell growth that eventually lead to cell death. The novel targets in these essential pathways could be further explored in the development of therapeutic compounds for the treatment of *S. aureus* infections and help mitigate resistance development due to target alterations.

**Keywords:** Pentacyclic triterpenoids, *Callicarpa farinosa*, *Staphylococcus aureus*, Antimicrobial activity, Mechanisms of action.

**Anti-biofilm agents: Recent breakthrough against multi-drug resistant *Staphylococcus aureus***

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**Abstract**

*Staphylococcus aureus* is a Gram-positive pathogen that causes potentially life-threatening nosocomial- and community-acquired infections, such as osteomyelitis and endocarditis. *Staphylococcus aureus* has the ability to form multicellular, surface-adherent communities called biofilms, which enables it to survive in various sources of stress, including antibiotics, nutrient limitations, heat shock, and immune responses. Biofilm-forming capacity is now recognized as an important virulence determinant in the development of staphylococcal device-related infections. In light of the projected increase in the numbers of elderly patients who will require semi-permanent indwelling medical devices such as artificial knees and hips, we can anticipate an expanded need for new agents and treatment options to manage biofilm-associated infections in an expanding at-risk population. With better understanding of staphylococcal biofilm formation and growth, novel strategies that target biofilm-associated infections caused by *S. aureus* have recently been described and seem promising as future anti-biofilm therapies.

**Keywords:** *Staphylococcus aureus*; anti-biofilm agents; quorum sensing.
Apoptosis induced by para-phenylenediamine involves formation of ROS and activation of p38 and JNK in chang liver cells

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Abstract
para-phenylenediamine (p-PD) is a suspected carcinogen, but it has been widely used as a component in permanent hair dyes. In this study, the mechanism of p-PD-induced cell death in normal Chang liver cells was investigated. The results demonstrated that p-PD decreased cell viability in a dose-dependent manner. Cell death via apoptosis was confirmed by enhanced DNA damage and increased cell number in the sub-G1 phase of the cell cycle, using Hoechst 33258 dye staining and flow cytometry analysis. Apoptosis via reactive oxygen species generation was detected by the dichlorofluorescin diacetate staining method. Mitogen-activated protein kinase (MAPK) activation was assessed by western blot analysis and revealed that p-PD activated not only stress-activated protein kinase (SAPK)/c-Jun N-terminal kinases (JNK) and p38 MAPK but also extracellular signal-regulated kinase (ERK). Cytotoxicity and apoptosis induced by p-PD were markedly enhanced by ERK activation and selectively inhibited by ERK inhibitor PD98059, thus indicating a negative role of ERK. In contrast, inhibition of p38 MAPK activity with the p38-specific inhibitor SB203580 moderately inhibited cytotoxicity and apoptosis induction by p-PD. Similarly, SP600125, an inhibitor of SAPK/JNK, moderately inhibited cytotoxicity and apoptosis induced by p-PD, thus implying that p38 MAPK and SAPK/JNK had a partial role in p-PD-induced apoptosis. Western blot analysis revealed that p-PD significantly increased phosphorylation of p38 and SAPK/JNK and decreased phosphorylation of ERK. In conclusion, the results demonstrated that SAPK/JNK and p38 cooperatively participate in apoptosis induced by p-PD and that a decreased ERK signal contributes to growth inhibition or apoptosis.

Keywords: para-phenylenediamine; apoptosis; Chang liver cells; reactive oxygen species; MAP-kinases.
Stem cell tourism: A web-based analysis of clinical services available to international travelers.

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Abstract

Background: Stem cell therapies are advertised through online resources which describe a range of treatments with diverse clinical indications. Stem cell tourists may not be aware of the information they should seek when consulting these clinics, or of the potential risks involved. The aim of this study was to characterise the therapies offered by online stem cell clinics.

Methods: A web based search utilising five search terms was employed. The first twenty pages of each search result were screened against 340 variables.

Results: 224 out of 1091 websites advertised stem cell clinics. 68 eligible sites covering 21 countries were evaluated. The top five clinical indications for stem cell therapy were multiple sclerosis, anti-ageing, Parkinson’s disease, stroke and spinal cord injury. Adult, autologous stem cells were the most commonly utilised stem cell, and these were frequently sourced from bone marrow and adipose tissue and administered intravenously. Thirty-four per cent of sites mentioned the number of patients treated while one quarter of clinics provided outcome data. Twenty-nine per cent of clinics had an internationally recognised accreditation. Fifteen per cent of clinics stated that their therapies posed no risk. Eighty-eight per cent of clinics claimed treatment effectiveness, with 16% describing their curative potential. Over 40% of sites did not specify the number or duration of treatments. Fifty-three per cent of clinics requested access to patients’ medical records, and 12% recommended patients discuss the proposed therapy with their doctor. No clinic recommended that travellers consult a travel medicine specialist or receive vaccinations prior to their intended travel. One quarter of sites discussed contraindications to treatment, with 41% of sites detailing follow up patient care.

Keywords: Stem cell tourism; Travel medicine; Online resources; Medical tourism; Patient welfare.

**A comparison of quality and satisfaction experiences of patients attending chiropractic and physician offices in Ontario**

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**Abstract**

**Introduction:** Improving the quality of healthcare is a common goal of consumers, providers, payer groups, and governments. There is evidence that patient satisfaction influences the perceptions of the quality of care received.

**Methods:** This exploratory, qualitative study described and analyzed, the similarities and differences in satisfaction and dissatisfaction experiences of patients attending physicians (social justice) and chiropractors (market justice) for healthcare services in Niagara Region, Ontario. Using inductive content analysis the satisfaction and dissatisfaction experiences were themed to develop groups, categories, and sub-categories of quality judgments of care experiences.

**Results:** Study participants experienced both satisfying and dissatisfying critical incidents in the areas of standards of practice, professional and practice attributes, time management, and treatment outcomes. Cost was not a marked source of satisfaction or dissatisfaction. Conclusion: Patients may be more capable of generating quality judgments on the technical aspects of medical and chiropractic care, particularly treatment outcomes and standards of practice, than previously thought.

**Keywords:** quality, satisfaction, chiropractic care.
A comparative effect of mouthwashes with different alcohol concentrations on surface hardness, sorption and solubility of composite resins

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Abstract
The longevity and durability of composite resins are influenced by the actions of water, saliva, drinks, food and features of the oral environment.

Objective: The aim of this study was to evaluate the effect of mouthwashes containing alcohol on the surface hardness, sorption and solubility of composite resins.

Methods: Disc-shaped specimens were prepared with two composite resins Z250 (Z2) and Z350XT (Z3). Measurements of Vickers hardness were performed before and after immersion in Plax, PerioGard, Listerine, ethanol and distilled water for 12 h at 37°C, followed by a further 12 h at 37°C in artificial saliva. Sorption and solubility were performed according to ISO 4049. Data were analysed using one-way ANOVA and Tukey tests (α=0.05).

Results: None of the mouthwashes significantly reduced the hardness of the resin Z2 (p>0.05). The greatest change in resin Z3 hardness was produced by PerioGard (p<0.01). Plax produced the lowest changes in the sorption and solubility of resins Z2 and Z3 (p<0.01), followed by Listerine and PerioGard.

Conclusions: The sorption and solubility properties of the composite resins were more altered by mouthwashes than the surface hardness.

Keywords: Composite resins, Mouthwashes, Hardness tests, Absorption, Solubility, Introduction.
Comparative radiopacity of six current adhesive systems

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Abstract

Background: The radiopacity of contemporary adhesive systems has been mentioned as the indication for replacement of restorations due to misinterpretation of radiographic images.

Aims: This study aimed to evaluate the radiopacity of contemporary bonding agents and to compare their radiodensities with those of enamel and dentin.

Methods and Materials: To measure the radiopacity, eight specimens were fabricated from Clearfil SE Bond (CF), Xeno V (XE), Adper SE Bond (ASE), Magic Bond (MB), Single Bond 2 (SB), Scotchbond Multipurpose (SM), and gutta-percha (positive control). The optical densities of enamel, dentin, the bonding agents, gutta-percha, and an aluminium (Al) step wedge were obtained from radiographic images using image analysis software.

Statistical Analysis: The radiographic density data were analyzed statistically by analysis of variance and Tukey’s test ($\alpha = 0.05$).

Results: Significant differences were found between ASE and all other groups tested and between XE and CF. No statistical difference was observed between the radiodensity of 1 mm of Al and 1 mm of dentin, between 2 mm of Al and enamel, and between 5 mm of Al and gutta-percha. Five of the six adhesive resins had radiopacity values that fell below the value for dentin, whereas the radiopacity of ASE adhesive was greater than that of dentin but below that of enamel.

Conclusion: This investigation demonstrates that only ASE presented a radiopacity within the values of dentin and enamel. CF, XE, MB, SB, and SM adhesives are all radiolucent and require alterations to their composition to facilitate their detection by means of radiographic images.

Keywords: Densitometry; dentin-bonding agents; radiography.

**Synthesis, anti-inflammatory evaluation, and docking studies of some new thiazole derivatives**

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**Abstract**

A series of new 2-substituted-N-(1,3-thiazole-2-yl)acetamide 3-7 and N-(benzo[d]thiazol-2-yl)-2-(substituted)acetamide 10-13 derivatives have been synthesized and evaluated in vivo (rat paw edema) for their anti-inflammatory activities and in silico (docking studies) to recognize the hypothetical binding motif of the title compounds with the cyclooxygenase isoenzyme (COX-2) employing GLIDE software (Schrodinger Inc.). The compounds, 10-13 were found to have good anti-inflammatory activities [around 84-93 % of the standard: indomethacin]. The binding mode of the title compounds has been proposed based on the docking studies. Further, the predicted ADME properties of all the tested compounds were found to be in the ranges as predicted by QikProp for 95 % of known oral drugs and also satisfy the Lipinski’s rule of five.

**Keywords:** Microwave assisted synthesis, Thiazole derivatives, Anti-inflammatory activity, COX-2 docking studies, ADME prediction.

**Effect of nanosuspension and inclusion complex techniques on invitro protease inhibitory activity of naproxen**

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**Abstract**

This study investigated the effects of nanosuspension and inclusion complex techniques on *in vitro* trypsin inhibitory activity of naproxen—a member of the propionic acid derivatives, which are a group of antipyretic, analgesic, and non-steroidal anti-inflammatory drugs. Nanosuspension and inclusion complex techniques were used to increase the solubility and anti-inflammatory efficacy of naproxen. The evaporative precipitation into aqueous solution (EPAS) technique and the kneading methods were used to prepare the nanosuspension and inclusion complex of naproxen, respectively. We also used an *in vitro* protease inhibitory assay to investigate the anti-inflammatory effect of modified naproxen formulations. Physiochemical properties of modified naproxen formulations were analyzed using UV, IR spectra, and solubility studies. Beta-cyclodextrin inclusion complex of naproxen was found to have a lower percentage of antitryptic activity than a pure nanosuspension of naproxen did. In conclusion, nanosuspension of naproxen has a greater anti-inflammatory effect than the other two tested formulations. This is because the nanosuspension formulation reduces the particle size of naproxen. Based on these results, the antitryptic activity of naproxen nanosuspension was noteworthy; therefore, this formulation can be used for the management of inflammatory disorders.

**Keywords:** Naproxen/ nanosuspension/ anti-inflammatory activity, Naproxen/ inclusion complex/ anti-inflammatory activity, Naproxen/ solubility, Protease inhibition.
Anti-urolithiatic activity of *Melia azedarach* Linn. leaf extract in ethylene glycol-induced urolithiasis in male Albino rats

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**Abstract**

**Purpose**: To investigate the anti-urolithiatic activity of the aqueous and alcoholic extracts of *Melia azedarach* Linn leaves in calcium oxalate urolithiasis in male albino rats.

**Methods**: The effect of oral administration of aqueous and ethanol extracts of *Melia azedarach* Linn leaves on calcium oxalate urolithiasis has been investigated. Lithiasis was induced by oral administration of ethylene glycol (0.75 %v/v) in male albino rats for 28 days. Each of the extract (250 mg/kg) was administered orally day 0 as a prophylactic regimen and from day 15 as a curative regimen. Regular administration of ethylene glycol caused hyperoxaluria in ethylene glycol-fed animals, leading to increased renal retention and excretion of oxalate, calcium and phosphate. Histopathological study, urine microscopy, serum analysis and biochemical analysis of kidney homogenate were performed.

**Results**: Oxalate and calcium excretion in urine increased (p < 0.01) to 3.68 ± 0.01 and 4.5 ± 0.01 mg/24 h, respectively, in lithiatic control animals compared to (0.37 ± 0.01 and 1.27 ± 0.12 mg/24 h) for the normal control group. Treatment with aqueous or ethanol extract (250 mg/kg, p.o.) significantly (p < 0.01) reduced the elevated levels of calcium, oxalate and phosphate excretion in urine to 0.79 ± 0.01 and 1.09 ± 0.04 mg/24 h, respectively. Following treatment with the ethanol extract (250mg/kg), serum creatinine excretion was restored from 0.95 ± 0.01 mg/24 h to the normal level of 0.87 ± 0.01 mg/24 h. The results were comparable to those of the standard drug, allopurinol (50 mg/kg p.o.). Histopathological data for the kidney supported the foregoing results.

**Conclusions**: The results demonstrate that the aqueous and ethanol extracts of *Melia azedarach* Linn leaves have potent antiurolithiatic activity against ethylene glycol-induced calcium oxalate urolithiasis in male albino rats.

**Keywords**: *Melia azedarach*, Antiurolithiatic, Ethylene glycol, Urolithiasis, Excretion, Kidney.
Investigation of antidiarrhoeal activity of *Aristolochia indica* Linn. root extracts in mice

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**Abstract**

**Background:** The present study aimed at investigating the effect of ethanolic extract (EtAI), and aqueous extract (AqAI) of *Aristolochia indica* Linn roots on castor oil-induced diarrhoea and study on small intestinal transit. Phytochemical analysis of extracts was performed as per standard procedure.

**Materials and Methods:** The oral toxicity study using Swiss albino mice was performed in accordance with OECD guidelines. The EtAI and AqAI extracts of *Aristolochia indica* Linn were studied for antidiarrhoeal property using castor oil-induced diarrhoeal model and charcoal-induced gastrointestinal motility test in Swiss albino mice.

**Results:** Among the tested doses of 200 and 400 mg/kg body weight, the extracts reduced the frequency and severity of diarrhoea in test animals throughout the study period. At the same doses, the extract delayed the intestinal transit of charcoal meal in test animals as compared to the control and the results were statistically significant.

**Conclusion:** Experimental findings showed that ethanol extract of *Aristolochia indica* Linn root possess significant antidiarrheal activity and may be a potent source of anti-diarrhoeal drug in future.

**Keywords:** Antidiarrheal activity; *Aristolochia indica* Linn; ethanol extract; small intestinal transit.

**Anticarcinogenic effects of *Nothapodytes nimmoniana* against Dalton’s lymphoma ascites tumor Model**

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**Abstract**

The aim of the present study was to explore the effect of ethanolic extract of *Nothapodytes nimmoniana* heartwood and barks against Dalton’s Ascitic Lymphoma (DAL) in Swiss mice. DAL cells were injected intraperitoneally 1X10⁶cell to the mice. Two days after cells injection the animals were treated with ethanolic extract heartwood and barks at dose of 200 mg/kg for 14 days. 5-fluorouracil (20 mg/kg) was used as reference drug. On day 11, cancer cell number, packed cell volume, decrease in tumour weight of the mice, increase in life span and haematological parameters were evaluated and compared with the same parameters in control. A significant increase in the life span and a decrease in the cancer cell number and tumour weight were noted in the tumour-induced mice after treatment with the extract. The hematological parameters were also normalized by the extract in tumour-induced mice. These observations are suggestive of the protective effect of ethanolic extract of heartwood and barks against Dalton’s Ascitic Lymphoma (DAL).

**Keywords:** *Nothapodytes nimmoniana*, Dalton’s Ascitic Lymphoma, Anticancer agents.

**Investigation on antidiarrhoeal activity of *Aristolochia indica* linn. root extracts in mice**

Senthil Rajan Dharmalingam; Madhappan, Rajkumar; Ramamurthy, Srinivasan; Chidambaram, Kumarappan; Meka Venkata Srikanth; Shanmugham, Suresh; Senthil Kumar K. L.

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**Abstract**

**Background:** The present study aimed at investigating the effect of ethanolic extract (EtAI), and aqueous extract (AqAI) of *Aristolochia indica* Linn roots on castor oil-induced diarrhoea and study on small intestinal transit. Phytochemical analysis of extracts was performed as per standard procedure.

**Materials and Methods:** The oral toxicity study using Swiss albino mice was performed in accordance with OECD guidelines. The EtAI and AqAI extracts of *Aristolochia indica* Linn were studied for antidiarrhoeal property using castor oil-induced diarrhoeal model and charcoal-induced gastrointestinal motility test in Swiss albino mice.

**Results:** Among the tested doses of 200 and 400 mg/kg body weight, the extracts reduced the frequency and severity of diarrhoea in test animals throughout the study period. At the same doses, the extract delayed the intestinal transit of charcoal meal in test animals as compared to the control and the results were statistically significant.

**Conclusion:** Experimental findings showed that ethanol extract of *Aristolochia indica* Linn root possess significant antidiarrheal activity and may be a potent source of anti-diarrhoeal drug in future.

Comparative quality control evaluation of atenolol tablets marketed in Kuala Lumpur, Malaysia

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Abstract

Background: The emergent of many pharmaceutical companies producing their own generic type of drugs after the patent of innovator drugs expired can improve the general healthcare delivery systems as well as decreasing the healthcare costs. But it also raises a few issues with one of it is the widespread of substandard and counterfeit product. Post surveillance study to assess product parameter of various generics drug marketed is crucial. This kind of monitoring reduces a country’s economical burden on health issues from diseases due to fraudulent and substandard drugs usage.

Purpose: The main objective of this study is to perform a comparative evaluation of the physicochemical properties of five commercially available leading brands of Atenolol tablets marketed in Kuala Lumpur.

Method: The quality control parameters of five different brands of atenolol tablets were atenolol tablet assessed included uniformity of content, uniformity of weight, friability, crushing strength, disintegration and dissolution tests as well as content uniformity of the tablets. All the tablets were assessed for conformity with British Pharmacopoeia (BP) standards.

Results: All the five brands of the tablets passed the British Pharmacopoeia (BP) standards for weight uniformity, disintegration, friability, content uniformity and hardness tests.

Conclusion: The quality control parameters of all five top selling brands of atenolol tablets marketed in Kuala Lumpur analyzed passed all the BP and USP quality specifications and were physically and chemically equivalent.

Keywords: Quality control; physicochemical anti-hypertensive; generic; innovator.

A simple HPLC-UV bioanalytical method for the estimation of doxorubicin in rat plasma: Application to pharmacokinetic studies

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Abstract
Purpose: To develop a simple, accurate, and precise high performance chromatography (HPLC) method with spectrophotometric detection for the determination of doxorubicin hydrochloride in rat plasma.

Methods: Doxorubicin hydrochloride and daunorubicin hydrochloride (internal standard, IS) were separated on a C18 reversed-phase HPLC column. Following protein precipitation extraction, chromatographic separation was accomplished with a mobile phase consisting of acetonitrile: water at ratio of 30:70 (pH 3.0), and the drug was detected at 233 nm using a UV detector at flow rate of 1.0 ml/min and ambient temperature.

Results: Linearity was obtained over the range 1.0 – 50.0 μg/ml for doxorubicin hydrochloride with lower limit of quantitation of 1.0 μg/ml. For each level of quality control samples, inter- and intra-day precision (% CV) was < 9.6 and 5.1 %, respectively. Stability of doxorubicin hydrochloride in plasma was within the acceptance limit (± 15 %) with no evidence of degradation during sample processing and 30 days storage in a deep freezer at -70 ± 5 °C. Absolutes extraction recovery of drug from plasma was ≥ 86 %.

Conclusion: The method is highly selective and rugged for the determination of doxorubicin hydrochloride in rat plasma and should be suitable for conducting pharmacokinetic studies and therapeutic drug monitoring.

Keywords: Doxorubicin, Daunorubicin, Validation, pharmacokinetics, rat plasma.
Epidemiological profile of hospitalised injuries among electric bicycle riders admitted to a rural hospital in Suzhou: A cross-sectional study

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Abstract

Police reports indicate an increasing burden of electric bike (E-bike) casualties in China; however, hospitalised injury data have not been reported. The aim of the present work was to describe hospitalised injury patterns for E-bikers involved in road crashes and explore injury risk disparities among them. For the period October 2010 to April 2011, this cross-sectional study retrospectively collected information for hospitalised E-bikers involved in road crashes from hospital records, in Suzhou China, using the International Classification of Diseases, 10th revision (ICD-10) injury diagnosis codes. Injury nature and body region were further categorised using ICD-10 codes. Multivariate logistic regression was used to assess the risk of specific injury types. We found that hospitalised E-biker injuries (n=323) accounted for 57.2% of road traffic hospitalisations over the 6-month study period. The average age, length of stay and hospitalisation cost were 43.8 years, 10.0 days and ¥8229 (US$1286), respectively. Fractures and head injuries were common. The odds of traumatic brain injuries were significantly elevated for night-time E-bike crashes and incidents other than colliding with motor vehicles. These findings confirm E-bike injuries as an important population health problem and identify elevated injury odds in different E-biker groups. Future injury prevention initiatives should include encouraging helmet use among E-bikers.
Can learning outcomes in cognitive domain be assessed effectively using multiple choice questions? A study in an undergraduate pharmacy curriculum

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Abstract

Background: The widespread use of multiple choice questions (MCQ) in examinations is attributed to its logistical advantage and broad coverage of content within a short duration. The end-of-semester examinations for several modules in the pharmacy programme previously employed a combination of written examination tools including MCQ, short answer questions (SAQ) or essays for assessing learning outcomes in the cognitive domain. Concerns regarding assessment fatigue and subjectivity in marking have led to a review of the assessment formats in the examinations. Various types of MCQ were consequently introduced as the only assessment tool. This study was conducted to evaluate the performance of students in the examinations as a result of the change.

Methodology: Analyses were carried out on the end-of-semester examination results of two cohorts of students for each module, one based on a combination of MCQ, SAQ or essay and the other based on MCQ alone. The class means were compared, and t-test was used to determine the difference between the performances.

Results: Although the difference in the mean scores of the two groups is statistically significant in 13 of the 20 modules, the difference is less than 5% in 10 modules.

Conclusion: The findings provide evidence that well-constructed MCQ can effectively assess cognitive skills.

Keywords: Cognitive; learning outcomes; multiple choice questions; pharmacy; written examination.
Phylogenetic analysis and identification of *Sarcocystis* spp. found in rodents in Peninsular Malaysia

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**Abstract**

**Background:** The tissue specimens used for extraction of DNA in this study were from rodents trapped in four states in Peninsular Malaysia, namely Kedah, Kelantan, Selangor and Johor.

**Methods:** Histological sections of these rodent muscle tissues stained with hematoxylin and eosin showed infection with *Sarcocystis* spp. Based on these results, the current study was carried out to determine the phylogenetic relationship among the identified *Sarcocystis* spp. in these rodents. The formalin fixed paraffin embedded (FFPE) rodent muscle blocks were subjected to DNA extraction and followed with semi nested PCR targeting 5’ and 3’ regions of 18S rRNA of *Sarcocystis* spp.

**Results:** Phylogenetic analysis showed two distinct groups of *Sarcocystis* spp. among the rodents in Peninsular Malaysia. Most of the identified *Sarcocystis* spp. were genetically closely related to *Sarcocystis rodentifelis* and *Sarcocystis muris* and were also observed to be genetically closely related to *Sarcocystis* sp. ex *Columba livia* and *Sarcocystis* sp. cyst type I ex *Anser albitrons*.

**Conclusion:** Further classification to confirm these *Sarcocystis* spp. was not possible as only partial sequences of 18S rRNA was available and this was insufficient for optimal differentiation.

**Keywords:** *Sarcocystis*, rodents.
Medical professionalism from a socio-cultural perspective: Evaluating medical residents communicative attitudes during the medical encounter in Malaysia

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Abstract
Context: The practice of medicine requires good communication skills to foster excellent rapport in doctor patient relationship. Reports on communication skills learning attitude among medical professionals are key essentials toward improving patient safety and quality of care.

Aims: We aimed to determine factors affecting communication skills learning attitudes among medical residents in Malaysia.

Settings and Design: Cross sectional survey, in a Malaysian public health hospital.

Materials and Methods: A total of 191 medical residents across medical and surgical based rotations were included. We assessed the validated communication skills attitude scale among medical residents from different rotations.

Statistical Analysis: Statistical Package of Social Sciences (SPSS®) (version 16.0, IBM, Armonk, NY) was used. Cronbach’s alpha was used to test the internal consistency of the scale. Descriptive analysis was conducted for all variables. Bivariate analysis was employed across the socio-demographic variables.

Results: Majority of the residents believed that communication skills training should be made compulsory in Malaysia (78.5%). Medical residents agreed that acquiring good communication skills is essential to be a good doctor. However, the majority cited time pressures for not being able to learn communication skills. Significant differences in communication skills learning attitude scores were found between Malays and Chinese.

Conclusion: The majority of medical residents had a positive attitude toward communication skills learning. Socio-demographic factors influenced communication skills learning attitude among medical residents. Incorporating communicative skills modules during hospital Continuous Medical Education for medical residents is essential to cultivate communicative skills attitudes for effective doctor-patient relationship during the routine medical encounters.

Keywords: Communicative attitudes, medical encounter, medical residents, patient care, professionalism.
Level and determinants of knowledge of symptomatic knee osteoarthritis among railway workers in Malaysia

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Abstract

Background: Symptomatic knee osteoarthritis, an ancient malady greatly impairing modern population quality of life, has stimulated global attention to find effective modes of prevention and intervention.

Purpose: This study aimed to assess factors affecting knowledge of symptomatic knee osteoarthritis (knee OA) among Malaysian railway workers.

Methods: A cross-sectional study was conducted among 513 railway workers involving eight major states within Peninsular Malaysia using population-based sampling. The assessment instrument was a face-validated, prepiloted, self-administered instrument with sociodemographics and knowledge items on knee OA.

Results: Mean (±SD) age of the respondents was 41.4 (±10.7), with the majority aged 50 years or older (34.9%). Of the total respondents, 53.6% had low levels of knowledge of knee OA disease. Multivariate analysis found that four demographic predictors, age ≥50 years, family history of knee OA, self-awareness, and clinical diagnosis of the disease entity, were significantly associated with knowledge scores.

Conclusion: The finding of a low level knee OA knowledge among Malaysian railway workers points to an urgent need for massive information to be disseminated among the workers at risk to foster primary prevention and self-care.
Psycho-behavioural risks of low back pain in railway workers

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Abstract

Background: Low back pain (LBP) is the most costly ailment in the work force. Risky work behaviour and psychological stress are established risk factors.

Aims: To explore the associations between workplace risk factors, psychological stress and LBP among Malaysian railway workers.

Methods: A cross-sectional study was carried out on railway workers in Malaysia. Socio-demographics, workplace risk factors for LBP, perceived psychological stress and history of LBP over the previous month were obtained by direct interviews using a structured closed-ended questionnaire. Descriptive, bivariate and logistic regression analyses were conducted.

Results: There were 513 study participants (70% response rate). The prevalence of LBP in the previous month was 69%. Multivariate analysis yielded four significant predictors of LBP: employment of >=10 years, lifting and lowering heavy loads, prolonged standing posture and psychological stress.

Conclusions: The high prevalence of LBP and its significant associations with physical and psychological stress factors in railway workers points to an urgent need for preventive measures, particularly among workers in high-risk occupations.

Keywords: Epidemiology; low back pain; musculoskeletal; psychological stress; railway workers; workplace risk factors.
Psycho-socioeconomic factors affecting complementary and alternative medicine use among selected rural communities in Malaysia: A cross-sectional study

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Abstract

Introduction: The use of complementary and alternative medicine (CAM) as a source of cure has gained much spectrum worldwide, despite skeptics and advocates of evidence-based practice conceptualized such therapies as human nostrum.

Objective: This study aimed to explore the factors affecting CAM use among rural communities in Malaysia.

Methods: A cross-sectional study was carried out on 288 occupants across four rural villages within the District of Selama, Perak, Malaysia. A survey that consisted of socio-economic characteristics, history of CAM use and the validated Holistic Complementary and Alternative Medicine Questionnaire (HCAMQ) were used.

Results: The prevalence of self-reported CAM use over the past one year was 53.1%. Multiple logistic regression analyses yielded three significant predictors of CAM use: monthly household income of less than MYR 2500, higher education level, and positive attitude towards CAM.

Conclusion: Psycho-socioeconomic factors were significantly associated with CAM use among rural communities in Malaysia.
Factors associated with anxiety and depression among type 2 diabetes outpatients in Malaysia: A descriptive cross-sectional single-centre study

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Abstract

Objective: To determine the prevalence and factors associated with anxiety and depression among type 2 diabetes outpatients in Malaysia.

Design: Descriptive, cross-sectional single-centre study with universal sampling of all patients with type 2 diabetes.

Setting: Endocrinology clinic of medical outpatient department in a Malaysian public hospital. Participants: All 169 patients with type 2 diabetes (men, n=99; women, n=70) aged between 18 and 90 years who acquired follow-up treatment from the endocrinology clinic in the month of September 2013.

Main outcome measures: The validated Hospital Anxiety and Depression Scale (HADS), sociodemographic characteristics and clinical health information from patient records.

Results: Of the total 169 patients surveyed, anxiety and depression were found in 53 (31.4%) and 68 (40.3%), respectively. In multivariate analysis, age, ethnicity and ischaemic heart disease were significantly associated with anxiety, while age, ethnicity and monthly household income were significantly associated with depression.

Conclusions: Sociodemographics and clinical health factors were important correlates of anxiety and depression among patients with diabetes. Integrated psychological and medical care to boost self-determination and confidence in the management of diabetes would catalyse optimal health outcomes among patients with diabetes.

**Protective effect of pioglitazone, a PPARγ agonist against acetaminophen-induced hepatotoxicity in rats**

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**Abstract**

Acetaminophen has a reasonable safety profile when consumed in therapeutic doses. However, it could induce hepatotoxicity and even acute liver failure when taken at an overdose. Pioglitazone, PPARγ ligand, is clinically tested and used in treatment of diabetes. PPARγ is a key nuclear hormone receptor of lipid metabolisms and regulates several gene transcriptions associated with differentiation, growth arrest, and apoptosis. The aim of our study was to evaluate the hepatoprotective activity of pioglitazone on acetaminophen-induced hepatotoxicity and to understand the relationship between the PPARγ and acetaminophen-induced hepato injury. For the experiment, Sprague–Dawley rats (160–180 g) were used and divided into four groups. Groups I and II were normal and experimental controls, respectively. Groups III and IV received the pioglitazone 20 mg/kg for 10 days. Hepatotoxicity was induced in Groups II and III on the eighth day with acetaminophen (i.p. 350 mg/kg body weight). The hepatoprotective effect was evaluated by performing an assay of the total protein, total bilirubin, alkaline phosphatase, aspartate aminotransferase, alanine aminotransferase, and α-fetoprotein as well as glutathione peroxidase, lipid peroxidation, catalase, superoxide dismutase, and glutathione transferase and liver histopathology. The assay results were presented as mean and standard error of mean for each group. The study group was compared with the control group by one-way ANOVA test. A p value of 0.05 was considered significant. Pioglitazone significantly reduced the elevated level of above serum marker enzymes and also inhibits the free radical formation by scavenging hydroxyl ions. It also restored the level of LPO and significantly elevated the levels of endogenous antioxidant enzymes in acetaminophen-challenged hepatotoxicity. Liver histopathological examination showed that pioglitazone administration antagonized acetaminophen-induced liver pathological damage. Various biochemical estimations of different hepatic markers and antioxidant enzymes and histopathological studies of liver tissues glimpse a support to its significant hepatoprotective activity on acetaminophen-induced hepatotoxicity.

**Keywords**: Pioglitazone, Acetaminophen, Liver, Hepatotoxicity, PPAR gamma agonist.
Hepatoprotective activity of moralbosteroid, a steroidal glycoside isolated from *Morus alba*

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Abstract

This study evaluates the hepatoprotective activity of moralbosteroid, isolated from *Morus alba*, against the hepatotoxicity induced by CCl₄ in wistar albino rats. The level of hepatoprotection was estimated by measuring the following biochemical markers: aspartate amino-transferase (AST), alkaline phosphatase (ALP), serum alanine aminotransferase (ALT), total bilirubin (TB), and total protein (TP), including the enzymes involved in antioxidant activities like glutathione transferase (GST), glutathione peroxidase (GPx), catalase (CAT), lipid peroxidation (LPO) and superoxide dismutase (SOD). The oral administration of CCl₄ significantly caused elevation in LPO level (13.22±1.59 μM/mg protein) as compared to control. The activities of antioxidant enzymes including CAT, SOD, GPx and GST were decreased significantly (0.38±0.6 nmol/min/ml, 0.89±0.83U/ml, 3.90±0.91 μmol and 0.05±0.16 U/min/mg protein) in testicular tissue as compared to control animals. Moralbosteroid significantly prevents the marked escalation of serum markers and inhibited the free radical processes by the scavenging of hydroxyl radicals. It also modulates the levels of LPO and prominently increases the endogenous antioxidant enzyme levels in hepatocellular toxicity induced by CCl₄. The results obtained in the present study suggest the preventive influence of moralbosteroid on liver toxicity in rats induced by CCl₄ comparable with those of Silymarin.

Keywords: *Morus alba*, Moralbosteroid, Carbon tetrachloride, Silymarin, Hepatoprotective, Rats.
Anti-inflammatory effects of *Polygonum minus* (Huds) extract (LineminusTM) in in-vitro enzyme assays and carrageenan induced paw edema

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Abstract

**Background:** The study was aimed to evaluate the anti-inflammatory activity of ethanolic and aqueous extracts of *Polygonum minus* (Huds) using in vitro and in vivo approaches.

**Methods:** The in vitro tests used to evaluate ethanolic extract are cyclooxygenase-1 (COX-1), cyclooxygenase-2 (COX-2), lipooxygenase (5-LOX), secretory phospholipase-A2 (sPLA2) inhibition assay whilst the in-vivo effect was measured by the ability of aqueous extracts to reduce paw edema induced by λ-carrageenan, in rats.

**Results:** The ethanolic extract inhibited the activities of 5-LOX and COX-1 (p < 0.05) whilst the inhibitory effect on COX-2 was only moderate. A marked inhibition of 5-LOX was observed at 30 μg/ml. The extract did not inhibit the activity of sPLA2. The ability of the ethanolic extracts of *Polygonum minus* to inhibit both 5-LOX and COX, prompted a study to evaluate the effects of using an aqueous extract of *Polygonum minus* (LineminusTM); as this could be more suitable for future clinical testing. The anti-inhibitory activity of the aqueous extract from this plant was evaluated using a rat model where inflammation was induced in the paws by injection of λ-carrageenan. The aqueous extracts from *Polygonum minus* administered at doses of 100 and 300 mg/kg body weight (b.w.), significantly (p < 0.01) reduced paw edema induced by λ-carrageenan in the experimental model, at 4 h compared to the vehicle control. Furthermore, administration of 100 mg/kg b.w. or 300 mg/kg b.w. completely reduced inflammation of the paw 4 h after injection.

**Conclusion:** These findings suggest that aqueous extract of *Polygonum minus* possesses potent anti-inflammatory activities.

**Keywords:** Inflammation, *Polygonum minus* (Huds), Paw edema, Cyclooxygenase, Lipooxygenase, Secretory phospholipase-A2.
Uncomplicated hyperemesis gravidarum does not alter the course of cardiovascular changes during pregnancy

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Abstract
The purpose of this prospective longitudinal study was to investigate the maternal cardiac haemodynamic and structural changes that occur in pregnancies with uncomplicated hyperemesis gravidarum in a selected Malaysian population. Nine women underwent serial echocardiography beginning at 12 weeks of gestation and throughout pregnancy at monthly intervals. Their echocardiograms were repeated at 6 and 12 weeks following delivery to reflect the pre-pregnancy haemodynamic state. Cardiac output was measured by continuous wave Doppler at the aortic valve. Interventricular septum thickness was determined by M-mode echocardiography and ventricular diastolic function by assessing flow at the mitral valve with Doppler recording. Cardiac output showed an increase of 32.9% at 36 weeks and maintained till 40 weeks of gestation. Heart rate increased from 79 ± 6 to 96 ± 8 beats/min at 36 weeks. Stroke volume increased by 16.4% at 40 weeks of gestation when compared to the baseline value. Systolic and diastolic blood pressure did not appreciably change but showed a lower reading during the mid-trimester period. Early inflow velocity of left ventricle did not show a rise while peak atrial velocity showed an increasing trend; thus the ratio of early inflow to peak atrial transport showed a declining trend from early pregnancy to term. End diastolic dimension of left ventricle and interventricular septum thickness showed an increased value at term. Uncomplicated hyperemesis gravidarum did not alter the haemodynamic changes throughout pregnancy and concur with established data for normal pregnancy.

Keywords: Normal pregnancy, cardiac changes, echocardiogram, uncomplicated hyperemesis gravidarum.
The influence of fasting insulin level in post-gestational diabetes mellitus women receiving low-glycaemic-index diets

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Abstract
Post-gestational diabetes mellitus (GDM) women are recommended weight loss to manage increased cardio-metabolic risks. We investigated the effects of lowering diet glycaemic index (GI) on fasting blood glucose (FBG), serum lipids, body weight and composition of post-GDM women with varying fasting insulin levels (INS). Seventy-seven Asian, non-diabetic women with previous GDM (aged 20–40 years, mean BMI: 26.4±4.6 kgm⁻²) were recruited. At baseline, 20 subjects with INS o2 mIU ml⁻¹ and 18 with INS X2 mIU ml⁻¹ received conventional dietary recommendations (CHDR) only. CHDR emphasised energy and fat intake restriction and encouraged increase in dietary fibre intakes. Twenty-four subjects with INS o2 mIU ml⁻¹ and 15 with INS X2 mIU ml⁻¹, in addition to CHDR, received low-GI education (LGI). Changes in FBG, serum lipids, body weight and body composition were evaluated. Subjects with INS o2 mIU ml⁻¹ had similar outcomes with both diets. After 1 year, subjects with INS X2 mIU ml⁻¹ who received LGI education had reductions in FBG and triglycerides. Subjects who received CHDR observed increase in both FBG and triglycerides (Po0.05). Among all subjects, diet GI was lower and dietary fibre intakes were higher in LGI compared with CHDR subjects (all Po0.05). Thus, in Asian post-GDM women with normal/higher INS, adding low-GI education to CHDR improved management of FBG and triglycerides.

Keywords: gestational diabetes mellitus; glycaemic index; type 2 diabetes mellitus; prevention; fasting insulin; diet.
Antioxidant value and antiproliferative efficacy of mitragynine and a silane reduced analogue

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Abstract

Background: To investigate the antioxidant value and anticancer functions of mitragynine (MTG) and its silane-reduced analogues (SRM) in vitro.

Materials and Methods: MTG and SRM was analyzed for their reducing power ability, ABTS radical inhibition and 1,1-diphenyl-2-picryl hydrazyl free radicals scavenging activities. Furthermore, the antiproliferation efficacy was evaluated using MTT assay on K 562 and HCT116 cancer cell lines versus NIH/3T3 and CCD18-Co normal cell lines respectively.

Results:
SRM and MTG demonstrate moderate antioxidant value with ABTS assay (Trolox equivalent antioxidant capacity (TEAC): 2.25±0.02 mmol trolox / mmol and 1.96±0.04 mmol trolox / mmol respectively) and DPPH (IC50=3.75±0.04 mg/mL and IC50=2.28±0.02 mg/mL respectively). Both MTG and SRM demonstrate equal potency (IC50=25.20±1.53 and IC50=22.19±1.06 respectively) towards K 562 cell lines, comparable to control, betulinic acid (BA) (IC50=24.40±1.26). Both compounds showed concentration-dependent cytotoxicity effects and exert profound antiproliferative efficacy at concentration > 100 μM towards HCT 116 and K 562 cancer cell lines, comparable to those of BA and 5-FU (5-Fluorouracil). Furthermore, both MTG and SRM exhibit high selectivity towards HCT 116 cell lines with selective indexes of 3.14 and 2.93 respectively compared to 5-FU (SI=0.60).

Conclusions:
These findings revealed that the medicinal and nutitional values of mitragynine obtained from ketum leaves that growth in tropical forest of Southeast Asia and its analogues does not limited to analgesic properties but could be promising antioxidant and anticancer or chemopreventive compounds.

Keywords: Mitragynine related analogues, antioxidant values, antiproliferative efficacy.

**MDRO Beijing Consensus Meeting Report: Global burden of multidrug-resistant organisms’ current antimicrobial resistance problems in Asia-Pacific**

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**Abstract**

The International Society of Chemotherapy’s Working Groups on Antibiotic Resistance and Antibiotic Stewardship convened a half-day workshop on the burden of multidrug-resistant organisms in the Asia-Pacific. This short review is a summary of their discussion and conclusions.

**Keywords:** Multidrug resistance, Bacteria, Control, Asia-Pacific.
Myocardial infarction false alarm: Initial electrocardiogram and cardiac enzymes

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Abstract
Objective: The objectives of this study were to determine the incidence of a myocardial infarction "false alarm" and evaluate the efficacy of the initial electrocardiogram and cardiac enzymes in diagnosing myocardial infarction in Malaysia.

Methods: We recruited patients who were admitted with suspected myocardial infarction from June to August 2008. The medical records of these patients were reviewed for the initial electrocardiogram, initial cardiac enzyme levels (creatine kinase-MB and troponin T), and the final diagnosis upon discharge. The subjects were stratified into 2 groups: true myocardial infarction, and false alarm.

Results: 125 patients were enrolled in this study. Following admission and further evaluation, the diagnosis was revised from myocardial infarction to other medical conditions in 48 (38.4%) patients. The sensitivity and specificity of the initial ischemic electrocardiographic changes were 54.5% and 70.8%, respectively. Raised cardiac enzymes had a sensitivity of 44.3% and specificity of 95.8%.

Conclusion: A significant proportion of patients in Malaysia are admitted with a false-alarm myocardial infarction. The efficacy of the electrocardiogram in diagnosing myocardial infarction in Malaysia was comparable to the findings of Western studies, but the cardiac enzymes had a much lower sensitivity.

Keywords: Biological markers, creatine kinase, MB form, electrocardiography, Malaysia, myocardial infarction, troponin T.
Predictors of frequent oral analgesic use in rheumatoid arthritis

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Abstract

Objective: The main objective of this study was to determine the predictors of frequent oral analgesic use among Rheumatoid Arthritis (RA) patients who were prescribed with the above medication on an ‘as-needed’ basis.

Methods: Patients with RA were recruited consecutively from the Rheumatology outpatient clinics in this cross-sectional study. The sociodemographic data, frequency of oral analgesic intake, Patient Global Assessment (PGA) scores and HAQ (Health Assessment Questionnaire) scores were determined by interviewing the subjects. Subjects were divided into 2 groups; frequent users (3 days and above in a week) and less frequent users (less than 3 days in a week).

Results: In a total of 112 subjects, 39 (34.8%) were frequent analgesic users. Both the HAQ and PGA scores were significantly higher among the frequent users (p < 0.05). Using multivariate analysis, the HAQ scores (p=0.015, odds ratio 3.161 [95% confidence interval of 1.246-8.015]) and PGA scores (p=0.039 odds ratio 1.291 [95% confidence interval of 1.012-1.646]) were found to be independent predictors of frequent analgesic use.

Conclusions: Our study confirms that the frequency of analgesic intake in Rheumatoid Arthritis has a significant relationship with patient-reported functional capacity and well-being.

Keywords: Analgesic, Rheumatoid arthritis.
Anticonvulsant activity of Morus alba and its effect on brain gamma-aminobutyric acid level in rats

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Abstract

Morus alba (locally known as Tut, commonly known as white mulberry, Family: Moraceae) has been domesticated over thousands of years and adapted to many continents of Asia, Europe, North and South America and Africa with tropical, subtropical and temperate zones. As per Ayurveda, all parts of M. alba are medicinally important. In folk medicine, the plant is reportedly used in treating epileptic convulsions, mental illness, insomnia and hemicranias. Number of active phytochemical constituents such as alkaloids, flavonoids, glycosides, terpenoids, steroids, volatile oils, tannins, has been reported from different parts of the plant. On the basis of reported traditional uses, we undertook the present study to determine the anticonvulsant activity of M. alba by using pentylenetetrazole (PTZ) and maximal electroshock (MES) - induced convulsion models in rats. M. alba leaves were collected at the Campus of Siddhartha Institute of Pharmacy, Dehradun. The plants were identified and authenticated by Dr. Imran Kazmi, Department of Pharmacognosy, Siddhartha Institute of Pharmacy, Dehradun. After collection, the plant leaves which were air-dried under shade were pulverized using a mechanical grinder. Methanol/water (1:1) solvent was used for the extraction of the air-dried pulverized leaves (100 g) to obtain methanolic extract of M. alba (MEMA).

**Therapeutic efficacy of vitamin E δ–tocotrienol in collagen-induced rat model of arthritis**

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**Abstract**

Rheumatoid arthritis (RA) is a chronic, systemic, inflammatory disease primarily involving inflammation of the joints. Although the management of the disease has advanced significantly in the past three decades, there is still no cure for RA. The aim of this study was to determine the therapeutic efficacy of δ-tocotrienol, in the rat model of collagen-induced arthritis (CIA). Arthritis was induced by intradermal injection of collagen type II emulsified in complete Freund’s adjuvant. CIA rats were orally treated with δ-tocotrienol (10mg/kg) or glucosamine hydrochloride (300mg/kg) from day 25 to 50. Efficacy was assessed based on the ability to reduce paw edema, histopathological changes, suppression of collagen-specific T-cells, and a reduction in C-reactive protein (CRP) levels. It was established that δ-tocotrienol had the most significant impact in lowering paw edema when compared to glucosamine treatment. Paw edema changes correlated well with histopathological analysis where there was a significant reversal of changes in groups treated with δ-tocotrienol. The results suggest that δ-tocotrienol is efficient in amelioration of collagen-induced arthritis. Vitamin E delta-tocotrienol may be of therapeutic value against rheumatoid arthritis.

The validity of the Menopause-specific Quality of Life questionnaire in women with type 2 diabetes

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Abstract

Objectives: To examine the validity and reliability of the Menopause-specific Quality of Life (MENQOL) questionnaire in a sample of women with diabetes in Malaysia, with the secondary aim of determining whether MENQOL domain scores were associated with depression and diabetes.

Methods: A total of 337 postmenopausal women (241 with diabetes, 96 controls) were evaluated. Construct validity was evaluated using principal components analysis (PCA) and comparing scale items against the mental component score of the Short Form-12 (SF-12 MCS), and against the Center for Epidemiologic Studies Depression Scale 10 (CES-D 10). Consistency assessment was conducted using Cronbach's alpha.

Results: The internal consistencies for the physical (PHS), psychosocial (PS), sexual (VSS) and vasomotor domains were 0.86, 0.79, 0.79 and 0.70, and 0.90 for the full scale of MENQOL. PCA revealed a four-factorial model. Diabetes and non-diabetes subjects experienced their first period (13.25 vs. 13.10 years, \(p = 0.680\)) and achieved menopause around the same age (49.35 vs. 48.87 years, \(p = 0.426\)). We found significant variations in the MENQOL's PHS and PS domain scores that could be explained by SF-12 PCS (25%) and SF-12 MCS (20%) sub-scales. The validity of the MENQOL domains was demonstrated through significant associations with the equivalent SF-12 MCS and PCS subscales. The PS domain of the MENQOL also predicted the likelihood of symptoms of depression (1.42, 95% confidence interval 1.01-2.02).

Conclusions: This study confirms the validity and internal consistency of the MENQOL questionnaire for measuring quality of life in postmenopausal women with diabetes, suggesting that the instrument can be used to screen people for menopausal symptoms.

Keywords: Validity, menopause, quality of life, diabetes.

**Relation between mental health-related variables and glycemic control in Malaysian women with type 2 diabetes mellitus (T2DM)**

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**Abstract**

The primary objective of this study was to examine the association between depression, anxiety symptoms, and glycemic control in Malaysian women with type 2 diabetes mellitus (T2DM). Another objective was to examine the association between glycemic control and mental status, measured by mental composite score (MCS). This study was conducted on 611 randomly sampled Malaysian women with T2DM who were treated as outpatients at medication therapy adherence clinics (MTAC). The Delusions-Symptoms-States Inventory: State of Anxiety and Depression (DSSI/SAD) and Center for Epidemiologic Studies Depression Scale 10 (CESD 10) were used. Five most recent readings of haemoglobin A1c (HbA1c), fasting, and random glucose levels were recorded. Regression analysis was used to correlate glycemic control with depression, anxiety symptoms, and MCS, while considering potential confounders. For depression symptoms, an increase of one category was associated with a small average HbA1c increase of 0.10 % (95 % CI − 0.38, 0.68), whereas for anxiety symptoms, there was a small decrease in average HbA1c of 0.44 % (95 % CI − 1.17, 0.28); both were not significant. Very poorly controlled HbA1c was not significantly associated with symptoms of depression (OR 1.43, 95 % CI 0.45–4.55) or anxiety (OR 0.47, 95 % CI 0.15–1.49). MCS was found to have a strong inverse correlation with HbA1c. That is, women who reported poor MCS had a significantly higher, and therefore very poorly controlled, HbA1c (OR 1.70, 95 % CI 1.01–2.88). The presence of depression and anxiety symptoms was not significantly associated with glycemic control in women with T2DM, supporting the hypothesis that argues against the existence of a link between depression, anxiety, and glycemic control.

**Keywords:** Mental health, Depression, Anxiety, Type 2 diabetes mellitus, Women, Malaysian.
Hypertension among HIV-infected adults receiving Highly Active Antiretroviral Therapy (HAART) in Malaysia

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Abstract

There are increasing researches about non-communicable disease such as elevated blood pressure among people living with HIV before and after initiation of highly active antiretroviral therapy (HAART). This cross-sectional study was designed to determine the prevalence of hypertension and associated risk factors among 340 HIV-infected patients on antiretroviral therapy at a Malaysian public hospital providing HIV-related treatment. Data on socioeconomic background, anthropometry, medical history and dietary intake of the patients were collected. Hypertension is defined as blood pressure ≥130/85 (mm Hg). Prevalence of hypertension was 45.60% (n=155) of which 86.5% of the hypertensive group were male (n=134). The results showed that increase in age (OR 1.051, 95% confidence interval (CI) 1.024-1.078), higher body mass index (OR 1.18, 95% CI 1.106-2.71), bigger waist circumference (OR 1.18, 95%CI 1.106-2.71), higher waist-hip ratio (OR 1.070, 95%CI 1.034-1.106), higher fasting plasma glucose (OR 1.332, 95% CI 0.845-2.100) and percentage energy intake from protein >15 (OR 2.519, 95%CI 1.391-4.561) were significant risk factors for hypertension (p<0.001). After adjusting for other variables, increasing age (adjusted odds ratio (aOR) 1.069 95%CI 1.016-1.124, p=0.010), being male (aOR 3.026, 95%CI 1.175-7.794, p=0.022) and higher body mass index (aOR 1.26, 95%CI 1.032-1.551, p=0.024) were independently associated with hypertension. None of the antiretroviral therapy and immunologic factors was linked to hypertension. In conclusion hypertension among PLHIV was linked to the well-known risk factors such as age, gender and body mass index. With HAART, people can live longer by making monitoring and control of some reversible factors, especially excessive weight gain for maintaining quality of life.

Keywords: hypertension, HIV, HAART, ARV, nutrition, Malaysia.
The ethical decision making model in obstetrics and gynecology practice

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Abstract
This paper attempts to utilise clinical scenarios where ethical issues are embedded and requires appropriate application of the steps of the framework mentioned. A step by step sequential approach is adopted to illustrate how the ‘ethical decision model ‘can be used to resolve ethical problems to arrive at a reasonable conclusion. The UNESCO ethical method of reasoning is used as the framework for decision making. Physician educators should be competent to use ethical decision models as well as best available scientific evidence to be able to arrive at the best decision for patient care as well as teach health professional trainees how reasonable treatment decisions can be made within the perimeter of medical law and social justice.

Keywords: bioethics, clinical practice, decision-making model, medical education, obstetrics and gynaecology.
Evaluation of interleukin-1β and 8 in gutka chewers with periodontitis in rural Indian populations

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Abstract

Purpose: Smokeless tobacco-based oral-use products like gutka are popular in India. Gutka usage leads to increased periodontal destruction and inflammation; however, the relevant mechanism remains unknown. This study aimed to elucidate the role of gutka in periodontitis by examining its effect on the levels of interleukin (IL) 1β and IL-8 from the gingival crevicular fluid (GCF).

Methods: A total of 45 patients were enrolled in this study. Thirty patients with periodontitis (15 gutka chewers [GCP] and 15 nongutka chewers [NGC]) and 15 periodontally healthy controls (HC) were selected. The full-mouth plaque index (PI), gingival index (GI), probing depth (PD), clinical attachment level (CAL), and recession (RC) were recorded. The IL-1β and IL-8 levels in the GCF of all subjects were assessed through an enzyme-linked immunosorbent assay (Quantikine).

Results: The IL-1β and IL-8 levels were not significantly higher in the GCP group (IL-1β, 369.01±273.44 μL; IL-8, 205.97±196.78 μL) as compared to those in the NGC group (IL-1β, 195.57±96.85 μL; IL-8, 178.61±149.35 μL). More gingival RC and loss of attachment was seen among the GCP group (RC: 2.02±0.31, P=0.013; CAL: 4.60±0.56, P<0.001) than among the NGC group (RC, 1.21±1.15; CAL, 3.70±0.32); however, PD was deeper among the NGC subjects (P=0.002). PI and GI were significantly higher for the periodontitis group (P<0.001) when compared to the HC, but there was no difference among gutka chewers and non-chewers (P=0.22 and P=0.89). A positive correlation was found between the IL-8 levels and the duration of gutka chewing (r=−0.64, P<0.01).

Conclusions: Gutka chewing leads to increased gingival RC and clinical loss of attachment. There was no effect seen in the proinflammatory cytokine levels in the GCF of gutka users.

Keywords: Cytokine, Interleukin-1beta, Interleukin-8, Periodontitis, Smokeless tobacco.

**Periodontitis among poor rural Indian mothers increases the risk of low birth weight babies: A hospital-based case control study**

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**Abstract**

**Purpose:** Low birth weight (LBW) is one of the major public health problems in India. Hence, there is a need to identify risk factors that, when modified, will reduce the burden of unhealthy children on the healthcare system. The objective of this study was to determine whether periodontitis among mothers in the rural population of India is a risk factor for LBW babies.

**Methods:** A hospital-based case control study was conducted among 340 postpartum mothers. The cases consisted of 170 women who had given birth to babies weighing <2,500 g, while the control group consisted of 170 women who had given birth to babies weighing ≥2,500 g. Details of the mothers were taken from the hospital records and through a personal interview, and a full-mouth periodontal examination was performed postpartum, which included probing depth, clinical attachment level, and bleeding on probing on six sites per tooth.

**Results:** LBW cases had a significantly worse periodontal status than the controls, having an odds ratio (OR) of 2.94 ($P=0.01$). The multivariate logistic regression model demonstrated that periodontal disease is a significant independent risk factor with an adjusted odds ratio (aOR) of 2.85 for the LBW group (95% confidence interval [CI], 1.62–5.5). Other factors showing significant associations with LBW were pre-eclampsia (aOR, 4.49; 95% CI, 1.4–14.7), preterm labor (aOR, 5.5; 95% CI, 3.2–9.9), and vaginal type of delivery (aOR, 2.74; 95% CI, 1.4–5.2).

**Conclusions:** Periodontitis represents a strong, independent, and clinically significant risk factor for LBW. Periodontal therapy should form a part of the antenatal preventive care among rural women in India.

**Keywords:** Case-control studies, Low birth weight infant, Periodontitis, Pregnancy outcome, Risk factors.

**Targeting cysteine rich C1 domain of Scaffold protein Kinase Suppressor of Ras (KSR) with anthocyanidins and flavonoids - A binding affinity characterization study**

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**Abstract**

Kinase Suppressor of Ras (KSR) is a molecular scaffold that interacts with the core kinase components of the ERK cascade, Raf, MEK, ERK to provide spatial and temporal regulation of Ras-dependent ERK cascade signaling. Interruption of this mechanism can have a high influence in inhibiting the downstream signaling of the mutated tyrosine kinase receptor kinase upon ligand binding. Still none of the studies targeted to prevent the binding of Raf, MEK binding on kinase suppressor of RAS. In that perspective the cysteine rich C1 domain of scaffold proteins kinase suppressor of Ras-1 was targeted rather than its ATP binding site with small ligand molecules like flavones and anthocyanidins and analyzed through *insilico* docking studies. The binding energy evaluation shows the importance of hydroxyl groups at various positions on the flavone and anthocyanidin nucleus. Over all binding interaction shows these ligands occupied the potential sites of cysteine rich C1 domain of scaffold protein KSR.

**Keywords:** Kinase suppressor of Ras, MAPK signaling, flavones, anthocyanidins, *insilico* docking, AutoDock 4.2.6, Neoplasia.

**The life-cycle of Spirometra species from Peninsular Malaysia**

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**Abstract**

The life-cycle of Malaysian *Spirometra* spp. was studied under experimental conditions in the laboratory. The Cyclops were reared as the first intermediate host, the hamster as the experimental second intermediate host and cat as the definitive host. Maturation and hatching of eggs took 6 to 12 days by incubation at temperature 30 ºC. The hatched coracidium measured 46 x 34 μm. The Cyclops used were susceptible to the coracidial infection. The procercoid older than 5 days in the Cyclop body cavity had minute spines at the anterior end, calcium corpuscles in the body parenchyma and the cercomer at the posterior end. Procercoids 10 to 14 days old were infective to hamster. The plerocercoids from the hamster after 30 days were long and slender and were infective to cats. The plerocercoids experimentally inoculated to cats developed to adult worms and began to produce eggs between 10 to 60 days. Based on the results that have been obtained, a complete life-cycle was successfully elucidated in the laboratory and hamster was identified to be a good laboratory model for a second intermediate host of *Spirometra* sp.

### Removal of hazardous heavy metals from aqueous environment by low-cost adsorption materials

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**Abstract**

The rapid growth of the human population and industrialization in the world has indirectly increased environmental problems such as water, air and land pollution. Amongst all, heavy metals can be considered as the most problematic pollutants. Numerous efforts have been attempted to minimize the impact of heavy metals. This chapter discusses the recent developments and technical applicability of different treatment methods for heavy metal removal. The adsorption process using various low-cost materials as the potential alternative for heavy metal removal is being highlighted and summarized.

**Keywords:** Heavy metals; Chemical precipitation; Ion exchange; Membrane filtration; Adsorption; Low-cost adsorbents.
Structural analysis of raw and commercial farm edible bird nests

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Abstract

Edible bird nests (EBNs) are consumed worldwide for various health benefits. EBNs are nests built from the saliva of swiftlets of Aerodramus species. The global market for EBNs is on the rise, especially from Hong Kong and mainland China. In the past, EBNs were harvested mainly from natural caves; however, in the recent years, there has been a rapid growth of swiftlet farming. Little is known about the actual composition of EBNs except for protein, carbohydrate, ash and lipid contents, amino acids, vitamins and macro/ micronutrients. Besides the biochemical components of EBNs, are there any other structures that are associated with EBNs? This paper reports on the structural analysis of raw unprocessed farm and processed commercial EBNs. The raw EBNs were purchased from swiftlet farms in five locations in Peninsula Malaysia: Kuala Sanglang (Perlis; 6° 16' 0"N, 100° 12' 0"E), Pantai Remis (Perak; 4° 27' 0" N, 100° 38' 0" E), Kluang (Johor; 02° 01' 30" N 103° 19' 58"E), Kajang (Selangor; 2° 59' 0"N, 101° 47' 0"E) and Kota Bharu (Kelantan; 6° 8' 0"N, 102° 15' 0"E). The commercial nests were purchased from five different Chinese traditional medicinal shops (Companies A-E). A portion of each EBN was randomly broken into small fragments, attached to carbon tape and coated with gold and palladium particles for examination and photography under a scanning electron microscope. Structural analysis revealed the presence of mites, fungi, bacteria and feather strands on both the raw and commercial nests. Mite eggshells and faecal pellets, and body parts of other arthropods were seen only in the raw nests. The commercial nests had a variety of unidentified structures and substances coated on the nests’ surfaces that were not found on the raw nests. The presence of these contaminants may jeopardise the quality of EBNs and pose health risks to consumers. Further identification of the mites and their allergens, fungi and bacteria are on-going and will be reported separately.
Understanding workplace based assessment

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Abstract
Practicing clinicians are often tasked with the responsibility of supervising or assisting in the supervision of medical students or postgraduate trainees in the workplace. It is important for these clinicians to have an understanding of the basic principles of Workplace Based Assessment (WPBA).
Unusually large breast tumour in a middle-aged woman

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Abstract
Phyllodes tumour is an unusual fibroepithelial tumour of the breast constituting only 0.3% to 0.5% of all breast lesions. It usually occurs in middle-aged women. The median size of phyllodes tumour is 4 cm; however, 20% of these tumours grow larger than 10 cm and are known as giant phyllodes tumours. We report here a rare case of a middle-aged woman who presented to her family physician with an unusually large breast tumour which measured 24 × 22 × 20 cm in size, weighed 5.5 kg, showed multiple ulcerations, and resulted in gross cosmetic disfigurement. The tumour was subsequently diagnosed as a borderline-grade giant phyllodes tumour. To our knowledge, such a large phyllodes tumour (weighing more than 5 kg) has rarely been reported in the medical literature.
Role of community service as a curriculum delivery tool in the outcome-based curriculum of the International Medical University, Malaysia

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Abstract

Background: The International Medical University (IMU) has an outcome-based curriculum defined by eight major curriculum outcome domains. The attributes, qualities and competencies expected of a health care professional form the basis for these outcome domains. Community service is an effective curriculum delivery tool widely practised by medical universities around the world. We present the results of a survey among IMU students to explore the effectiveness of community service as a curriculum delivery tool in enabling activities defined under the eight major curriculum outcome domains of IMU.

Methods: A self-administered 6-point Likert scale questionnaire was used to survey student participants of 20 community service events held in a rural village between 2007–2012. The survey tool included questions on demographic data as well as the perception of the students on whether participation in the events enabled them to experience activities defined under the eight major curriculum outcome domains of IMU. The one sample Student t-test was used to test for statistical significance while regression analysis was done to look for significant predictors.

Results: A total of 255 students were surveyed, of which 229 (90.5%) were medical students while the rest were nursing students. Most of the students were in the 3rd (48.2%) and 4th (43.8%) year of their studies and have completed the surgery, internal medicine and family medicine posting. Six out of the 8 curriculum outcomes domains were achieved through participation in the community service programme.

Conclusion: Community service is an effective curriculum delivery tool for the outcome-based curriculum of IMU where activities defined in six out of eight outcome domains were achieved.

Keywords: Medical Education, Medical Students, Community-Based Medical Education, International Medical University.

Medical students’ perceptions regarding the impact of mobile medical applications on their clinical practice

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Abstract

**Background:** Medical apps on smart devices are popular among medical students. However, the impact of medical apps on clinical practice is relatively less known.

**Aims:** To study the prevalence of medical app usage among medical students and assess its impact on clinical practice.

**Method:** One hundred fifty-five first year medical students of the International Medical University, Malaysia completed an anonymous questionnaire designed to explore demographic parameters, types of smart devices owned and the medical apps installed on the smart devices; and the frequency and purpose of usage of the apps. The students’ perception regarding medical apps, the impact of medical apps on clinical practice and the characteristics of an ideal medical app were explored.

**Results:** About 88% of medical students reported owning a smart device and 87.5% had medical apps installed on their smart devices. Most students reported positive perceptions towards medical apps and agreed they have positive impact on their studies and clinical practice. However, the medical students reported little awareness about the potential breach of patient confidentiality with the use of these apps.

**Conclusion:** There is high prevalence of smart devices and medical apps usage among first year clinical medical students with positive perception regarding its usage and impact on their clinical practice. Medical schools should encourage the use of medical apps among medical students with strategies put in place to safeguard patient confidentiality.

**HIV risk perception, sexual behavior, and HIV prevalence among men-who-have-sex-with-men at a community-based voluntary counseling and testing center in Kuala Lumpur, Malaysia**

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**Abstract**

We describe the HIV risk perception, sexual behavior, and HIV prevalence among 423 men-who-have-sex-with-men (MSM) clients who received voluntary counseling and testing (VCT) services at a community-based center in Kuala Lumpur, Malaysia. The mean age was 29 years old. One hundred one (23.9%) clients rated themselves as low risk, 118 (27.9%) as medium risk, 36 (8.5%) as high risk, and 168 (39.7%) were unsure of their risk. Twenty-four (9.4%) clients tested HIV positive (4 (4%) low risk, 9 (7.6%) medium risk, 11 (30.6%) high risk, and 13 (7.7%) unsure risk). We found a positive correlation between risk perception and HIV infection in this study. Clients with high HIV risk perception have 17x the odds of testing HIV positive compared to low risk clients. High HIV risk perception was significantly associated with multiple sex partners, multiple types of sex partners, alcohol use before intercourse, unprotected sex beyond 6 months, and inconsistent condom use during anal sex compared to low risk clients. There were no statistically significant differences between medium risk and unsure risk clients compared to low risk clients. Strategies should be targeted towards change in sexual practices among those who are perceived to be at high risk.

**Metabolites from actinomycetes strain H6552 extract inhibit transforming growth factor-mediated pulmonary fibrosis**

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**Abstract**

**Purpose:** To evaluate the effects of H6552 extract in inhibiting transforming growth factor (TGF)-mediated pulmonary fibrosis in vitro and in vivo.

**Methods:** Maximum-nontoxic dose (MNTD) of Actinomyces H6552 extract was determined using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. Effect of the extract on IMR-90 lung fibroblasts proliferation was determined by calculating the population doubling time (PDT). Collagen gel contraction assay was carried out to determine cell contractility while α-smooth muscle actin (SMA) level in cells was evaluated by quantitative real-time polymerase chain reaction (PCR) and immunostaining methods. A bleomycin-induced ICR mouse model was used in the study to determine the effect of the extract in vivo. The animals received treatments in two regimes: early treatment in which treatment was given on Day 0 and delayed treatment with treatment on Days 5 and 10. The animals were sacrificed on Day 14 and the lungs removed for histopathological assessment.

**Results:** The MNTD of the H6552 extract was 1625 ± 459.62 μg/ml. H6552 extract significantly reduced TGF-β-mediated cell proliferation, gel contraction and α-SMA expression. PDT was increased up to 83.84 % in the treated cells. Gel contraction was inhibited by the addition of 1000 μg/ml of H6552 extract. Immunostaining results revealed negligible α-SMA antibody staining after H6552 extract treatment at 500 μg/ml. The extract also inhibited lung injury (54% reduction in Ashcroft score) when early treatment was provided. Delayed treatment with the extract did not show any significant changes in the animals.

**Conclusion:** H6552 extract inhibited TGF-β-induced pulmonary fibrosis and elucidation of its bioactive metabolites may yield a potential agent to treat the disease.

**Keywords:** Actinomycetes H6552, Transforming growth factor-β, Cell contractility, α-Smooth muscle actin, Pulmonary fibrosis.

**Inhibitory activities of microalgal extracts against Epstein-Barr virus (EBV) antigen expression in lymphoblastoid cells**

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**Abstract**

This study aimed to assess the inhibitory activities of methanol extracts from three microalgae: *Ankistrodesmus convolutus*, *Synechococcus elongatus*, and *Spirulina platensis* against Epstein-Barr virus (EBV) in three Burkitt’s lymphoma (BL) cell lines, namely Akata, B95-8, and P3HR-1. The antiviral activity was assessed by quantifying the cell-free EBV DNA using real-time polymerase chain reaction (PCR) technique. The methanol extracts from *Ankistrodesmus convolutus* and *Synechococcus elongatus* displayed low cytotoxicity and potent effect in reducing cell-free EBV DNA (EC50<0.01 μg/ml) with a high therapeutic index (>28000). After fractionation by column chromatography, the fraction from *Synechococcus elongatus* (SEF1) reduced the cell-free EBV DNA most effectively (EC50=2.9 μg/ml, therapeutic index>69). Upon further fractionation by high performance liquid chromatography (HPLC), the sub-fraction SEF1’a was most active in reducing the cell-free EBV DNA (EC50=1.38 μg/ml, therapeutic index>14.5). This study suggests that microalgae could be a potential source of antiviral compounds that can be used against EBV.

**Keywords:** Microalgae, *Ankistrodesmus convolutus*, *Synechococcus elongatus*, *Spirulina platensis*, Lymphoblastoid cells, Epstein-Barr virus (EBV).
The effect of epiregulin on epidermal growth factor receptor expression and proliferation of oral squamous cell carcinoma cell lines

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Abstract

Background: Epiregulin (EPR) is a novel member of the epidermal growth factor (EGF) family. It has been shown to promote wound healing in oral epithelium, enhance proliferation of other epithelial tissues, and is involved in several epithelial-related malignancies such as colorectal, lung, and bladder carcinoma. More recently, EPR transcripts were found to be high in a study on archival oral squamous cell carcinoma (OSCC) specimens. This implies that EPR may be responsible for the progression of OSCC. The aim of this was to elucidate the effects of EPR on (i) cell morphological changes, (ii) cell proliferation and (iii) receptor expression of the H-series OSCC cell lines.

Methods: The clinicopathological origin and the expression of the epidermal growth factor receptor (EGFR) and ErbB4 receptors of the H-series cell lines were initially characterised. Based on these parameters, two of the H-series cell lines, namely H103 and H357 were selected for downstream experiments. The cell lines were treated with 1 ng/ml, 10 ng/ml, and 20 ng/ml of EPR for 24 and 48 hours in all subsequent experiments. Untreated cells acted as the control which was used for comparison with each treated group. The cell morphological changes, cell proliferation and receptor expression of the OSCC cell lines were evaluated using phase contrast microscopy, 5-bromo-2'-deoxy-uridine (BrdU) assays and flow cytometry respectively. The results were compared and analysed using the student t-test.

Results: There were no appreciable morphological changes in the cells regardless of the dose of EPR tested nor between the different timelines. There were no significant changes in cell proliferation after EPR treatment. As for the effect of EPR on receptor expression, 20 ng/ml of EPR significantly reduced the density of EGFR expression (p value = 0.049) in the H103 cell line after the 24-hour treatment. No other statistically significant changes were detected.

Conclusions: The results show that EPR had no effect on the morphology and proliferativity of OSCC cells. However, the significant decline in EGFR expression after EPR treatment suggests that EPR might play an important role in the regulation of EGFR expression and hence OSCC progression.

Keywords: Oral squamous cell carcinoma, Epiregulin, Epidermal growth factor receptor, ErbB4.
Expression of P16 in high-risk human papillomavirus related lesions of the uterine cervix in a government hospital Malaysia

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Abstract

Background: Cervical cancer is one of the most common cancers affecting women worldwide. It is well established that human papilloma virus (HPV) infection is the prime risk factor in the development of cervical cancer. The current screening and diagnostic tests have limitations in identifying the range of lesions caused by HPV. The current study aims to evaluate the diagnostic value of p16 immunohistochemical (IHC) investigation in high-risk human papillomavirus (HR-HPV) related lesions of the uterine cervix in Hospital Tuanku Jaafar, Seremban, Malaysia.

Methods: A total of 75 cases were selected from the records of Pathology services, Hospital Tuanku Ja’afar, Seremban. The samples were collected in three separate groups (n = 25 per group) as Carcinoma cervix, Carcinoma in situ and Chronic cervicitis. The demographic data of the patients and the representative paraffin blocks were retrieved from Hospital Tuanku Ja’afar, Seremban. The immunohistochemical staining with p16 and HPV 16 L1 were done on all cases. The staining intensity and density were observed and compared among the three groups of cases.

Results: Immunohistochemistry of p16INK4A staining shows nil (0/25) expression in the cervicitis patients, 72% (18/25) in CIN patients and 100% (25/25) in cervical carcinoma. HPV 16 L1 was positive in 100% (25/25) of cervicitis patients, 96% (24/25) of CIN patients and 40% (10/25) of cervical cancers patients. A chi square test was used to analyse the result and the obtained p value was <0.05.

Conclusion: p16 expression was strongly observed in cervical cancer and minimally observed in cervicitis. Thus indicating p16 immunohistochemistry investigations can aid in diagnosing the different categories of cervical lesions into benign, insitu and malignant.

Keywords: Immunohistochemistry, Human papillomavirus, Cervix, p16INK4A.

**Pediatric lymphadenopathy – A clinico-pathological review**

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**Abstract**

Lymph node enlargement is one among the common physical findings seen in the clinics. It can be a normal age related physiological change, may also hint chronic infections and serious conditions like malignancy. Although the underlying etiology often is simple self-limited infection, more serious underlying etiologies must be recognized quickly and treated appropriately. Serious infections and malignancies are important considerations, which should not be missed. Therefore, an understanding of the differential diagnosis is critical in directing an appropriate and timely evaluation. An organized step-by-step approach is essential to avoid an inappropriately rapid or over aggressive attempt at diagnosis or missing a serious disease process. The differential diagnosis of lymphadenopathy is broad. A thorough medical history and meticulous clinical examination is important in narrowing this differential.

**Keywords:** Lymph nodes, Malignancy, Infections, Investigations.

**Comparison of free hand versus ultrasound guided fine needle aspiration of thyroid with histopathological correlation**

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**Abstract**

Fine-needle aspiration (FNA) cytology of the thyroid is usually performed on an outpatient basis. The results of FNA are operator dependent and may be affected by the lesion characteristics and the aspiration technique. In current practice ultrasound (US) is widely used to guide the needle for aspiration of nondominant nodules. Our study aimed to compare the free-hand FNA with US-guided FNA in the evaluation of thyroid nodules. A total of 91 cases of thyroid lesions were studied at the Department of Pathology, Karnataka Institute of Medical Sciences, Hubli, India. All the cases underwent free-hand and US-guided FNA. The cytological samples from both procedures were analyzed for adequacy, cytological features, and possible diagnosis. The results were correlated with histopathological diagnosis whenever possible. Of 91 aspirates, 89 were satisfactory and 2 were unsatisfactory on US-guided FNA, whereas 85 were satisfactory and 6 were unsatisfactory in free-hand FNA. Of 91 cases 68 (74.7%) were nonneoplastic lesions and 21 (23.1%) were neoplastic lesions in US-guided FNA, whereas 67 cases (73.6%) were nonneoplastic and 18 cases (19.8%) were neoplastic in free-hand FNA. Histopathological study was possible in 25 patients, among whom 15 lesions were nonneoplastic and 10 were neoplastic. Sensitivity and specificity of US-guided FNA to detect neoplastic lesions were 81.81% and 92.85%, respectively, compared with free-hand FNA, for which the sensitivity and specificity were 54.54% and 92.85%, respectively. The diagnostic accuracy of guided FNA was 88% against the 76% accuracy rate of free-hand FNA. US-guided FNA provides a better representative sample and has a higher diagnostic rate in the evaluation of thyroid lesions.

**Keywords:** FNA, thyroid, ultrasound, cytology.

**Cytological evaluation of thyroid lesions by fine needle aspiration versus non-aspiration cytology techniques – A comparative study**

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**Abstract**

**Aim:** To compare the fine-needle non-aspiration cytology (FNNAC) with fine-needle aspiration cytology (FNAC) in providing the adequate samples for the evaluation of thyroid lesions.

**Materials and Methods:** A total of 48 patients presenting with thyroid lesions at Standard Diagnostics Laboratory, Bangalore during period of Jan 2009 to October 2010, underwent both FNAC and FNNAC techniques. All the needle-sampling procedures were done by a single pathologist. The obtained samples were assessed for cytological evaluation based on sample adequacy, aspiration of blood, cellular features and possible diagnosis.

**Results:** FNNAC produced less inadequate samples (20.9 %) than FNA (31.25%).

**Conclusion:** The FNNAC is a better technique of sampling thyroid nodules and appears to produce more adequate specimen.

**Keywords:** Thyroid lesions, Fine Needle Aspiration Cytology, Non-aspiration.
Neoplastic lesions of thyroid – Key cytodiagnostic characteristics

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Abstract
Neoplastic lesions of thyroid are the frequent encounters in the medical clinics. Fine needle aspiration is an ideal first line diagnostic test in evaluating such thyroid lesions. The procedure is regarded as a valuable method of distinguishing between malignant from those with benign nodules. There is good amount of overlap in the cytological features of neoplastic and non-neoplastic lesions and further among the neoplastic lesions to one another. The review attempts to detail the key clinical and cytopathological characteristics of the neoplastic lesions of thyroid, which will aid in accurate diagnosis and further management of them.

Keywords: Thyroid, Fine needle aspiration cytology, Lesion, Neoplasia.

**Usefulness of fine needle aspiration cytology in the evaluation of the nodular goiter with histopathological correlation**

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**Abstract**

**Aim:** To assess the usefulness of fine needle aspiration (FNA) in making a diagnosis of multinodular goiter by correlating with the histopathology wherever possible.

**Materials & methods:** All the patients presented with multinodular thyroid swellings at the Karnataka Institute of Medical Sciences, Hubli underwent FNAC procedure. After careful analysis of the slides, a cytological diagnosis was made. This diagnosis was compared with histological diagnosis wherever possible. Analyses were evaluated using descriptive statistics.

**Results:** A total of 41 patients were included in the study. The mean age was 39 years. The majority of the patients were females (85.4%). The results of thyroid FNA revealed that 7.3% (3) of the samples were inadequate and did not yield a diagnosis. Overall, the results of the tests were good, revealing the diagnostic accuracy of 89%.

**Conclusion:** Thyroid FNA is a useful test in the evaluation of multinodular goiter.

**Keywords:** Fine-needle aspiration, malignancy, multinodular goiter.

**Cytological features of non-neoplastic lesions of thyroid: An overview**

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**Abstract**

Thyroid disorders are one among the common clinical encounters, which range from congenital disorders to the malignant lesions. Fine needle aspiration (FNA) of thyroid is accepted globally as the best screening tool to differentiate neoplastic versus non neoplastic lesions. The cytological features of the non-neoplastic disorders of thyroid have a good amount of overlap between them and with a few neoplastic lesions as well, thus leading to wrong interpretation and possible inappropriate management of the patient. Identification of these cytological features is the key element in diagnosing thyroid lesions by Fine needle aspiration procedure. The review attempts to give cytological details of non-neoplastic lesions which can be applied for evaluation of thyroid lesions and identifying this category will reduce the number of unnecessary surgeries of thyroid nodules.

**Keywords**: Thyroid, Fine needle aspiration cytology, Lesion.
Interventions for the management of taste disturbances


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Abstract

Background: The sense of taste is very much essential to the overall health of the individual. It is a necessary component to enjoying one’s food, which in turn provides nutrition to an individual. Any disturbance in taste perception can hamper the quality of life in such patients by influencing their appetite, body weight and psychological well-being. Taste disorders have been treated using different modalities of treatment and there is no consensus for the best intervention. Hence this Cochrane systematic review was undertaken.

Objectives: To assess the effects of interventions for the management of patients with taste disturbances.

Search methods: We searched the Cochrane Oral Health Group Trials Register (to 5 March 2014), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library Issue 1, 2014), MEDLINE via OVID (1948 to 5 March 2014), EMBASE via OVID (1980 to 5 March 2014), CINAHL via EBSCO (1980 to 5 March 2014) and AMED via OVID (1985 to 5 March 2014). We also searched the relevant clinical trial registries and conference proceedings from the International Association of Dental Research/American Association of Dental Research (to 5 March 2014), Association for Research in Otolaryngology (to 5 March 2014), the US National Institutes of Health Trials Register (to 5 March 2014), metaRegister of Controlled Trials (mRCT) (to 5 March 2014), World Health Organization's International Clinical Trials Registry Platform (WHO ICTRP) (to 5 March 2014) and International Federation of Pharmaceutical Manufacturers and Associations (IFPMA) Clinical Trials Portal (to 5 March 2014).

Selection criteria: We included all randomised controlled trials (RCTs) comparing any pharmacological agent with a control intervention or any non-pharmacological agent with a control intervention. We also included cross-over trials in the review.

Data collection and analysis: Two authors independently, and in duplicate, assessed the quality of trials and extracted data. Wherever possible, we contacted study authors for additional information. We collected adverse events information from the trials.
Main results: We included nine trials (seven parallel and two cross-over RCTs) with 566 participants. We assessed three trials (33.3%) as having a low risk of bias, four trials (44.5%) at high risk of bias and two trials (22.2%) as having an unclear risk of bias. We only included studies on taste disorders in this review that were either idiopathic, or resulting from zinc deficiency or chronic renal failure.

Of these, eight trials with 529 people compared zinc supplements to placebo for patients with taste disorders. The participants in two trials were children and adolescents with respective mean ages of 10 and 11.2 years and the other six trials had adult participants. Out of these eight, two trials assessed the patient reported outcome for improvement in taste acuity using zinc supplements (RR 1.45, 95% CI 1.0 to 2.1; very low quality evidence). We included three trials in the meta-analysis for overall taste improvement (effect size 0.44, 95% CI 0.23 to 0.65; moderate quality evidence). Two other trials described the results as taste acuity improvement and we conducted subgroup analyses due to clinical heterogeneity. One trial described the results as taste recognition improvement for each taste sensation and we analysed this separately. We also analysed one cross-over trial separately using the first half of the results. None of the zinc trials tested taste discrimination. Only one trial tested taste discrimination using acupuncture (effect size 2.80, 95% CI -1.18 to 6.78; low quality evidence).

Out of the eight trials using zinc supplementation, four reported adverse events like eczema, nausea, abdominal pain, diarrhoea, constipation, decrease in blood iron, increase in blood alkaline phosphatase, and minor increase in blood triglycerides. No adverse events were reported in the acupuncture trial.

None of the included trials could be included in the meta-analysis for health-related quality of life in taste disorder patients.

Authors’ conclusions: We found very low quality evidence that was insufficient to conclude on the role of zinc supplements to improve taste perception by patients, however we found moderate quality evidence that zinc supplements improve overall taste improvement in patients with zinc deficiency/idiopathic taste disorders. We also found low quality evidence that zinc supplements improve taste acuity in zinc deficient/idiopathic taste disorders and very low quality evidence for taste recognition improvement in children with taste disorders secondary to chronic renal failure. We did not find any evidence to conclude the role of zinc supplements for improving taste discrimination, or any evidence addressing health-related quality of life due to taste disorders.

We found low quality evidence that is not sufficient to conclude on the role of acupuncture for improving taste discrimination in cases of idiopathic dysgeusia (distortion of taste) and hypogeusia (reduced ability to taste). We were unable to draw any conclusions regarding the superiority of zinc supplements or acupuncture as none of the trials compared these interventions.

Intracellular delivery of ERBB2 siRNA and p53 gene synergistically inhibits the growth of established tumor in an immunocompetent mouse

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Abstract
Breast cancer is one of the leading causes of deaths worldwide in women with hormone therapy, chemotherapy, targeted therapies, or their combinations being the current options for treating the disease at the different stages (stages I-III) with associated side-effects or increasing life-span at the advanced stage (stage IV). Small interfering RNA (siRNA) as an effective tool to selectively knockdown of a particular gene could be harnessed in combination with plasmid DNA (carrying a gene of interest) and conventional anti-cancer drugs for precisely treating breast cancer with minimal side effects. However the limitation of the naked siRNA and DNA in penetrating the plasma membrane and their sensitiveness to nuclease-mediated cleavage render the technology rather complex in therapeutic intervention. Recently, we have developed pH-sensitive carbonate apatite as a potential nano-carrier to efficiently deliver siRNA or DNA across the cell membrane and facilitate them to escape endosomal acidic compartment resulting in specific cleavage of a particular mRNA transcript or expression of a desirable protein, respectively. Moreover, we demonstrated nanoparticle-assisted delivery of the siRNAs targeting cyclin B1, PLCgamma-2/calmodulin1, NFκB1/NFκB2, ABCG2/ABCB1 and cROS1 mRNAs sensitizes cervical adenocarcinoma and breast cancer cells towards traditional anti-cancer drugs. Here, we report that co-delivery of the siRNA targeting HER2/ErbB2 gene transcript and p53 gene with the help of carbonate apatite nanoparticles synergistically induces inhibition of growth/proliferation of breast cancer cell lines as well as regression of the breast tumor induced in Balb/c mice. Additionally, combined delivery of nanoparticle-associated HER2/ErbB2 siRNA and p53 gene apparently slows down the growth of the established tumor in presence of doxorubicin or paclitaxel compared with the individual free drugs. Thus, the combination of HER2/ErbB2 knockdown and restoring of normal p53 function could be a highly promising approach necessitating further studies through pre-clinical trials with different models of breast cancer to establish the therapeutic role of this combination therapy prior to conducting clinical trials in breast cancer patients.

Keywords: Carbonate apatite; siRNA; Gene expression; Transfection; Breast cancer; HER2/ErbB2; p53; Doxorubicin; Paclitaxel; Cisplatin; Chemosensitivity.

**Professional socialization among the diploma and degree nursing students in Malaysia**

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**Abstract**

**Background:** Professional socialization is the process of acquisition of the specialized knowledge, skills, attitudes, values, norms, and interests to be socialized into a profession. The evolution of nursing profession and education has taken its pace over the past years. Therefore, with the changes in nursing education over the years, the level of professional socialization among the students has become an area of interest.

**Objectives:** The objective of this study was to compare the level of professional socialization between the first year and final year diploma and bachelor of nursing students.

**Methods:** It was a cross-sectional comparative study conducted in UCSI University, Nilai University College, University Teknologi MARA (UiTM), and University Sains Malaysia (USM). A questionnaire consisting of two sections: Demographic Data Questionnaires (DDQ) and Nurses Professional Values Scale – Revised (NPVS-R) developed by Weis and Schank (2009). The questionnaires were distributed to the students after their class sessions and collected immediately on completion by the students. The overall response rate was 83.7% (992 out of 1185 students completed the questionnaires). Data collected were analyzed using The Predictive Analytics Software (PASW) Statistics 18 to compute the one-way analysis of variance (ANOVA) and student t-tests of the research variables.

**Findings:** Findings revealed that the first year bachelor of nursing students had significantly higher level of professional socialization than the first year diploma of nursing students (p < .010). However, no significant difference was found in the level of professional socialization between the final year diploma and final year degree nursing students. Past working experience, main reason of enrolling in nursing, and future goal in nursing were the demographic variables identified to influence the level of professional socialization among the students.

**Keywords:** Professional, socialization, nursing students, diploma, degree programme.

Turner's tooth with unique radiographic presentation: A case report

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Abstract

Hypoplasia--the result of a disruption in the enamel matrix formation process--causes a defect in the quality and thickness of enamel. Enamel formation is a complex and highly regulated process. Enamel defects have been associated with a broad spectrum of etiologies, including genetic, epigenetic, systemic, local, and environmental factors. An enamel defect in the permanent teeth caused by periapical inflammatory disease in the overlying primary tooth is referred to as Turner's tooth (also known as Turner's hypoplasia). This article presents a case of Turner's hypoplasia of the first mandibular premolar, with an unusual radiographic presentation.

Keywords: Turner's tooth; enamel hypoplasia; mandibular premolar.

**Mental foramen mimicking as periapical pathology – A case report**

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**Abstract**

The radiographic recognition of any disease requires a thorough knowledge of the radiographic appearance of normal structure. Intelligent diagnosis mandates an appreciation of the wide range of variation in the appearance of normal anatomical structures. The mental foramen is usually the anterior limit of the inferior dental canal that is apparent on radiographs. It opens on the facial aspect of the mandible in the region of the premolars. It can pose diagnostic dilemma radiographically because of its anatomical variation which can mimic as a periapical pathosis. Hereby we are reporting a rare case of superimposed mental foramen over the apex of right mandibular second premolar mimicking as periapical pathology.

**Keywords:** mental foramen; periapical radiolucency; mandibular premolars.
Neuroprotective effects of orientin on hydrogen peroxide induced apoptosis in SH SY5Y cells

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Abstract
Neurodegenerative diseases remain a global issue which affects the ageing population. Efforts towards determining their aetiologies to understand their pathogenic mechanisms are underway in order to identify a pathway through which therapeutic measures can be applied. One such pathogenic mechanism, oxidative stress (OS), is widely considered to be involved in neurodegenerative disease. Antioxidants, most notably flavonoids, have promising potential for therapeutic use as shown in in vitro and in vivo studies. In view of the importance of flavonoids for combating OS, this study investigated the neuroprotective effects of orientin, which has been reported to be capable of crossing the blood-brain barrier. The maximum non-toxic dose (MNTD) of orientin against SH-SY5Y neuroblastoma cells was determined using a 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. The effects of the MNTD and the half MNTD (½MNTD) of orientin on cell cycle progression and intracellular reactive oxygen species (ROS) levels, as well as the activity of caspases 3/7, 8 and 9 after exposure to 150 µM of hydrogen peroxide (H2O2) were also determined using flow cytometry, a 2',7'-dichlorodihydrofluorescein-diacetate (DCFH-DA) assay and caspase assay kits, respectively. The results revealed that orientin at ≤20 µM was not cytotoxic to SH-SY5Y cells. After treatment with orientin at the MNTD, the percentage of apoptotic cells was significantly reduced compared with that in cells treated with 150 µM H2O2 alone. The results also showed that, although orientin at the MNTD and ½MNTD did not reduce intracellular ROS levels, it significantly inhibited the activity of caspases 3/7. Caspase 9 was significantly inactivated with orientin at the MNTD. Findings from this study suggest that the neuroprotection conferred by orientin was the result of the intracellular mediation of caspase activity.
Caloric restriction with meal-replacements versus conventional food for weight loss: Similar yet different challenges

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Abstract

While the use of meal-replacements aid weight loss to improve metabolic outcomes in diabetes, it introduces distinctive challenges. This study describes challenges reported with meal-replacement use in adults with Type 2 Diabetes Mellitus in an on-going randomized-controlled trial on weight loss and metabolic outcomes. Group 1 (MRP1, n=11) consumed 1 meal-replacement/day, Group 2 (MRP2, n=13) consumed 2 meal-replacements/day whilst Group 3 (CD, n=9) consumed conventional low calorie foods. A questionnaire on perceived challenges was administered one month after intervention. More MRP2 patients reported facing challenges (85%; 46%; and 56% of patients in MRP2, MRP1, and CD respectively). Main challenges identified across groups were 'Dietary deprivation' (12/27 responses) and 'Lack of social support' (6/27 responses). 'Dietary deprivation' increased with meal-replacement use (20%; 43%; and 53% of responses in CD, MRP1, and MRP2 respectively). Nevertheless, the need for food planning decreased with meal replacement use (40%; 14%; and 0% of responses in CD, MRP-1, and MRP-2 respectively). Other challenges reported across groups were 'Need for constant self-care' and 'Complications in life'. While all groups faced similar challenges; 'Dietary deprivation' was reported more frequently but 'Food planning' less frequently as a challenge with meal-replacement use. This study provides insights into issues that impact adherence to a meal-replacement plan.
Leong CO, Ching CS, Tiong YL, Foon LV, Ng CH, Chai SM. 4-chloro-1,2-phenylenediamine induces apoptosis in Mardin-Darby canine kidney cells via activation of caspases. *Environmental Toxicology*, 2014; 29(6): 655-64. DOI: 10.1002/tox.21792. (SCI IF: 2.139; H-index: 45; Tier: Q1).

4-chloro-1,2-phenylenediamine induces apoptosis in Mardin-Darby canine kidney cells via activation of caspases

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Abstract

4-Chloro-1,2-phenylenediamine (4-Cl-o-PD) is a halogenated aromatic diamine that was used as a precursor for manufacturing permanent hair dyes. Despite its well-documented mutagenic and carcinogenic effects in a number of *in vitro* and *in vivo* models, its cytotoxicity and mode of action have not received similar attention. Here, we investigated the effect of 4-Cl-o-PD on Mardin–Darby canine kidney cells. It induced apoptosis and the evidence suggests its initiation by reactive oxygen species (ROS). The results of various assays used show a dose-dependent (i) decrease in cell viability, (ii) increase in cells at sub-G1 phase and the G0/G1 phase arrested in cell cycle, (iii) increase in intracellular ROS accompanied by depletion of glutathione, and (iv) that apoptotic cell death probably involves activation of both intrinsic and extrinsic pathways.

Keywords: 4-chloro-1,2-phenylenediamine; apoptosis; reactive oxygen species; caspase; Mardin–Darby canine kidney cells.
Strain measurements and fracture resistance of endodontically treated premolars restored with all-ceramic restorations

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Abstract
Objectives: The aim of this study was to investigate the recovery of cuspal stiffness and fracture resistance in endodontically treated maxillary premolars restored with bonded ceramic inlays and onlays of various designs.

Methods: Seventy intact premolars were selected for this study; six cavity designs were investigated: (i) mesio-occlusal-distal (MOD) inlay (I), (ii) MOD inlay with palatal cusp coverage (IPC), (iii) MOD onlay (O), (iv) MOD inlay with pulp chamber extension (IPE), (v) MOD inlay with palatal cusp coverage and pulp chamber extension (IPCPE), and (vi) MOD onlay with pulp chamber extension (OPE). Intact teeth acted as control. Strain gauges were attached to the buccal and palatal surfaces of the teeth to measure cuspal stiffness under static loading. All specimens were eventually subjected to compressive load to failure. Cuspal stiffness and fracture resistance data were analyzed using ANOVA and Tukey test.

Results: The I and IPE restorations restored cuspal stiffness to 75% of the sound tooth value. The O and OPE restored teeth had stiffness values greater than that of a sound tooth. The I, IPC, O, IPE, IPCPE and OPE restored teeth demonstrated fracture strength values of 938 N _ 113 N (s.d.), 1073 N _ 176 N and 1317 N _ 219 N, 893 N _ 129 N, 1062 N _ 153 N and 1347 N _ 191 N respectively.

Conclusions: Within the limitations of this study, it was concluded that the all-ceramic onlay or inlay with palatal cusp coverage provided best biomechanical advantage in restoring an endodontically treated maxillary premolar tooth.

Clinical significance: The onlay approach which is more conservative compared to full coverage restoration is considered an appropriate approach to the restoration of endodontically treated maxillary premolars. The addition of a pulpal extension to the all-ceramic restorations, apart from being technically challenging, was not found to offer any biomechanical advantage to the restored teeth.

Keywords: Strains, Fracture strengths, Endodontically treated teeth, Inlay, Onlay, Pulp chamber extension.
Assessors for communication skills: SPs or healthcare professionals?


Abstract

Introduction: The complexity of modern medicine creates more challenges for teaching and assessment of communication skills in undergraduate medical programme. This research was conducted to study the level of communication skills among undergraduate medical students and to determine the difference between simulated patients and clinical instructors' assessment of communication skills.

Methods: This comparative study was conducted for three months at the Clinical Skills and Simulation Centre of the International Medical University in Malaysia. The modified Calgary-Cambridge checklist was used to assess the communication skills of 50 first year and 50 second year medical students (five-minutes pre-recorded interview videos on the scenario of sore throat). These videos were reviewed and scored by simulated patients (SPs), communication skills instructors (CSIs) and non-communication skills instructors (non-CSIs).

Results: Better performance was observed among the undergraduate medical students, who had formal training in communication skills with a significant difference in overall scores detected among the first and second year medical students (p<0.0008). A non-significant difference existed between the scores of SPs and CSIs for Year 1 (p>0.151).

Conclusions: The SPs could be trained and involved in assessment of communication skills. Formal training in communication skills is necessary in the undergraduate medical programme.
Assessors for communication skills: SPs or healthcare professionals?


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Conclusions: The SPs could be trained and involved in assessment of communication skills. Formal training in communication skills is necessary in the undergraduate medical programme.

**Methylenetetrahydrofolate reductase (MTHFR) C677T polymorphism: Epidemiology, metabolism and the associated diseases**

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**Abstract**

The Methylenetetrahydrofolate reductase (MTHFR) C677T polymorphism is associated with various diseases (vascular, cancers, neurology, diabetes, psoriasis, etc) with the epidemiology of the polymorphism of the C677T that varies dependent on the geography and ethnicity. The 5, 10-Methylenetetrahydrofolate reductase (MTHFR) locus is mapped on chromosome 1 at the end of the short arm (1p36.6). This enzyme is important for the folate metabolism which is an integral process for cell metabolism in the DNA, RNA and protein methylation. The mutation of the MTHFR gene which causes the C677T polymorphism is located at exon 4 which results in the conversion of valine to alanine at codon 222, a common polymorphism that reduces the activity of this enzyme. The homozygous mutated subjects have higher homocysteine levels while the heterozygous mutated subjects have mildly raised homocysteine levels compared with the normal, non-mutated controls. Hyperhomocysteinemia is an emerging risk factor for various cardiovascular diseases and with the increasing significance of this polymorphism in view of the morbidity and mortality impact on the patients, further prevention strategies and nutritional recommendations with the supplementation of vitamin B12 and folic acid which reduces plasma homocysteine level would be necessary as part of future health education. This literature review therefore focuses on the recent evidence-based reports on the associations of the MTHFR C677T polymorphism and the various diseases globally.

**Keywords:** C677T polymorphism, Folic acid, Methylenetetrahydrofolate reductase (MTHFR) gene, Diseases, Single nucleotide polymorphism, Vitamin B12.

**Assessment effects of maintenance therapy on quality of life of opiate abusers**

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**Abstract**

**Objective:** This study was conducted to assess the effects of Methadone Maintenance Therapy (MMT) and buprenorphine-naloxone Maintenance Therapy (BNX) on the Quality of life (QoL) of opiate abusers.

**Methods:** The QoL status of opioid-dependent patients was assessed using the WHOQOL-BREF questionnaire. It is a cross-sectional study involving a total of 108 patients who received MMT or BNX therapy in Malaysia from May 2011 to September 2011.

**Results:** A statistically significant difference in the overall QoL and psychological aspect among patients on MMT was observed. On the contrary, the scores of overall QoL and quality of social relationship for BNX group were higher in patients with lower dosage.

**Conclusion:** The comparison between patients on high dose MMT and high dose BNX exhibited significant difference in the overall QoL especially in psychological, social relationship and environment domains, with the high dose MMT group having better mean score.

**Keywords:** Buprenorphine-Naloxone (BNX), Maintenance Treatment, Malaysia, Methadone, Opiate Abusers, Quality of Life.

**Introducing a collection of reviews on major diseases in Malaysia**

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**Abstract**

This collection of reviews of major diseases in Malaysia was initiated by the National Clinical Research Centre (NCRC) of the Ministry of Health (MOH). The aim was to examine what has been published on diseases that contribute most to disease burden in Malaysia, to highlight research findings that have significant clinical implication and to identify research gap. The Malaysian Burden of Disease Study¹ published in 2004 by Institute of Public Health, MOH showed that, for cause-specific mortality, cardiovascular deaths (36%), consisting mainly of ischaemic heart disease and strokes, is the leading cause of deaths in Malaysia, followed by infectious diseases, chiefly septicaemia (12%), cancers (11%) and unintentional injury, contributed mainly by road accidents and falls (Table I).

**A review of colorectal cancer research in Malaysia**

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**Abstract**

105 articles related to colorectal cancer (CRC) were found in a search through a database dedicated to indexing all original data relevant to medicine published in Malaysia between the years 2000-2013. 56 articles were selected and reviewed on the basis of clinical relevance and future research implications. Research into the genetic basis for colorectal cancer included studies in germline mutations of known syndromes as well as polymorphisms that conferred individuals a higher odds ratio for developing CRC. Several studies also documented the variety of somatic mutations seen in cases of sporadic CRC in Malaysia. Studies into the knowledge and attitudes of Malaysians regarding CRC revealed poor appreciation of the common symptoms, risk factors and available measures for its early detection. This may explain the observed facts that more Malaysians present with late stage CRC than seen in developed countries. The small amount of data recorded concerning the outcome of treatment also suggests overall survival of Malaysian CRC patients for comparable stage of CRC is lower than achieved in developed countries.

**Keywords:** Colorectal cancer, Malaysia, Review, genetics, screening, diagnosis, staging, treatment, outcome.
Changing trends in informed consent

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Abstract
Consent is defined as the “voluntary agreement to or acquiescence in what another person proposes or desires”. In the context of medical practice it is now universally accepted that every human being of adult years and of sound mind has the right to determine what shall be done with his or her own body. Informed consent is now a central part of medical ethics and medical law. There has been a change in the public’s expectations of their role in medical decision making. The paternalistic approach by doctors is no longer acceptable. Today the patient has the right to receive and the doctor the obligation to give sufficient and appropriate information so that the patient can make an informed decision to accept or refuse a treatment option. This has led to higher standards of practice in the process of informed consent taking. Consent taking is both a legal and moral requirement. Failure to comply with standards of practice can result in criminal prosecution, civil litigation or disciplinary action by the relevant professional authority. Consent taking is a process and not merely a one-off affixation of the patient’s signature on a consent form. It involves a continuous discussion to reflect the evolving nature of treatment from before the treatment is given to the post-operative or discharge period. The regulatory authorities in many countries have established standards for consent taking which would include the capacity of the patient, the person who should seek consent, the information to be provided and the necessary documentation.

Keywords: informed consent, ethics, medical litigation, medical professionalism.
Formulation and delivery of itraconazole to the brain using a nanolipid carrier system

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Abstract
The objectives of this study were to develop and characterize itraconazole (ITZ)-loaded nanostructured lipid carriers (NLCs) and to study their potential for drug delivery into the brain. Precirol® ATO 5 and Transcutol® HP were selected as the lipid phase, and Tween® 80 and Solutol® HS15 as surfactants. The ITZ-NLCs were prepared by a hot and high-pressure homogenization method. The entrapment efficiency for the best formulation batch was analyzed using high-performance liquid chromatography and was found to be 70.5%±0.6%. The average size, zeta potential, and polydispersity index for the ITZ-NLCs used for animal studies were found to be 313.7±15.3 nm, −18.7±0.30 mV, and 0.562±0.070, respectively. Transmission electron microscopy confirmed that ITZ-NLCs were spherical in shape, with a size of less than 200 nm. Differential scanning calorimetry and X-ray diffractometry analysis showed that ITZ was encapsulated in the lipid matrix and present in the amorphous form. The in vitro release study showed that ITZ-NLCs achieved a sustained release, with cumulative release of 80.6%±5.3% up to 24 hours. An in vivo study showed that ITZ-NLCs could increase the ITZ concentration in the brain by almost twofold. These results suggest that ITZ-NLCs can be exploited as nanocarriers to achieve sustained release and brain-targeted delivery.

Keywords: lipid nanoparticles, brain delivery, nanostructured lipid carrier.

Selective anti-cancer effects of palm phytonutrients on human breast cancer cells

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Abstract
Palm oil contains a number of phytonutrients. To date, most of the studies using palm phytonutrients have focused on palm vitamin E. The objective of this study was to compare the anti-cancer activities of four major palm phytonutrients, namely tocotrienol-rich fraction, carotenoids, squalene and co-enzyme Q10 using some cell-based assays. Two human breast cancer cell lines, the highly aggressive triple-negative MDA-MB-231 and the estrogen-dependent MCF-7 cells, were treated with these palm phytonutrients to determine their anti-cancer effects. Palm vitamin E exhibited higher ability to induce cell death by apoptosis in both human breast cancer cells compared to the other palm phytonutrients (carotenoids, squalene and co-enzyme Q10), which was absent in normal NIH/3T3 cells. In addition, there was higher cleavage of the poly-adenosine diphosphate-ribose polymerase (PARP) enzyme in palm vitamin E-treated MDA-MB-231 cells compared to the other phytonutrients. All the tested palm phytonutrients suppressed the expression of nuclear factor kappa-light-chain-enhancer of activated B-cells (NF-κB) protein in the breast cancer cells exposed briefly to tumor necrosis factor-alpha (TNF-α). Palm phytonutrients possess varying extent of anti-cancer effects on the human breast cancer cells.

**Designing colon-specific delivery systems for anticancer drug-loaded nanoparticles: An evaluation of alginate carriers**

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**Abstract**

Incorporation of drug-loaded nanoparticles (NPs) in colon-specific delivery systems shows potential for raising local drug concentrations, tumor targeting and improving chemotherapy. Alginate microcapsules (15–80 μm diameter) containing insoluble Eudragit® RS NPs as models were characterized precisely in terms of NP loading and release kinetics. High NP loading (22%, w/w of the dried microcapsules) combined with negligible release in simulated gastric fluid (SGF) and simulated intestinal fluid (SIF) suggested that high concentrations of NPs could be transported to the colon. However, NP aggregation was confirmed at extremely low concentration (0.0003%, w/v) in alginate solution (0.007%, w/v) and after release from alginate microcapsules. Indomethacin, a model anticolorectal cancer drug, was encapsulated in pH-responsive Eudragit® S100 NPs (116 nm, 5%, w/w drug loading) using the nanoprecipitation method. Approximately 90% of the drug load was released from the NPs in SGF and SIF before transfer to simulated colon fluid (SCF). However, incorporation of NPs in 2 mm alginate pellets resulted in a significantly higher fraction of the drug load (around 60%) being available for release in SCF. Delivery of isolated NPs to the colon for interaction with and uptake by cancer cells requires elimination of NP-excipient interactions that promote NP aggregation. NP-loaded alginate carriers, meanwhile, offer a promising strategy for delivery of anticancer drugs to tumor sites in the colon and reducing systemic side effects.

**Keywords:** Eudragit nanoparticles; colorectal cancer; alginate microcapsules; aggregation; transmission electron microscopy.

**Development and evaluation of solid lipid nanoparticles of mometasone furoate for topical delivery**

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**Abstract**

**Introduction:** Solid lipid nanoparticles (SLNs) are the new generation of submicron sized lipid emulsions where liquid lipid (oil) has been substituted by solid lipid. Lipids used in the formulation are safe, stable and biodegradable in nature. SLNs offer various advantages for topical drug delivery like ability of deposition into skin with the reduced systemic exposure and reduced local side-effects along with providing sustained release of drug. Mometasone furoate (MF) is a topical glucocorticoid having anti-inflammatory, anti-pruritic, anti-hyper proliferative activity. Owing to these properties it is recommended in chronic inflammation and psoriasis. In market, MF cream and lotion (0.1%) are available, which show slight skin irritation, burning and common side-effects due to steroids.

**Experimental:** To overcome the shortcomings of conventional formulations, there is a need to develop a novel formulation that can reduce these side-effects and show maximum desired effects. Thus, SLN of MF can be prepared, which would help in increasing skin deposition as well as provide sustained release. In this study, SLNs were prepared by solvent - injection method.

**Results:** The F8 batch had shown maximum entrapment up to 55.59% and sustained drug release for more than 8 h. The skin permeability of SLN loaded gel was found to be 15.21 times more than that of marketed cream. SLN loaded gel showed 83.52% of skin deposition which was 2.67 times more than marketed cream and 20 times more than plain drug loaded gel. The scanning electron microscopy and zeta potential study showed formation of good SLN dispersion. The stability study showed successful formation of stable SLNs. Thus, SLNs proved the potential for topical delivery of corticosteroid drug over the conventional formulations.

**Keywords:** Entrapment efficiency, gel, lipid, mometasone furoate, solid lipid nanoparticles.
Quercetin glycosides induced neuroprotection by changes in gene expression in a cellular model of Parkinson's disease

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Abstract
Quercetin glycosides, rutin and isoquercitrin, are potent antioxidants that have been found to possess neuroprotective effect in diseases like Parkinson’s and Alzheimer’s disease. In the present study, we have examined the gene expression changes with rutin and isoquercitrin pretreatment on 6-hydroxydopamine (6-OHDA)-treated toxicity in rat pheochromocytoma (PC12) cells. PC12 cells were pretreated with rutin or isoquercitrin and subsequently exposed to 6-OHDA. Rutin-pretreated PC12 attenuated the Park2, Park5, Park7, Casp3, and Casp7 genes which were expressed significantly in the 6-OHDA-treated PC12 cells. Rutin upregulated the TH gene which is important in dopamine biosynthesis, but isoquercitrin pretreatment did not affect the expression of this gene. Both rutin and isoquercitrin pretreatments upregulated the ion transport and antiapoptotic genes (NSF and Opa1). The qPCR array data were further validated by qRT-PCR using four primers, Park5, Park7, Casp3, and TH. This finding suggests that changes in the expression levels of transcripts encoded by genes that participate in ubiquitin pathway and dopamine biosynthesis may be involved in Parkinson’s disease.

Keywords: 6-Hydroxydopamine, Parkinson’s disease, Flavonoids, Parkin.

Protective effects of flavonol isoquercitrin, against 6-hydroxy dopamine (6-OHDA) - induced toxicity in PC12 cells

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Abstract

**Background:** Free radicals-induced neurodegeneration is one of the many causes of Parkinson's disease (PD). This study investigated the neuroprotective effects of flavonol isoquercitrin against toxicity induced by 6-hydroxydopamine (6-OHDA) in rat pheochromocytoma (PC12) cells.

**Methods:** PC12 cells were pretreated with different concentrations of isoquercitrin for 4, 8 and 12 hours and incubated with 6-OHDA for 24 hours to induce oxidative cell damage.

**Results:** A significant cytoprotective activity was observed in isoquercitrin pre-treated cells in a dose-dependent manner. There was a significant increase (P < 0.01) in the antioxidant enzymes namely superoxide dismutase, catalase, glutathione peroxidase, and glutathione in isoquercitrin pretreated cells compared to cells incubated with 6-OHDA alone. Isoquercitrin significantly reduced (P < 0.01) lipid peroxidation in 6-OHDA treated cells. These results suggested that isoquercitrin protects PC 12 cells against 6-OHDA–induced oxidative stress.

**Conclusions:** The present study suggests the protective role of isoquercitrin on 6-hydroxydopamine-induced toxicity by virtue of its antioxidant potential. Isoquercitrin could be a potential therapeutic agent against neurodegeneration in Parkinson’s disease.

**Keywords:** Antioxidant, Flavonoids, 6-hydroxydopamine, Parkinson’s disease, Oxidative stress.

Chalcones with electron-withdrawing and electron-donating substituents: Anticancer activity against TRAIL resistant cancer cells, structure-activity relationship analysis and regulation of apoptotic proteins

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Abstract
In the present study, a series of 46 chalcones were synthesised and evaluated for antiproliferative activities against the human TRAIL-resistant breast (MCF-7, MDA-MB-231), cervical (HeLa), ovarian (Caov-3), lung (A549), liver (HepG2), colorectal (HT-29), nasopharyngeal (CNE-1), erythromyeloblastoid (K-562) and T-lymphoblastoid (CEM-SS) cancer cells. The chalcone 38 containing an amino (-NH2) group on ring A was the most potent and selective against cancer cells. The effects of the chalcone 38 on regulation of 43 apoptosis-related markers in HT-29 cells were determined. The results showed that 20 apoptotic markers (Bad, Bax, Bcl-2, Bcl-w, Bid, Bim, CD40, Fas, HSP27, IGF-1, IGFBP-4, IGFBP-5, Livin, p21, Survivin, sTNF-R2, TRAIL-R2, XIAP, caspase-3 and caspase-8) were either up regulated or down regulated.

Keywords: Chalcones, Anti-proliferative, Apoptosis proteins, TRAIL-resistant tumours, Human colorectal cancer (HT-29) cells.
Mak JW. Conducting research that is both ethical and responsive to the health needs of a developing country. *International E-Journal of Science, Medicine & Education (IeJSME)*, 2014; 8(1): 19-23. (MyCite IF: 0.038).

**Conducting research that is both ethical and responsive to the health needs of a developing country**

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**Abstract**

There is no substantial difference in conducting research that is both ethical and responsive to the health needs in developing and developed nations. Differences are in financial constraints, technological expertise in identification and addressing needs, and in the perception of equal partnership of all stakeholders. There will be differences in emphasis of research but this is slowly blurred due to globalisation. Public health emergencies in developing countries need timely and effective global collaborative research to implement control strategies. Research needs should be based on predictive models with learning from past emergencies, technological advances, strategic critical appraisal of local and global health information, and dialogue with all stakeholders. Adequate funding will be challenging and resources from national, international and aid foundations will be needed. Issues associated with such funding include deployment of international rapid response teams, collaborating researchers, transfer of technology, and intellectual property ownership. While all types of research ranging from basic, applied, clinical studies, meta-analysis, and translational research are relevant, the relative importance and specific allocation of resources to these may differ. Is the choice related to responsiveness or based on researchers’ perception of their contributions to evidence-based practice and research? Ethical issues relating to vulnerable groups, risk distribution, quality issues, research integrity and oversight are just as important. Internationally funded research including clinical trials must be sensitive to such issues to avoid allegations of exploitation. Thus the potential of utilisation and buy-in of research findings and recommendations must be considered.

**Keywords**: ethical and responsive research, research needs, developing countries, resource allocation, research stakeholders.
Do South Australian pharmacy interns have the educational and behavioural precursors to meet the objectives of Australia's health care reform agenda?

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Abstract

Objective: To explore South Australian (SA) pharmacy interns' values, beliefs and motivations to study pharmacy and their assessment of how well their pharmacy education has prepared them for activities required of all health professionals under Australia's health care reforms.

Methods: A postal questionnaire was sent to all 136 SA pharmacy interns enrolled in SA intern training programmes in February 2010 (second month of the intern training programme).

Key findings: Sixty (44%) of SA pharmacy interns responded; 75% selected pharmacy as a career because of an interest in health-related sciences and 65% valued working with patients. Respondents believed their pharmacy education prepared them for patient care (80%), providing medicine information (72%) and primary health care delivery (68%), but 51% indicated that they were not prepared for multidisciplinary team care.

Conclusions: The positive values, beliefs and motivations expressed by respondents are significant behavioural precursors to meet the requirements of health professionals in Australia's health care reforms. Respondents indicated that their pharmacy education provided appropriate training in a number of relevant professional areas.

Keywords: behaviour, career choice, education, pharmacy interns, preparedness.

**In vivo toxicity evaluation of a standardized extract of *Syzygium aqueum* leaf**

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**Abstract**

In this study, the acute and subchronic toxicity effect of the *Syzygium aqueum* leaf extract (SA) was evaluated. For the acute toxicity study, a single dose of 2000 mg/kg of the SA was given by oral-gavage to male Sprague-Dawley (SD) rats. The rats were observed for mortality and toxicity signs for 14 days. In the subchronic toxicity study the SA was administered orally at doses of 50, 100, and 200 mg/kg per day for 28 days to male SD rats. The animals were sacrificed at the end of the experiment. The parameters measured including food and water intake, body weight, absolute and relative organ weight, blood biochemical tests and histopathology observation. In both the acute and subchronic toxicity studies, SA did not show any visible signs of toxicity. There were also no significant differences between the control and SA treated rats in terms of their food and water intake, body weight, absolute and relative organ weight, biochemical parameters or gross and microscopic appearance of the organs. There were no acute or subchronic toxicity observed and our results indicate that this extract could be devoid of any toxic risk. This is the first in vivo study reported the safety and toxicity of SA.

**Keywords:** Acute toxicity, Subchronic toxicity, *Syzygium aqueum* leaf, Extract standardization, SD rats.

Veterinary drug delivery

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Abstract

Research into drug delivery for veterinary species incorporates unique challenges whilst providing opportunities for advancement in the care of both animal and human patients. In the field of veterinary pharmaceutics, there is great diversity in the animals that require treatment and the type of therapeutic agents to be delivered. Our aim in compiling this Special Theme Issue was to draw together a wide scope of articles from those describing fundamental research in veterinary drug delivery (including pharmacology, pharmaceutics and analytical sciences) to reviews on contemporary topics relevant to the field.

The contributions to this Special Issue of The Journal of Pharmacy and BioAllied Sciences open with a review by Vandamme who discusses the integral topic of the utilization of animals as models of disease to evaluate therapeutic compounds prior to testing in the clinical setting. Animal models are also the topic of the excellent and extensive review by Griffin and will be of value to anyone working in the field of immunology. Griffin draws on his some 30 years in the animal health field to propose that exotic animals may be more relevant disease models for infectious diseases than traditional mouse models. Formulation and re-formulation of therapeutic agents continues to be an integral component of veterinary medicine. McDowell et al. address limitations in the current formulation of the anesthetic Avertin® and investigate a cyclodextrin formulation as an alternative. A nanoparticle formulation is suggested by Soni et al. as a targeted delivery system to administer the drug buparvaquone in the treatment of theileriosis, a parasitic disease affecting cattle. One of the benefits of working in the veterinary area is that unlike human medicine, formulations can be tested immediately in the target species. Vandamme has used this approach to assess pulsed delivery of an anthelminthic in dairy cattle that releases levamisole hydrochloride during the season when larval infestation is highest, thus enabling more effective treatment. Such delayed release systems commonly rely on degradation of the dosage form in vivo to release the therapeutic agent. Guarnieri et al. in their study investigate the degradation of implants for subcutaneous administration and discuss the important issue of drug and implant residues in the subcutaneous space. Furthermore presented from the Guarnieri group is a study by Schildhaus et al. where they report on a new and simple method for restraining mice when conducting studies involving nociception. The use of plant extracts for their therapeutic effect is becoming increasingly of interest in human medicine. The final article of this special issue investigates the neuroprotective activity of a leaf extracts from the plant Clitorea ternatea in a model of diabetes-induced cognitive decline.

The Editors extend thanks to the authors for their interest in this Special Theme Issue and submitting their work to us - we value their contributions. We also thank the reviewers for their time and expertise to provide an appraisal of the manuscripts and their comments to help improve the quality of the submissions.

There is considerable scope for formulation scientists to provide valuable input into researching and developing drugs and delivery systems for application in veterinary medicine.
and to collaborate with animal health researchers in related disciplines. In the future, advances in the field of veterinary and indeed human, medicine and drug delivery will be enhanced by a multidisciplinary approach. It is hoped that this special theme issue on veterinary drug delivery may stimulate new endeavors in this fascinating area.

**Participation of hypoxia inducible factor -1 (HIF-1 alpha) in the pathogenesis of preeclampsia related placental ischemia: HIF-1 alpha as potential marker for preeclampsia**

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**Abstract**

Hypoxia-inducible factor-1a (HIF-1a) is important for placental development. This study aims to determine whether the increased level and expression of HIF could be used to demonstrate failed placentation in women with preeclampsia. The study included 20 pregnant females [10 with and 10 without preeclampsia (the control group)]. Placental tissues were collected and stained with hematoxylin and eosin. Immunohistochemical studies for evaluating the expression of HIF-1a by these tissues were then performed. The results demonstrated that placental tissues collected from mothers with preeclampsia showed a variety of histomorphological changes. All the cytotrophoblasts rimming the placental villi in mothers with preeclampsia demonstrated a strong and uniform nuclear staining with HIF-1a. The study results indicated that cytotrophoblasts respond to an ischemic environment by their nuclear expression of HIF-1a, and thus we conclude that this transcription factor has a significant potential as a marker for preeclampsia.

**Keywords**: hypertension; hypoxia-inducible factor; placenta; preeclampsia; pregnancy.

**Development and validation of HPLC method in human plasma for the estimation of metformin HCl and propranolol HCl in bulk mixture and tablet dosage form**

Venkata srikanth Meka, Janaki Ram Battu, Senthil Rajan Dharmalingam, Adinarayana Gorajana, Venkata Ramana Murthy Kolapalli.

School of Pharmacy, International Medical University, Kuala Lumpur, Malaysia.

**Abstract**

The present investigation targets to develop a simple, specific, sensitive and accurate reverse phase high performance liquid chromatographic (RP-HPLC) method in human plasma for the estimation of metformin HCl and propranolol HCl from bulk drug and also from the marketed products. Human plasma samples were subjected to correct procedure for protein precipitation by methanol and protein free plasma samples were directly injected into HPLC C18 column. Chromatographic determination was performed on a reversed phase C18 column (3.9 mm X 300 mm, particle size 5 µm) using a mixture of acetonitrile and 0.1M pH 4.5 potassium dihydrogenorthophosphate buffer (mL) (40:60) at a flow rate of 0.8 mL/min and maintained at a pressure of 140 to 150 Kg/cm2. The retention time for metformin HCl and propranolol HCl was found to be 9.084 min and 6.132 min respectively at 232 nm without any interference of endogenous compounds in the plasma. The method was linear in the range between 50-2000 ng/mL. The peak areas were reproducible as indicated by low coefficient of variation. It was found that the excipients in the tablet dosage form do not interfere in the quantification of active drug by proposed method.

### Study on the effect of hydrophilic polymers and diluents in the development of oral sustained drug delivery system of Febuxostat

Venkata Srikanth Meka, Senthil Rajan Dharmalingam, Ravi Sheshala and Adinarayana Gorajana.

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**Abstract**

The present study evaluated the possibilities of developing desirable sustained-release delivery systems for Febuxostat by using hydrophilic polymers, hydroxypropyl methyl cellulose (HPMC) and xanthan gum with different diluents. Sustained-release formulations of Febuxostat tablets were prepared by direct compression method and their physiochemical properties (mean weight, thickness and hardness) were evaluated. In-vitro dissolution study was performed in pH 6.8 phosphate buffer for 12 hours. The dissolution data showed that lactose was the best diluents to be used in the formulation of sustained-release Febuxostat. In-vitro dissolution studies showed that formulations with 2:1 Febuxostat: HPMC ratio and 1:0.75 Febuxostat: xanthan gum ratio have the potential to be developed into a successful sustained-release formulation. The kinetic release study showed that formulations incorporated with HPMC followed erosion mechanism whilst formulations with xanthan gum followed diffusion mechanism. FTIR and DSC studies indicated that there is no possible drug-excipients interaction present.

**Keywords:** Sustained release delivery system, Febuxostat, HPMC, xanthan gum, release kinetics.
Formulation and optimization of gastric floating drug delivery system using central composite design and its biopharmaceutical evaluation

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Abstract

The present work investigates the formulation and biopharmaceutical estimation of gastric floating drug delivery system (GFDDS) of propranolol HCl using semi-synthetic polymer carboxymethyl ethyl cellulose (CMEC) and a synthetic polymer polyethylene oxide (PEO). A central composite design was applied for optimization of polymer quantity (CMEC or PEO) and sodium bicarbonate concentration as independent variables. The dependent variables evaluated were: % of drug release at 1 hr (D1hr), % drug release at 3 hr (D3hr) and time taken for 95% of drug release (t95). Numerical optimization and graphical optimization were conducted to optimize the response variables. All observed responses of statistically optimized formulations were in high treaty with predicted values. Accelerated stability studies were conducted on the optimized formulations at 40±2ºC/75% ±5% RH and confirm that formulations were stable. Optimized formulations were evaluated for in vivo buoyancy characterization in human volunteers and were found buoyant in gastric fluid. Gastric residence time was enhanced in the fed but not the fasted state. The optimized formulations and marketed formulation were administered to healthy human volunteers and evaluated for pharmacokinetic parameters. Mean residence time (MRT) was prolonged and AUC levels were increased for both optimized floating tablets when compared with marketed product. High relative bioavailability obtained with optimized gastric floating tablets compared to commercial formulation, indicated the improvement of bioavailability.

Formulation of gastroretentive floating drug delivery system using hydrophilic polymers and its in vitro characterization

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Abstract
The aim of the present research is to formulate and evaluate the gastroretentive floating drug delivery system of antihypertensive drug, propranolol HCl. Gastroretentive floating tablets (GRFT) were prepared by using a synthetic hydrophilic polymer polyethylene oxide of different grades such as PEO WSR N-12 K and PEO 18 NF as release retarding polymers and calcium carbonate as gas generating agent. The GRFT were compressed by direct compression strategy and the tablets were evaluated for physico-chemical properties, in vitro buoyancy, swelling studies, in vitro dissolution studies and release mechanism studies. From the dissolution and buoyancy studies, F 9 was selected as an optimized formulation. The optimized formulation followed zero order rate kinetics with non-Fickian diffusion mechanism. The optimized formulation was characterised with FTIR studies and observed no interaction between the drug and the polymers.

Keywords: Gastroretentive floating/ drug delivery system; Gastroretentive floating tablets/in vitro dissolution; Hydrophilic polymers/use in drug delivery system; Polyethylene oxide; Propranolol HCl/delivery system

**Preparation and in vitro characterization of non-effervescent floating drug delivery system of poorly soluble drug, carvedilol phosphate**

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**Abstract**

The objective of the study was to enhance the solubility of carvedilol phosphate and to formulate it into non-effervescent floating tablets using swellable polymers. Solid dispersions (SD) of carvedilol were prepared with hydrophilic carriers such as polyvinylpyrrolidone and poloxamer to enhance solubility. Non-effervescent floating tablets were prepared with a combination of optimized solid dispersions and release retarding polymers/swellable polymers such as xanthan gum and polyethylene oxide. Tablets were evaluated for physicochemical properties such as hardness, thickness and buoyancy. SD prepared with the drug to poloxamer ratio of 1:4 by melt granulation showed a higher dissolution rate than all other dispersions. Formulations containing 40 mg of polyethylene oxide (C-P40) and 50 mg xanthan gum (C-X50) were found to be best, with the drug retardation up to 12 hours. Optimized formulations were characterized using FTIR and DSC and no drug and excipient interactions were detected.

**Keywords:** carvedilol phosphate, solid dispersion, non-effervescent, floating tablets.

**Preparation and in-vitro characterization of a non-effervescent floating drug delivery system for poorly soluble drug, glipizide**

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**Abstract**

The aim of the present study was to formulate a non-effervescent floating drug delivery system of glipizide, a poorly water soluble drug. The solubility of glipizide was initially enhanced using a solid dispersion (SD) strategy with the help of hydrophilic carriers such as poloxamer, cyclodextrin, and povidone. The optimized core material/SD was further formulated into non-effervescent floating tablets (NEFT) by using matrix ballooning inducers, such as crospovidone and release retarding agents including HPMC and PEO. Poloxamer-based solid dispersions prepared by a solvent evaporation technique showed the highest dissolution rate (1: 10 drug to carrier ratio) compared with all other dispersions. NEFT were evaluated for all physicochemical properties including in vitro buoyancy, dissolution, and release rate. All of the tablets were found to be within pharmacopoeial limits and all of the formulations exhibited good floating behavior. The formulations (F2 and F3) were optimized based on their 12 h drug retardation with continuous buoyancy. The optimized formulations were characterized using FTIR and DSC and no drug and excipient interaction was found. In-vitro buoyancy and dissolution studies showed that non-effervescent floating drug delivery systems provide a promising method of achieving prolonged gastric retention time and improved bioavailability of glipizide.

**Keywords:** non-effervescent, floating system, glipizide, solid dispersion.

Thermal sintering: A novel technique used in the design, optimization and biopharmaceutical evaluation of propranolol HCl gastric floating tablets

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Abstract

The objective of the present investigation was to study the applicability of thermal sintering technique for the development of gastric floating tablets of propranolol HCl. Formulations were prepared using four independent variables, namely (i) polymer quantity, (ii) sodium bicarbonate concentration, (iii) sintering temperature and (iv) sintering time. Floating lag time and t95 were taken as dependent variables. Tablets were prepared by the direct compression method and were evaluated for physicochemical properties, in vitro buoyancy and dissolution studies. From the drug release studies, it was observed that drug retarding property mainly depends upon the sintering temperature and time of exposure. The statistically optimized formulation (PTSso) was characterized by Fourier transform infrared spectroscopy and differential scanning calorimetry studies, and no significant chemical interaction between drug and polymer was observed. Optimized formulation was stable at accelerated conditions for a period of six months. PTSso was evaluated for in vivo buoyancy studies in humans for both fed and fasted states and found that gastric residence time of the floating tablets were enhanced by fed stage but not in fasted state. Optimized formulation PTSso and commercial formulation Ciplar LA 80 were subjected to bioavailability studies in healthy human volunteers by estimating pharmacokinetic parameters such as Cmax, Tmax, area under curve (AUC), elimination rate constant (Kel), biological half-life (t1/2) and mean residence time (MRT). There was a significant increase in the bioavailability of the propranolol HCl from PTSso formulation, which was evident from increased AUC levels and larger MRT values than Ciplar LA 80.

Keywords: Gastric floating, in vivo buoyancy, polyethylene oxide, propranolol HCl, sintering.

**Do manual therapies help low back pain? A comparative effectiveness meta-analysis**

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**Abstract**

**Study Design:** Meta-analysis methodology was extended to derive comparative effectiveness information on spinal manipulation for low back pain.

**Objective:** Determine relative effectiveness of spinal manipulation therapies (SMTs), medical management, physical therapies, and exercise for acute and chronic nonsurgical low back pain.

**Summary of Background Data:** Results of spinal manipulation treatments of nonsurgical low back pain are equivocal. Nearly 40 years of SMT studies were not informative.

**Methods:** Studies were chosen on the basis of inclusion in prior evidence syntheses. Effect sizes were converted to standardized mean effect sizes and probabilities of recovery. Nested model comparisons isolated nonspecific from treatment effects. Aggregate data were tested for evidential support as compared with shams.

**Results:** Of 84% acute pain variance, 81% was from nonspecific factors and 3% from treatment. No treatment for acute pain exceeded sham's effectiveness. Most acute results were within 95% confidence bands of that predicted by natural history alone. For chronic pain, 66% of 98% was nonspecific, but treatments influenced 32% of outcomes. Chronic pain treatments also fit within 95% confidence bands as predicted by natural history. Though the evidential support for treating chronic back pain as compared with sham groups was weak, chronic pain seemed to respond to SMT, whereas whole systems of clinical management did not.

**Conclusion:** Meta-analyses can extract comparative effectiveness information from existing literature. The relatively small portion of outcomes attributable to treatment explains why past research results fail to converge on stable estimates. The probability of treatment superiority matched a binomial random process. Treatments serve to motivate, reassure, and calibrate patient expectations—features that might reduce medicalization and augment self-care. Exercise with authoritative support is an effective strategy for acute and chronic low back pain.

**Keywords:** decision analysis, back pain, meta-analysis, comparative effectiveness, evidence synthesis, research methodology, psychology of back pain, placebo effects, nonspecific factors, hierarchical linear models.
Effect of online Formative Assessment on Summative Performances in Integrated Musculoskeletal System Module

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Abstract

Background: The impact of web-based formative assessment practices on performance of undergraduate medical students in summative assessments is not widely studied. This study was conducted among third-year undergraduate medical students of a designated university in Malaysia to compare the effect on performance in summative assessment, of repeated computer-based formative assessment with automated feedback with that of single paper-based formative assessment with face-to-face feedback.

Methods: This quasi-randomized trial was conducted among two groups of undergraduate medical students who were selected by stratified random technique from a cohort undertaking the Musculoskeletal module. The control group C (n = 102) was subjected to a paper-based formative MCQ test. The experimental group E (n = 65) was provided three online formative MCQ tests with automated feedback. The summative MCQ test scores for both these groups were collected after the completion of the module.

Results: In this study, no significant difference was observed between the mean summative scores of the two groups. However, Band 1 students from group E with higher entry qualification showed higher mean score in the summative assessment. A trivial, but significant and positive correlation (r² = +0.328) was observed between the online formative test scores and summative assessment scores of group E. The proportionate increase of performance in group E was found to be almost double than group C.

Conclusion: The use of computer based formative test with automated feedback improved the performance of the students with better academic background in the summative assessment. Computer-based formative test can be explored as an optional addition to the curriculum of pre-clinical integrated medical program to improve the performance of the students with higher academic ability.

Keywords: Medical, Students, Web-based, Formative, Summative performance.
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Abstract
Since time immemorial homo sapiens are subjected to both health and diseases states and seek treatment for succor and assuagement in compromised health states. Since last two decades the progressive rise in the alternative form of treatment cannot be ignored and population seems to be dissatisfied with the conventional treatment modalities and therefore, resort to other forms of treatment, mainly complementary and alternative medicine (CAM). The use of CAM is predominantly more popular in older adults and therefore, numerous research studies and clinical trials have been carried out to investigate the effectiveness of CAM in the management of both communicable and non-communicable disease. In this current mini review, we attempt to encompass the use of CAM in chronic non-communicable diseases that are most likely seen in geriatrics. The current review focuses not only on the reassurance of good health practices, emphasizing on the holistic development and strengthening the body's defense mechanisms, but also attempts to construct a pattern of self-care and patient empowerment in geriatrics. The issues of safety with CAM use cannot be sidelined and consultation with a health care professional is always advocated to the patient. Likewise, responsibility of the health care professional is to inform the patient about the safety and efficacy issues. In order to substantiate the efficacy and safety of CAMs, evidence-based studies and practices with consolidated standards should be planned and executed.

Keywords: Complementary and alternative medicine, geriatric, non-communicable diseases.

Knowledge, attitude and perceived confidence in handling medical emergencies among dental practitioners in India

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Abstract

Introduction: Medical Emergencies may arise on the dental chair despite efforts to minimize them. Lack of training and inability to cope with these can lead to tragic consequences.

Aims: The aim of this study was to assess the perceived level of competency among dental practitioners in handling medical emergencies.

Materials and Methods: A structured survey consisting of 13 questions pertaining to knowledge, attitude and perceived confidence of dental practitioners in handling medical emergencies was developed, and 282 dental practitioners holding at least a Bachelor of Dental Surgery degree and practicing in Dakshin Kannada district, Karnataka, India were approached.

Statistical analysis used: The data collected was tabulated and analysed by using the Epi-info version 5.0 and Statistical Package for Social Sciences (SPSS) version 17.0. The results were expressed in terms of proportion, chi-square test, odds ratio and its 95% confidence interval were applied for comparison purpose, a p-value<0.05 was considered as statistically significant.

Results: Over 70% of the specialists responded that they record medical history and follow the universal precaution guidelines. Training as well as perceived confidence of most dentists was statistically low in administering Cardio-Pulmonary-Resuscitation, intravenous drugs and Heimlich maneuver. The training and perceived confidence was highest for measuring blood pressure and managing syncope.

Conclusions: Dentists do have a gap in their knowledge, awareness and practice; hence a curriculum related to handling medical emergency should be enforced in dentistry to provide safe healthcare.

Keywords: Knowledge, Perceived confidence, Medical emergencies, Dental practitioners.
Pharmacokinetic study of a capsule-based chronomodulated drug delivery system of salbutamol sulphate in rabbits


Abstract

**Purpose:** To develop and determine the in vivo performance of a capsule-based pulsatile drug delivery system containing salbutamol sulphate.

**Methods:** A controlled pulsatile release of drug after a programmed 4 h lag period was achieved from cross-linked gelatin capsule shells containing salbutamol pellets, and sealed with a suitable mixture of sodium alginate and ethyl cellulose as plug. In order to confirm the utility of developed system for the management of nocturnal asthma, a crossover study was conducted. Six male rabbits were fasted overnight and divided into two groups comprised of 3 rabbits each. The individual rabbits were administered the developed pulsatile capsule and immediate release salbutamol capsule as reference, separately. Blood samples were collected from the ear vein of the animals into heparinized tubes and used to determine pharmacokinetic parameters, namely, maximum plasma concentration (Cmax), time to reach maximum plasma concentration (Tmax), and area under the plasma concentration time curve (AUC0-∞) using a validated HPLC method.

**Results:** It was observed that drug release from the optimized time-controlled capsule stopped for a period of approximately 4.25 h with an average Cmax and Tmax of 271.54 ± 58.95 ng/ml and 6.00 ± 0.25h. The AUC0-∞ of salbutamol after administration of the time-controlled pulsatile system was 2494.73 ± 525.95 ng h/ml while that of the immediate-release formulation was 2352.77 ± 432.51 ng h/ml. Using ANOVA at a significant difference of p < 0.05 (CI 95%), there was no significant difference for the AUC0-∞ between immediate release and the pulsatile capsule developed.

**Conclusion:** The developed system is capable of releasing salbutamol after a 4 h lag period and can be considered as promising delivery system for time-controlled (pulsatile) delivery of the medication for the management of nocturnal asthma.

**Keywords:** pH-controlled release, Lag time, Pulsatile release, Hydrocolloid plug, Nocturnal asthma.
Preparation and characterization of polymethacrylate-based matrix microspheres of carbamazepine using solvent evaporation method

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Abstract
The purpose of the present investigation was to prepare carbamazepine loaded Eudragit microspheres able to modify the release profile of carbamazepine by emulsion-solvent (R) evaporation technique. The effect of polymer, Eudragit (R) RSPO and Eudragit (R) RLPO alone and in combinations of these two acrylate polymers in different concentrations and in different drug polymer ratios on percentage yield, particle size, entrapment efficiency, and in vitro drug release behavior had been investigated. A mixed solvent system (MSS) consisting of acetonitrile and dichloromethane in a 1:1 ratio and corn oil was selected as primary and secondary oil phases, respectively. Span 80 was used as the secondary surfactant for stabililzing the external oil phase. The solid state characterization was carried out by Fourier transform spectroscopy, thermogravimetry, powder x-ray diffractometry, and differential scanning calorimetry. The surface morphology of microspheres was examined by scanning electron microscopy. Microspheres were found spherical and porous in nature. The mean particle size was between 20.74 - 29.33 μm and the encapsulation efficiencies ranged from 52.61-67.39 %. The release profile and encapsulation efficiencies depended mainly on the structure of the polymers used as wall materials. The release rate of the Eudragit (R) RSPO microspheres was much lower than that of Eudragit (R) RLPO microspheres. The release pattern of carbamazepine in distilled water from different microsphere formulations and the commercial product (CP) was found to follow different kinetic models. The formulation (F1) was best explained by Higuchi’s equation, formulations F2, F6, F7 and F8 confirmed that the release rates followed Hixson-Crowell cube root law, formulations F3, F4, F9 and commercial product (CP) followed zero order kinetic model of drug release, and the release from formulation F5 was best explained by Korsemayer-Peppas model. However, comparison of Akaike information criterion (AIC) values indicated first-order model for most of the formulations as the predominant release kinetics.

Keywords: Carbamazepine; Emulsion solvent evaporation; Eudragit; Microspheres; Mixed solvent system.

Influence of losartan on the hypoglycemic activity of glimepiride in normal and diabetic rats

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**Abstract**

**Background:** The influence of losartan on the hypoglycemic effect of glimepiride was studied in normal and diabetic rats.

**Method:** Losartan and glimepiride were studied at a dose of 4.5 and 0.09 mg/kg and in normal and diabetic rats, respectively. The blood samples were collected at 0, 1, 2, 3, 4, 6, 8, 10, 12, and 16 hours and analyzed for glucose levels using a glucometer.

**Results:** Glimepiride exhibited a maximum reduction of blood glucose levels at the 4th hour in normal and diabetic rats. The maximum hypoglycemic effect was observed at the 6th hour in normal rats treated with losartan. In normal rats, losartan did not have any significant effect on the hypoglycemic activity of glimepiride in either the single- or multiple-dose interaction study. In the case of diabetic rats, losartan did not have any significant effect on the hypoglycemic activity of glimepiride in the single-dose interaction study, but a significant change was observed in the multiple-dose study of diabetic rats. Hence, the interaction was found to be pharmacodynamic.

**Conclusions:** The study indicates that chronic losartan pretreatment elevates the hypoglycemic effect of glimepiride by a possible rise in insulin sensitivity and improving insulin homeostasis or may be due to the inhibition of CYP2C9. The study also suggests that caution may be recommended concerning combined use of losartan and an oral hypoglycemic agent, glimepiride.

**Keywords:** glimepiride, losartan, hypoglycemia, drug interactions.
Oral leukoplakia - Is biopsy at the initial appointment a must?

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Abstract

Background: Oral leukoplakia is a potentially malignant disorder of the oral cavity. Leukoplakias with chances of undergoing malignant transformation owing to the presence of dysplastic changes may not be clinically distinguishable from leukoplakias without dysplasia. The study was carried out to evaluate the usefulness of biopsy in assessing the clinico-pathologic correlations of oral leukoplakia at the patient’s initial visit.

Materials and Methods: Hospital records with clinical diagnosis of oral leukoplakia were retrospectively analysed. All these patients had undergone biopsy in their initial visit. Histopathological slides were reviewed and reported by a single pathologist. Diagnosis agreement was considered to be present if the clinical diagnosis matched the histopathological diagnosis. Misdiagnosis was considered if the clinical diagnosis did not match the histopathological diagnosis and underdiagnosis when malignancy was detected on histopathological examination.

Results: A total of 115 patients were clinically diagnosed with oral leukoplakia. According to clinical appearance of the leukoplakia patch was categorized in to three types viz homogeneous leukoplakia (n= 24 i.e. 20.87%), speckled leukoplakia (n=76 i.e. 66.08%) and verrucous leukoplakia (n=15 i.e. 13.04%). Histopathological examination confirmed clinical diagnosis in 88 cases (a diagnosis agreement of 76.52%). Histopathological examination of 19 cases revealed a different diagnosis, thus categorized as misdiagnosis (16.52%) and 8 cases had unexpected malignancy which accounted for underdiagnosis in 6.96% cases. There was dysplasia in 45 (51.13%) of the histopathologically confirmed cases of leukoplakia.

Conclusion: The clinical appearance of suspicious white lesions does not provide a true nature of its disease status and malignant changes may be missed.

Keywords: Biopsy, Dysplasia, Histopathology, Leukoplakia.
Overexpression of S100A4 as a biomarker of metastasis and recurrence in oral squamous cell carcinoma - An immunohistochemical study

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Abstract
S100A4, a biomarker of epithelial mesenchymal transition (EMT), plays an important role in invasion and metastasis by promoting cancer cell motility. In oral squamous cell carcinoma (OSCC), metastasis results in 90% of cancer associated mortality.

Objective: To investigate the role of S100A4 expression as an important component of the epithelial mesenchymal transition (EMT) program in oral squamous cell carcinoma (OSCC).

Material and Methods: S100A4 protein expression was assessed semi-quantitatively by immunohistochemistry in 47 histologically confirmed cases of oral squamous cell carcinoma (OSCC) and 10 normal oral mucosal biopsies. The association between the S100A4 overexpression and the aggressive features of OSCC were analyzed by X2 test.

Results: Moderate to strong cytoplasmic expression of S100A4 was observed in 30 out of 47 specimens of OSCC (64%). Overexpression of S100A4 was significantly associated with the clinical stage, lymph node involvement, metastases, pattern of invasion and recurrence (p<0.05).

Conclusion: S100A4 expression represents an important biomarker of prognostic significance that may be used to identify a subset of patients at high risk of invasion and metast.

Keywords: Biomarker, Epithelial-mesenchymal transition, Oral cancer, Metastasis, Prognosis.

**Clear cell variant of calcifying epithelial odontogenic tumor without calcification: A rarity**

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**Abstract**

Calcifying epithelial odontogenic tumor (CEOT) is a rare, benign, locally aggressive odontogenic epithelial tumor that affects the jaws. Although there are numerous reports on the variants of CEOT, occurrence of clear cells with complete absence of calcification has been a rarity. Histochemical analysis of tumor cells revealed glycogen granules with PAS staining, with absence of CD 1a staining in clear cells, while the amyloid-like deposit associated with clear cells showed green birefringence with Congo red. We report an unusual variant of CEOT occurring in a 27 years old male patient.

**Keywords:** Clear cell, Odontogenic tumor, PAS, Congo red.

**Decision making in hyperglycaemia seen in pregnancy**

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**Abstract**

Delay in childbearing, family history of type 2 diabetes mellitus and obesity in childbearing years increases a possibility of glucose intolerance or overt diabetes in pregnancy which may remain unrecognised unless an oral glucose tolerance test is done. The International Association of Diabetes and Pregnancy Study Group (IADPSG, 2010) recommended the detection and diagnosis of hyperglycaemic disorders in pregnancy at two stages of pregnancy, the first stage looking for ‘overt diabetes’ in early pregnancy based on risk factors like age, past history of gestational diabetes and obesity and the second stage where ‘gestational diabetes’ at 24-28 weeks with 75 g oral glucose tolerance test. Although the one step approach with 75 g of glucose offers operational convenience in diagnosing gestational diabetes, there are concerns raised by the National Institute of Health in the recent consensus statement, supporting the two step approach (50-g, 1-hour loading test screening 100-g, 3-hour oral glucose tolerance test) as the recommended approach for detecting gestational diabetes. Medical nutrition therapy (MNT) with well-designed meal plan and appropriate exercise achieves normoglycemia without inducing ketonemia and weight loss in most pregnant women with glucose intolerance. Rapidly acting insulin analogues, such as insulin lispro and aspart are safe in pregnancy and improve postprandial glycemic control in women with pre-gestational diabetes. The long acting analogues (Insulin detemir and glargine) though proven to be safe in pregnancy, do not confer added advantage if normoglycemia is achieved with intermediate insulin (NPH). Current evidence indicates the safe use of glyburide and metformin in the management of Type 2 diabetes and gestational diabetes as other options. However, it is prudent to communicate to the women that there is no data available on the long-term health of the offspring and the safety of these oral hypoglycemic drugs are limited to the prenatal period.

**Keywords:** Diabetes, Pregnancy, Medical Nutrition Therapy, Insulin.

Protein expression of STAT3, pSTAT3, MMP-7 and VEGF in colorectal adenocarcinoma: An immunohistochemical study

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Abstract

Background: The purpose of the present study is to investigate the expression levels of STAT3, pSTAT3, MMP-7 and VEGF in colorectal adenocarcinoma, and also to determine association with the clinico-pathological parameters and co-expression of these genes.

Methods: An immunohistochemical method was used to evaluate the expression of MMP-7 and VEGF genes in 93 archival tissues whereas STAT3 and pSTAT3 expression was determined in 75 cases.

Results: Overexpression of STAT3 was detected in 26.7% (20/75), pSTAT3 in 13.4% (10/75), MMP-7 in 38.8% (36/93) and VEGF in 59.2% (55/93) of the colorectal carcinomas. STAT3, MMP-7 and VEGF immunopositivity were significantly correlated with poorly-differentiated tumors (P = 0.004; P = 0.03; P = 0.002, respectively) but not with other parameters. However, pSTAT3 immunostaining was not significantly associated with the clinico-pathological characteristics. Significant relationship was noted between overexpression of pSTAT3 and STAT3 (P < 0.001), pSTAT3 and VEGF (P = 0.044), pSTAT3 and MMP-7 (P = 0.003), and STAT3 and VEGF (P = 0.037) but marginal association was detected between STAT3 and MMP-7 (P = 0.057), and MMP-7 and VEGF (P = 0.052).

Conclusion: Our data suggest that expression of these genes may have an important role in tumor dedifferentiation and may be useful as indicators of biologic aggressiveness. Co-expression of the bio-markers by cancer cells may have important implications in colorectal cancer biology and could be useful biological markers of the malignant phenotype.

Keywords: STAT3, pSTAT3, MMP-7, VEGF, Colorectal Adenocarcinoma.
Willingness to take a screening test for colorectal cancer: A community-based survey in Malaysia

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Abstract
(i) To determine the knowledge and perceptions of colorectal cancer (CRC), (ii) to explore the willingness of the study population to take a screening test for CRC, and (iii) to identify factors affecting the willingness to take a screening test for CRC. A cross-sectional survey was carried out in a semiurban town in Malaysia using a pretested structured questionnaire. Descriptive statistics were determined for all important variables. A binary logistic regression model was introduced to identify independent predictors of the willingness to take a screening test. Factors influencing willingness were explored according to the constructs of the health belief model. Of the 256 respondents who had heard about CRC, the majority were aware of altered bowel habits (67.3%) or the presence of blood in stool or rectal bleeding (63.4%) as the warning symptoms. Although 38% of the respondents knew of colonoscopy as the screening test, 22% were not aware of any screening test for CRC. A majority (77.4%) showed willingness to take a screening test for CRC. In the multivariate analysis, ‘having family or friends with history of CRC’ and ‘self-perceived risk’ were the two significant variables for predicting the acceptance of CRC screening among the study population. Findings suggested that the respondents' knowledge of the CRC screening test was inadequate, albeit a high proportion expressed their intention to take screening tests. Health education on the CRC addressing available screening tests and the benefits of early screening for CRC should be scaled up.

Keywords: colorectal cancer, health belief model, knowledge, screening test.

**Anabolic steroids for treating pressure ulcers**

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**Abstract**

This is the protocol for a review and there is no abstract. The objectives are as follows: To determine the effects of anabolic steroids on the healing of pressure ulcers of any grade, in any care setting; to establish whether anabolic steroids are an effective treatment; whether there is an optimal anabolic steroid, treatment duration and dosage; and which anabolic steroid has fewest side effects.
Applying the learning theories to medical education: A commentary

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Abstract
Medical education of today continues to evolve to meet the challenges of the stakeholders. Medical professionals today are expected to play multiple roles besides being experts. Thus, the curriculum has to be developed in a manner that facilitates learners to achieve the intended goal of becoming a medical professional with multiple competencies. The understanding of learning theories will be helpful in designing and delivering the curriculum to meet the demands of producing a medical professional who would meet the CanMEDS model. This commentary explores and reflects on the learning theories of behaviorism, cognitivism and constructivism as they have evolved over time and the application of these learning theories in medical education, particularly in the context of medical education in Malaysia. The authors are convinced that these three theories are not mutually exclusive but should be operationalized contextually and throughout the different stages of learning in the MBBS curriculum. Understanding these theories and their application will enhance the learning experience of students.

Keywords: learning theories, behaviourism, cognitivism, constructivism, medical education.

Selective anticancer copper(II)-mixed ligand complexes: Targeting of ROS and proteasomes

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Abstract

Copper compounds can be alternatives to platinum-based anticancer drugs. This study investigated the effects of a series of ternary copper(II) complexes, [Cu(phen)(aa)(H2O)]NO3.xH2O 1-4 (phen = 1,10-phenanthroline; aa = gly (1), DL-ala (2), sar (3), C-dmg (4)), on metastatic and cisplatin-resistant MDA-MB-231 breast cancer cells and MCF10A non-cancerous breast cells, and some aspects of the mechanisms. These complexes were distinctively more antiproliferative towards and induced greater apoptotic cell death in MDA-MB-231 than in MCF10A cells. 2 and 4 could induce cell cycle arrest only in cancer cells. Further evidence from DCFH-DA assay showed higher induction of reactive oxygen species (ROS) in treated cancer cells but minimal ROS increase in normal cells. DNA double-strand breaks, via a γ-H2AX assay, were only detected in cancer cells treated with 5 μM of the complexes. These complexes poorly inhibited chymotrypsin-like activity in 20S rabbit proteasome while they did not inhibit the three proteolytic sites of MDA-MB-231 cells at 10 μM. However, the complexes could inhibit degradation of ubiquinated proteins of MDA-MB-231 cells. In addition, compound 4 was found to be effective against cervical (Hela), ovarian (SKOV3), lung (A549, PC9), NPC (Hone1, HK1, C666-1), breast (MCF7, T47D), lymphoma leukemia (Nalmawa, HL60) and colorectal (SW480, SW48, HCT118) cancer cell lines with IC50 values (24 h) in the 1.7 – 19.0 μM range. Single dose NCI60 screening of 4 showed the complex to be highly cytotoxic to most cancer cell types and more effective than cisplatin.
Prevalence and factors associated with depression among rural communities in Negeri Sembilan, Peninsular Malaysia

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Abstract

Aims: To determine the prevalence of depression and factors associated with depression among rural communities in Negeri Sembilan, Peninsular Malaysia.

Study Design: A cross-sectional study with simple random sampling.

Place and Duration of Study: Port Dickson, Negeri Sembilan, between June 2013 and July 2013.

Methodology: A total of 223 respondents participated in this study. Data were collected by face-to-face interview using a structured questionnaire. The Patient Health Questionnaire (PHQ-9) was used as a screening tool to detect the presence of depression.

Results: The prevalence of depression among the rural communities was 7.6%. Nonbumiputra (OR = 3.90; 95% CI: 1.25, 12.18), low education level (OR = 2.65; 95% CI: 1.18, 5.94), smoking (OR = 4.69; 95% CI: 1.69, 13.05), no alcohol consumption (OR = 8.90; 95% CI: 1.71, 46.29), practice healthy diet (OR = 4.83; 95% CI: 1.07, 21.18) and did not exercise regularly (OR = 3.07; 95% CI: 1.40, 6.73) were factors associated with depression.

Conclusion: Early detection of individuals with depression is crucial to initiate treatment to reduce or minimize morbidity and mortality.

Keywords: Prevalence; factors associated; depression; rural communities; Negeri Sembilan; Malaysia.

The evaluation of students’ written reflection on the Learning of General Chemistry Lab Experiment

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Abstract

Reflective writing is often used to increase understanding and analytical ability. The lack of empirical evidence on the effect of reflective writing interventions on the learning of general chemistry lab experiment supports the examination of this concept. The central goal of this exploratory study was to evaluate the students’ written reflections about experimental work. This study used an instrument, pre- and post-intervention design. Data were collected in the form of individual reflective writing reports by students enrolled in the first semester of a general chemistry course. Our findings indicated that the treatment group had a statistically significant increase (p = .000) on the posttest test after a week of reflective writing was administered when compared to the control group. Students’ reflective writings were evaluated in the aspects of knowledge, critical thinking and applications. In the case of knowledge, our findings were particularly interesting as higher level of students' knowledge understanding was associated with the experimentation. The results of this study make it imperative for School of Pharmacy (SoP) and Health Sciences (SoHS) at this institution to consider including reflective writing in lab experiments.

Keywords: Reflective writing, general chemistry, pre- and post-intervention, lab experiment, first semester.

The mediating role of work locus of control on the relationship among emotional intelligence, organisational citizenship behaviours, and mental health among nurses

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Abstract

Using a cross-sectional design to evaluate the perceptions of 242 nurses working in a Malaysian hospital, this study investigates the mediating role of work locus of control (WLOC) on the relationship among emotional intelligence (EI), organisational citizenship behaviours (OCBs), and mental health among nurses. Additionally, the role of EI is examined. Findings indicate that EI correlates positively with OCBs and negatively with mental health and that WLOC mediates the relationship between EI and OCBs. However, WLOC does not mediate the relationship between EI and mental health. An in-depth understanding of nurses’ EI provides insights into health institution management to increase organisational outcomes. Results of this study are interpreted to indicate that EI should be part of nurse training and that OCBs are associated with performance and productivity. It is suggested that EI could also be included in selection processes to encourage growth and development of a health institution.

Keywords: emotional intelligence, mental health, organisational citizenship behaviours, work locus of control.

### Comparative evaluation of microleakage of lingual retainer wires bonded with three different lingual retainer composites

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**Abstract**

**Objective:** To evaluate microleakage when two types of retainer wires were bonded with two light cured and a self cured lingual retainer composites.

**Materials and Methods:** Total 120 freshly extracted human mandibular incisor teeth were collected and separated into six subgroups of 20 teeth each. Two different wires, a 0.036 inch hard round stainless steel (HRSS) wire sandblasted at the ends and 0.0175 inch multistranded wire bonded onto the lingual surfaces of the incisors with three different types of composite resins of 3M company; Concise Orthodontic (self-cure), Transbond XT (light-cure) and Transbond LR (light-cure). Specimens were further sealed with a nail varnish, stained with 0.5% basic fuchsine for 24 hours, sectioned and examined under a stereomicroscope, and scored for microleakage for the enamel-composite and wire-composite interfaces. Statistical analysis was performed by Kruskal-Wallis and Mann-Whitney U-tests.

**Results:** For HRSS wire, at the enamel-composite interface, the microleakage was least with Transbond LR followed by Concise Orthodontic and greatest for Transbond XT (p<0.05). At the wire composite interface too, the microleakage was in order of Transbond LR<Concise Orthodontic<Transbond XT. For the multistranded wire, at the enamel-composite interface, the microleakage was least with Transbond LR followed by Concise Orthodontic and Transbond XT (p<0.05). At the wire composite interface too, it was seen that microleakage was the least with Transbond LR followed by Concise Orthodontic and Transbond XT.

**Conclusion:** Transbond LR in combination with 0.0175 inch multistranded wire showed least microleakage amongst the groups studied.
Cough and cold medication in children: A public health concern

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Abstract

Background: The indiscriminate use of cough and cold medicines (CCMs) in children has become a public health concern. The study evaluates the prescription pattern of CCMs in primary care setting.

Methods: Analysis of CCMs prescription data among children aged 12 years and below who had participated in the National Medical Care Survey (NMCS) 2010. Data was extracted from NMCS 2010, a cross-sectional survey on the primary healthcare service which was carried out from December 2009 to April 2010 in public and private primary care clinics in Malaysia.

Result: Of 21,868 encounters for NMCS 2010, 3574 (16.3%) were children 12 years old and below; 597 (17%) were from public clinics and 2977 (83%) were from private clinics. Of these 3574 encounters, 1748 (49%) children were prescribed with CCM with total of 2402 CCMs. On average, CCMs were prescribed at a rate of 1.3 CCMs per encounter in public clinics and 1.4 CCMs per encounter in private clinics. CCMs containing single ingredient constituted 77% of the prescriptions while 23% were of multiple ingredient preparations. There were 556 (23%) CCMs prescribed to children younger than 2 years. Majority (65%) were prescribed with one CCM per visit, 32% received two CCMs and 3% of the children received three or more CCMs per visit.

Conclusion: Prescription of CCMs to children is common. Prevalence of CCM prescriptions among young children is of concern, in view of concerns about the safety and adverse effects related to the use of CCMs in this age group. Firmer policies and greater effort is needed to monitor the prescriptions of CCMs to children.

Keywords: Children; primary health care; prescribing pattern; antihistamine; decongestant.

**Clinical laboratory tests: Right choice of the test for the benefit of the patient**

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**Abstract**

Clinical laboratory tests form one of the major components of evidence-based medicine. Results obtained for the cases referred carry variations due to biological parameters including the effect of age, pre-analytical errors, analytical errors, as well as interpretation of the results obtained. In the present study, some of these concerns have been addressed with a view to prepare the physician to understand, interpret, as well as choose the required tests for a specific case in question.

**Keywords:** Analytical variation, biological variation, clinical laboratory tests, elderly patients, pre-analytical variation.
Abstract
Carbon nanotubes (CNTs) are an important class of nanomaterials, which have numerous novel properties that make them useful in technology and industry. Generally, there are two types of CNTs: single-walled nanotubes (SWNTs) and multi-walled nanotubes. SWNTs, in particular, possess unique electrical, mechanical, and thermal properties, allowing for a wide range of applications in various fields, including the electronic, computer, aerospace, and biomedical industries. However, the use of SWNTs has come under scrutiny, not only due to their peculiar nanotoxicological profile, but also due to the forecasted increase in SWNT production in the near future. As such, the risk of human exposure is likely to be increased substantially. Yet, our understanding of the toxicological risk of SWNTs in human biology remains limited. This review seeks to examine representative data on the nanotoxicity of SWNTs by first considering how SWNTs are absorbed, distributed, accumulated and excreted in a biological system, and how SWNTs induce organ-specific toxicity in the body. The contradictory findings of numerous studies with regards to the potential hazards of SWNT exposure are discussed in this review. The possible mechanisms and molecular pathways associated with SWNT nanotoxicity in target organs and specific cell types are presented. We hope that this review will stimulate further research into the fundamental aspects of CNTs, especially the biological interactions which arise due to the unique intrinsic characteristics of CNTs.

Keywords: Carbon nanotube, Nanotoxicity, Single-walled, Nanomaterials, Toxicology.
Low cost adsorbents for sustainable dye containing-wastewater treatment

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Abstract

Dyes are coloured substances that can be applied to various substrates such as textile materials, leather paper and hair. The usage of dyes has continuously increased in many industries but the removal of this pollutant remains as a problematic issue as they are generally stable to light and oxidizing agents and are resistant to aerobic digestion. This literature review paper provides and lists several low cost adsorbents to serve as an alternative method for dye removal. Adsorption using low cost materials can be viewed as a sustainable treatment process because most of these materials are of naturally occurring, locally available and inexpensive materials. This paper covers an overview of-dyes waste treatments for 5 years period, from 2008-2012. Some of the noteworthy adsorbents include agricultural by-products, industrial waste and natural clay materials. Besides, the combination processes involving adsorption and other methods was also discussed.

Keywords: Adsorbent; Dyes; Colour; Low-cost process; Wastewater treatment.

**Effects of microemulsion conditions on drug encapsulation efficiency of salicylic acid in PLGA microparticles**

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**Abstract**

Emulsion solvent evaporation technique is widely used to prepare nanoparticles of many organic polymer drug carriers. The mechanism of nanoparticle generation by this technique involves oil-in-water (O/W) microemulsion formation followed by solvent evaporation. Various microemulsion preparation conditions can affect the encapsulation efficiency of drug in the nanoparticulate carrier. In this study, emulsifying speed, emulsifying temperature, and organic-to-aqueous phase ratio were varied and the resulting encapsulation efficiency of a model drug in Poly (Lactide-co-Glycolide) (PLGA) nanoparticles was determined. The organic phase containing PLGA and a model drug dissolved in chloroform was first dispersed in an aqueous solution containing 0.5% (w/v) Poly (vinyl alcohol) (PVA), which was then homogenized at high speeds. The resulting O/W microemulsion was subsequently subjected to stirring at room temperature for four hours during which the solvent diffused and evaporated gradually. The fine white suspension was centrifuged and freeze-dried. The model drug loading in the PLGA nanoparticles was determined using UV spectrophotometry. Results showed that the encapsulation efficiency of a model drug, salicylic acid, ranged from 8.5% to 17% depending on the microemulsion preparation conditions. Under the same temperature (15 °C) and homogenization speed (19000 rpm) conditions studied, a relatively high organic-to-aqueous phase ratio (1:5) provided salicylic acid loaded PLGA nanoparticles with significantly higher drug encapsulation efficiency. In addition, under all microemulsion preparation conditions, PLGA nanoparticles obtained after solvent evaporation and freeze drying were spherical and aggregation between the nanoparticles was not observed under a high power microscope. This indicates that PLGA nanoparticles with desirable amount of drug and with anticipated size and shape can be realized by controlling emulsification process conditions.

**Keywords:** emulsions, microemulsions, solvent effects, diffusion.

Effect of eurycomanone on cytochrome P450 isoforms CYP1A2, CYP2A6, CYP2C8, CYP2C9, CYP2C19, CYP2E1 and CYP3A4 in vitro

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Abstract

Eurycomanone, an active constituent isolated from *Eurycoma longifolia* Jack, was examined for modulatory effects on cytochrome P450 (CYP) isoforms CYP1A2, CYP2A6, CYP2C8, CYP2C9, CYP2C19, CYP2E1 and CYP3A4 using in vitro assays. The IC50 value was determined to assess the potencies of modulation for each CYP isoform. Our results indicated that eurycomanone did not potently inhibit any of the CYP isoforms investigated, with IC50 values greater than 250 lg/ml. Hence there appears to be little likelihood of drug–herb interaction between eurycomanone or herbal products with high content of this compound and CYP drug substrates via CYP inhibition.

Keywords: *Eurycoma longifolia* Jack, Eurycomanone, Cytochromes P450, Inhibition.
Knowledge and awareness of HIV/AIDS among students of technical institution

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Abstract

Background: Acquired immunodeficiency syndrome (AIDS) is a major health problem worldwide. The number of infected people is increasing daily. Knowledge and awareness toward prevention and control of the disease is necessary among both educated and illiterate people.

Objectives: This study is aimed at assessing the knowledge and awareness about human immunodeficiency virus (HIV)/AIDS among undergraduate students studying in a technical institute in Gorakhpur, Uttar Pradesh, India.

Method: A community-based cross-sectional study was conducted among youths aged 15–30 years studying in a technical institution in Gorakhpur. Data were collected using a semistructured questionnaire developed with the help of existing literature, from 250 participants (students).

Results: The main source of information was the television; knowledge about the difference between HIV/AIDS was satisfactory. The findings showed that the knowledge about modes of prevention (blood checkup, needle/syringe sterilization) was satisfactory. There were several misconceptions about the modes of transmission of the disease, such as through mosquito bites, eating/drinking, and kissing.

Conclusion: The knowledge of the study population was satisfactory, and there is a need for innovation and comprehensive education to impart better knowledge and understanding about HIV/AIDS.

Keywords: awareness, HIV, knowledge.
A comparative evaluation of microleakage around class V cavities restored with different tooth colored restorative materials

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Abstract
Objectives: To evaluate and compare microleakage around class V cavities restored with silorane and dimethacrylate-based composite resins.

Methods: Standard Class V cavities were prepared on the buccal surface of 60 non-curious human molars. Teeth were randomly divided into 3 groups (n=20) depending on the restorative materials used, Silorane-based composite resin (Filtek P90-SIL), dimethacrylate-based composite resin (Solare P-SOLP) and light-cure glass ionomer cement (GC Fuji II LC - LCGIC). The restored teeth with these tooth-coloured restorative materials were thermocycled and then immersed in 2% Rhodamine B dye under vacuum pressure for 48 hours. All teeth were bisected longitudinally in a bucco-lingual direction and observed under stereomicroscope at 30X magnification for the evidence of dye penetration. The data were analysed using one-way analysis of variance (ANOVA) and Tukey’s Post Hoc tests (α=0.05).

Results: SIL composite resin showed the least microleakage in Class V cavity restorations with a statistically significant difference to SOLP and LCGIC. Sixty five percent of specimens in SIL group, 30% in SOLP group and 5% in LCGIC group showed dye penetration up to one-third of the cavity depth, while 5% in SIL group, 5% in SOLP group and 35% in LCGIC group showed dye penetration up to two-thirds of the cavity depth, and 30% in SIL group, 65% in SOLP group and 60% in LCGIC group showed dye penetration up to the axial wall.

Conclusions: Silorane-based composite exhibited least microleakage in restoring class V cavities compared to dimethacrylate-based composite resin and light-cured glass ionomer cement.

Keywords: Silorane Resins, Composite Resins, Glass Ionomer Cement, Dental Marginal Adaptation.

**Evaluation of polycaprolactone matrices for the intravaginal delivery of metronidazole in the treatment of bacterial vaginosis**

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**Abstract**

Microporous, poly (ε-caprolactone) (PCL) matrices loaded with the antibacterial, metronidazole were produced by rapidly cooling suspensions of drug powder in PCL solutions in acetone. Drug incorporation in the matrices increased from 2.0% to 10.6% w/w on raising the drug loading of the PCL solution from 5% to 20% w/w measured with respect to the PCL content. Drug loading efficiencies of 40-53% were obtained. Rapid 'burst release' of 35-55% of the metronidazole content was recorded over 24 h when matrices were immersed in simulated vaginal fluid (SVF), due to the presence of large amounts of drug on matrix surface as revealed by Raman microscopy. Gradual release of around 80% of the drug content occurred over the following 12 days. Metronidazole released from PCL matrices in SVF retained antimicrobial activity against *Gardnerella vaginalis* in vitro at levels up to 97% compared to the free drug. Basic modelling predicted that the concentrations of metronidazole released into vaginal fluid in vivo from a PCL matrix in the form of an intravaginal ring would exceed the minimum inhibitory concentration of metronidazole against *G. vaginalis*. These findings recommend further investigation of PCL matrices as intravaginal devices for controlled delivery of metronidazole in the treatment and prevention of bacterial vaginosis.

**Keywords:** Bacterial vaginosis; intravaginal rings; metronidazole; polycaprolactone.

**A radiographic measurement technique for crest bone changes related to dental implants**

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**Abstract**

The evaluation of crestal bone loss to assess implant success rate with radiographs and/or computerized tomography scans has been well described. After implant placement and at subsequent recall appointments, clinicians typically make an intraoral periapical radiograph. However, at each appointment, there are changes in the radiographic image. Conventionally, the distance between the first screw thread to the top of the alveolar crest in the parallel periapical radiograph is measured to assess crestal bone changes. This distance is sometimes so small that precise measurement is difficult between these 2 close points. To minimize inconsistencies and measurement errors, we propose to measure the radiographic crestal bone level from the tip of the implant body instead of the first screw thread. This method can be used with simple measuring devices such as calipers, or with more specialized measurement software (Eigentool, Henry Ford; Health System). The technique is applicable to implants with well-defined shoulders and can be used in both routine clinical practice and for research purposes, although it must be better validated for measurement errors as well as defined accuracy and precision.

**Multidisciplinary treatment approach to restore deep horizontally fractured maxillary central incisor**

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**Abstract**

This case report demonstrates sequential Periodontic, Orthodontic and Prosthodontic treatment modalities to save and restore deep horizontally fractured maxillary central incisor. The location of fracture was deep in the mucosa which reveals less than 2 mm of tooth structure to receive the crown. The procedures like surgical crown lengthening, endodontic post placement, orthodontic forced eruption, core build-up and metal-ceramic crown restoration were sequentially performed to conserve the fractured tooth. Forced eruption is preferred to surgical removal of supporting alveolar bone, since forced eruption preserves the biologic width, maintains esthetics, and at the same time exposes sound tooth structure for the placement of restorative margins.

**Keywords:** Crown lengthening procedures, Forced eruption, Post and core, Metal ceramic crown.

**Sectional impression technique and magnet retained two-piece obturator for maxillectomy patient with trismus**

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**Abstract**

This article describes technique to make the sectional impression of the maxillectomy defect of a patient with the reduced mouth opening. The cast generated after pouring the impression is duplicated twice to fabricate the defect component and the palatal base-plate component separately. Both the components were then oriented and attached with the help of a pair of the magnets. This magnet retained obturator facilitates the insertion and removal of the prosthesis in two separate pieces in restricted mouth opening situation.

**Keywords:** Maxillectomy, Obturators, Oral cancer, Sectional impression, Trismus.
Poovaneswaran S, Poovaneswaran A, Subramaniam T. End-of-life attitudes in the Intensive Care Unit (ICU) amongst final year medical students at International Medical University, Malaysia. *International E-Journal of Science, Medicine & Education (ieJSME)*, 2014; 8(1): 32-33. (MyCite IF: 0.038).

**End-of-life attitudes in the Intensive Care Unit (ICU) amongst final year medical students at International Medical University, Malaysia**

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**Abstract**

With recent medical advances and the availability of newer sophisticated technologies, critically ill patients tend to survive longer. Thus, decisions to forgo life-sustaining medical treatment generate challenging issues that all doctors must face. The aim of this pilot study was to assess attitudes towards end-of-life care in ICU which included futile therapy (withholding and withdrawing therapy) among final year medical students who had received the same degree of clinical exposure and training in medical school. The results revealed varying attitudes and views towards end-of-life care in ICU suggesting other factors such as religion, ethnicity and culture may influence decision making.

**Keywords:** end of life care, education, medical students, ethics.

### Effect on interleukin-1β and interleukin-8 levels following use of fibrin sealant for periodontal surgery

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**Abstract**

**Background:** Fibrin sealant (FS) is a biologically derived tissue adhesive for securing flaps. The aim of the present randomized controlled clinical trial was to compare early wound healing by assessing interleukin-1β (IL-1β) and interleukin-8 (IL-8) levels from gingival crevicular fluid (GCF) after using FS and suture for periodontal flap closure.

**Methods:** Thirty selected quadrants in 15 periodontitis patients were randomly assigned to either a test (fibrining) or control group (suturing) for flap closure. IL-1β and IL-8 were assessed in GCF using enzyme-linked immunosorbent assay (ELISA) before and eight days after surgery. Patients were recalled at 7, 14, 21 days and 3 months after surgery for clinical assessment.

**Results:** There was a statistically significant decrease in IL-1β (84.82 ± 77.18, 29.2 ± 21.97 pg/μl) and IL-8 (57.94 ± 55.47, 21.82 ± 21.93 pg/μl) levels in the test side after fibrining while there was an increase in the control side (IL-1β 31.40 ± 16.82, 128.8 ± 45.14; IL-8 31.40 ± 16.82, 128.83 ± 45.14 pg/μl) (p < 0.05). The change in concentration of IL-1β and IL-8 following intervention correlated significantly in both the sites. Clinical parameters differed significantly only on the seventh day with less plaque and bleeding on the test sites.

**Conclusions:** Fibrin sealant enhances early wound healing by reducing inflammation after periodontal flap surgery.

**Keywords:** Fibrin sealant; interleukin-1β; interleukin-8; randomized controlled clinical trial; wound healing.

Effect of γ tocotrienol in counteracting oxidative stress and joint damage in collagen induced arthritis in rats

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Abstract
Tocotrienols exhibit a significant anti-inflammatory and antioxidant effect in numerous human diseases. However, the anti-inflammatory and antioxidant effects of tocotrienols in arthritic conditions are not well documented. Therefore, the effect of γ-tocotrienol supplementation against oxidative stress and joint pathology in collagen-induced arthritis in rats was investigated in the present study. Adult female Dark Agouti rats were randomly divided into groups: Control, γ-tocotrienol alone, arthritis alone and arthritis with γ-tocotrienol. Arthritis was induced using 4 mg/kg body weight collagen in complete Freund's adjuvant. The rats were treated orally with 5 mg/kg body weight of γ-tocotrienol between day 21 and day 45. After 45 days, serum C-reactive protein (CRP), tumor necrosis factor (TNF)-α, superoxide dismutase (SOD) and total glutathione (GSH) assays were conducted. γ-tocotrienol significantly reduced the arthritis-induced changes in body weight, CRP, TNF-α, SOD and the total GSH levels. There was a significant reduction in the arthritis-induced histopathological changes in the γ-tocotrienol treatment group. The data indicated that administration of γ-tocotrienol resulted in a significant antioxidant and anti-inflammatory effect on collagen-induced arthritis; therefore, γ-tocotrienol may have therapeutic potential as a long-term anti-arthritic agent in rheumatoid arthritis therapy.

Keywords: rheumatoid arthritis, oxidative stress, tocotrienols, tumor necrosis factor.

**Quality control evaluation of five leading brands of atenolol tablets marketed in Kuala Lumpur**

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**Abstract**

**Background:** The emergent of many pharmaceutical companies producing their own generic type of drugs after the patent of innovator drugs expired can improve the general healthcare delivery systems as well as decreasing the healthcare costs. But it also raises a few issues with one of it is the widespread of substandard and counterfeit product. Postsurveillance study to assess product parameter of various generics drug marketed is crucial. This kind of monitoring reduces a country’s economical burden on health issues from diseases due to fraudulent and substandard drugs usage.

**Purpose:** The main objective of this study is to perform a comparative evaluation of the physicochemical properties of five commercially available leading brands of Atenolol tablets marketed in Kuala Lumpur.

**Method:** The quality control parameters of five different brands of atenolol tablets were atenolol tablet assessed included uniformity of content, uniformity of weight, friability, crushing strength, disintegration and dissolution tests as well as content uniformity of the tablets. All the tablets were assessed for conformity with British Pharmacopoeia (BP) standards.

**Results:** All the five brands of the tablets passed the British Pharmacopoeia (BP) standards for weight uniformity, disintegration, friability, content uniformity and hardness tests.

**Conclusion:** The quality control parameters of all five top selling brands of atenolol tablets marketed in Kuala Lumpur analyzed passed all the BP and USP quality specifications and were physically and chemically equivalent.

**Keywords:** Quality control; physicochemical anti-hypertensive; generic; innovator.

The role of propolis in inflammation and orofacial pain: A review

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Abstract

In recent years, the use of natural products and holistic or alternative medicine has gained popularity among the public, due to the potential side effects and safety concerns of conventional allopathic formulations. Natural products have been used since ancient times in folk medicine, involving both eastern and western traditional medicine. Among these natural products, a resinous bee product named propolis has gained popularity. It has been reported to have anti-inflammatory, anti-bacterial, anti-fungal, anti-viral, anti-oxidant and anti-cancer properties. Due to these properties there has been an increasing interest in the use of bee propolis in contemporary dentistry. In dentistry propolis has been tried out almost in every field such as to treat oral cancer, recurrent ulcers, fungal infections, in restorative dentistry as a cariostatic, desensitizing and pulp capping agent, in endodontics as an intra-canal medicament, intra-canal irrigant, in dental trauma as a storage media for an avulsed tooth, in oral surgery to treat dry socket after tooth extraction, in prosthetics to treat denture stomatitis, in periodontics to treat gingivitis, periodontitis and to control bone resorption. Despite having numerous advantages and uses, the role of propolis in orofacial pain is probably the least understood. Hence, this review highlights the anti-inflammatory and pain relieving mechanisms of propolis at the molecular level in orofacial pain.

Keywords: Propolis; anti-inflammatory; orofacial pain; analgesic effect.
Phytochemical, pharmacological and toxicological properties of *Ficus deltoidea*: A review of a recent research

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Abstract

*Ficus deltoidea* (Mas Cotek) is one of the commonly used medicinal plants in Malaysia and it belongs to the family of Moraceae. It is a shrub that reaches a height of six feet, used as an ornamental plant in the tropics or in the home and conservatories. This plant is native to Southeast Asia and Philippines. It has been used to relieve headache, fever, pneumonia, heart problems, migraines, skin diseases, diarrhea, and toothache. It is also used as an aphrodisiac tonic. Decoction of the whole plant has been used as herbal drink by women after birth to strengthen the uterus and vaginal muscles. It also improves blood circulation and regains body strength as well as treats disorders related to menstrual cycle. This plant is basically a Malay traditional medicine which was very popular ever since it has good medicinal properties. Based on ethnobotanical approaches, *F. deltoidea* has been claimed to possess antidiabetic, antiulcerogenic, antioxidant, anti-melanogenic, anti-inflammatory, analgesic, antihypertensive properties. Recently, there were a lot of investigations that was carried out to isolate some of the chemical constituents in *F. deltoidea* to understand how it influences the pharmacological properties of the plant. The plant contains flavonoid, tannins, triterpenoids and phenols. It has been investigated that generally *F. deltoidea* is safe and nontoxic. However, there are different studies that are still going on to investigate more about the toxicological effects and drug interactions in the long run of human consumption. Therefore, the objective of the review is to summarise the phytochemical, pharmacological and toxicological properties of this important medicinal plant.

**Keywords:** *Ficus deltoidea*; pharmacology; phytochemical; toxicology.
Role of adenosine receptors in resveratrol-induced IOP lowering in rats with steroid-induced ocular hypertension

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Abstract

Background: Steroid-induced ocular hypertension is currently treated in the same way as primary open angle glaucoma. However, the treatment is often suboptimal and is associated with adverse effects. We evaluated the oculohypotensive effects of topical trans-resveratrol in rats with steroid-induced ocular hypertension and involvement of adenosine receptors (AR) in intraocular pressure (IOP) lowering effect of trans-resveratrol.

Methods: Oculohypotensive effect of unilateral single drop application of various concentrations of trans-resveratrol was first studied in oculonormotensive rats. Concentration with maximum effect was similarly studied in rats with steroid-induced ocular hypertension. Involvement of AR was studied by observing the alterations of IOP in response to trans-resveratrol after pre-treating animals with AR subtype-specific antagonists. Additionally, we used computational method including 3D modelling, 3D structure generation and protein-ligand interaction to determine the AR-trans-resveratrol interaction.

Results: All concentrations of trans-resveratrol produced significant IOP reduction in normotensive rat eyes. Maximum mean IOP reduction of 15.1% was achieved with trans-resveratrol 0.2%. In oculohypertensive rats, trans-resveratrol 0.2% produced peak IOP reduction of 25.2%. Pretreatment with A1 antagonist abolished the oculohypotensive effect of trans-resveratrol. Pretreatment with A3 and A2A AR antagonists produced significant IOP reduction in both treated and control eyes, which was further augmented by trans-resveratrol application in treated eyes. Computational studies showed that trans-resveratrol has highest affinity for A2b and A1 followed by A2A and A3 AR.

Conclusion: Topically applied trans-resveratrol reduces IOP in rats with steroid-induced ocular hypertension. Trans-resveratrol-induced oculohypotension involves its agonistic activity at the A1 AR.

Keywords: adenosine receptors; docking simulation; intraocular pressure; rats; resveratrol; topical.

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Abstract

Background: Measures of household socio-economic position (SEP) are widely used in health research. There exist a number of approaches to their measurement, with Principal Components Analysis (PCA) applied to a basket of household assets being one of the most common. PCA, however, carries a number of assumptions about the distribution of the data which may be untenable, and alternative, non-parametric, approaches may be preferred. Mokken scale analysis is a non-parametric, item response theory approach to scale development which appears never to have been applied to household asset data. A Mokken scale can be used to rank order items (measures of wealth) as well as households. Using data on household asset ownership from a national sample of 4,154 consenting households in the World Health Survey from Vietnam, 2003, we construct two measures of household SEP. Seventeen items asking about assets, and utility and infrastructure use were used. Mokken Scaling and PCA were applied to the data. A single item measure of total household expenditure is used as a point of contrast.

Results: An 11 item scale, out of the 17 items, was identified that conformed to the assumptions of a Mokken Scale. All the items in the scale were identified as strong items (Hi > .5). Two PCA measures of SEP were developed as a point of contrast. One PCA measure was developed using all 17 available asset items, the other used the reduced set of 11 items identified in the Mokken scale analysis. The Mokken Scale measure of SEP and the 17 item PCA measure had a very high correlation (r = .98), and they both correlated moderately with total household expenditure: r = .59 and r = .57 respectively. In contrast the 11 item PCA measure correlated moderately with the Mokken scale (r = .68), and weakly with the total household expenditure (r = .18).

Conclusion: The Mokken scale measure of household SEP performed at least as well as PCA, and outperformed the PCA measure developed with the 11 items used in the Mokken scale. Unlike PCA, Mokken scaling carries no assumptions about the underlying shape of the distribution of the data, and can be used simultaneous to order household SEP and items. The approach, however, has not been tested with data from other countries and remains an interesting, but under researched approach.

Keywords: Mokken scale analysis (MSA), Principal component analysis (PCA).
Malignant and noninvasive skin tumours in renal transplant recipients

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Abstract

**Background:** Transplant recipients require immunosuppression to prevent graft rejection. This conveys an increased risk of malignancy, particularly skin tumours. There is a need for up-to-date data for the South of England.

**Method:** Pathology records were reviewed for 709 kidney transplant recipients on immunosuppression at our hospital from 1995 to 2008. Skin tumours were recorded/analysed.

**Results:** Mean age at transplant was 46 years. Mean length of follow-up was 7.2 years and total follow-up was 4926 person-years. 53 (7.5%) patients (39/458 (8.5%) males and 14/251 (5.6%) females) developed ≥1 skin malignancy. Cumulative incidences of 4.0%, 7.5%, and 12.2% were observed for those with <5, <10, and ≥10 years follow-up, respectively. The rate was 45 tumours per 1000 person-years at risk. Additionally, 21 patients (3.0%) only had noninvasive tumours. 221 malignant skin tumours were found: 50.2% were SCCs, 47.1% BCCs, and 2.7% malignant melanomas. Mean years to first tumour were 5.8. Mean number of tumours per patient was 4, with mean interval of 12 months.

**Conclusions:** Despite changes in transplantation practice during the time since the last data were published in this region, these findings are similar to previous studies. This adds to the evidence allowing clinicians to inform patients in this region of their risk.
Duration of hypertension and antihypertensive agents in correlation with the phases of female sexual response cycle

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Abstract

Objective: This cross-sectional study aimed to determine the construct of the phases of the female sexual response cycle (SRC) in women with hypertension and their association with the duration of hypertension and types of antihypertensive agents.

Methods: The sexual response phases were measured with a validated Malay version of the Female Sexual Function Index (FSFI). The correlations structure of the items of the SRC's phases (i.e. desire, arousal, orgasm, satisfaction and pain) was determined using principal component analysis (PCA), with varimax rotation method. The number of factors obtained was decided using Kaiser's criteria. A total of 348 hypertensive women were recruited for this study. Four constructs were extracted in the analysis of all subjects.

Results: Using the factor analysis, the six domains (i.e. sexual desire, arousal, etc.) of the women's SRC among hypertensive women merged into 4 constructs. They were composed of (i) sexual desire and arousal, (ii) orgasm and sexual satisfaction, (iii) vaginal lubrication and (iv) sexual pain. Interestingly, vaginal lubrication stood out alone as one construct, compared to the non-hypertensive women. It was also observed that the duration of hypertension, beta blocker and diuretic antihypertensive medications had different influence on the SCR (in terms of constructs).

Conclusion: Duration of hypertension and types of antihypertensive drugs may affect the components of the SRC. A clear understanding would help the clinician in strategizing the treatment approach of sexual dysfunction in women with hypertension.

**Comparative profile of circulating antigenic peptides in CSF, serum & urine from neurocysticercosis patients diagnosed by immunoblotting**

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**Abstract**

Traditionally serum and/or CSF specimens have been used for detection of either specific antibodies or antigens as a supportive diagnosis of NCC. However, in recent days much interest has been shown employing noninvasive specimens such as urine. In our study, we identified and compared a profile of circulating antigenic peptides of parasite origin in three different body fluids (CSF, serum and urine) obtained from confirmed NCC cases and control subjects. The circulating antigenic peptides were resolved by SDS-PAGE and subjected to immunoblotting. For confirmation of their origin as parasite somatic or excretory secretory (ES) material, immuno-reactivity was tested employing affinity purified polyclonal T. solium metacestode anti-somatic or ES antibodies respectively. Only lower molecular weight antigenic peptides were found circulating in urine in contrast to serum and CSF specimens. Few somatic peptides were identified to be 100% specific for NCC (19.5kDa in all three specimens; 131kDa, 70kDa in CSF and serum only; 128kDa in CSF only). Similarly, the specific ES peptides detected were 32kDa (in all three specimens), 16.5kDa (in serum and CSF only), and 15kDa (urine only). A test format detecting either one or more of these specific peptides would enhance the sensitivity in diagnosis of NCC.

Neurocysticercosis in children presenting with afebrile seizure: Clinical profile, imaging and serodiagnosis

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Abstract

Neurocysticercosis (NCC) is one of the major causes of childhood seizures in developing countries including India and Latin America. In this study neurological pediatric cases presenting with afebrile seizures were screened for anti-Cysticercus antibodies (IgG) in their sera in order to estimate the possible burden of cysticercal etiology. The study included a total of 61 pediatric afebrile seizure subjects (aged one to 15 years old); there was a male predominance. All the sera were tested using a pre-evaluated commercially procured IgG-ELISA kit (UB-Magiwell Cysticercosis Kit TM). Anti-Cysticercus antibody in serum was positive in 23 of 61 (37.7%) cases. The majority of cases with a positive ELISA test presented with generalized seizure (52.17%), followed by complex partial seizure (26.08%), and simple partial seizure (21.73%). Headaches were the major complaint (73.91%). Other presentations were vomiting (47.82%), pallor (34.78%), altered sensorium (26.08%), and muscle weakness (13.04%). There was one hemiparesis case diagnosed to be NCC. In this study one child without any significant findings on imaging was also found to be positive by serology. There was a statistically significant association found between the cases with multiple lesions on the brain and the ELISA-positivity (p = 0.017). Overall positivity of the ELISA showed a potential cysticercal etiology. Hence, neurocysticercosis should be suspected in every child presenting with afebrile seizure especially with a radio-imaging supportive diagnosis in tropical developing countries or areas endemic for taeniasis/cysticercosis.

Keywords: Childhood seizure; Afebrile seizure; Cysticercosis; Neurocysticercosis; Serodiagnosis.
Neuroprotective role of antioxidant and pyranocarboxylic acid derivative against AlCl₃ induced Alzheimer’s disease in rats

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Abstract

Objective: To assess potential of quercetin and etodolac to treat oxidative stress in neuronal death and inflammation in Alzheimer’s disease of AlCl₃ induced rat models. All results of this AlCl₃ model are compared with those obtained in controls.

Methods: Wistar rats, housed in a controlled environment were treated with aluminum chloride (4.2 mg/kg of body weight, i.p.) for 28 d rather than oral to ensure neurotoxic concentration in hippocampus and hypothalamic region, part highly active in memory control and cognition, while control group was injected with saline. Estimation of thiobarbituric acid reactive substance, superoxide dismutase, reduced glutathione and acetylcholine levels gave estimation of neuronal damage. Low (20 mg/kg and 25 mg/kg) and high (40 mg/kg and 50 mg/kg) doses of quercetin and etodolac were administered to the test groups respectively. Histopathology study was conducted to perform relative study.

Results: Co-administration of quercetin and etodolac either alone or in combination prevented the changes in biochemical markers of Alzheimer’s disease, but significant results (P < 0.05) were seen when a combination of two was administered at low dose levels. Good correlation was developed between chemical estimations and histopathology study.

Conclusions: Our findings suggest a combined role of anti-oxidant and cyclooxygenase inhibitor in protection of neural degeneration and inflammation due to oxidative stress.

Keywords: Quercetin, Etodolac, Aluminum chloride, Superoxide dismutase, Reduced glutathione, Thiobarbituric acid reactive substance.
Psychological problems and psychosocial predictors of cigarette smoking behavior among undergraduate students in Malaysia

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Abstract

Background: Cigarette smokers have their own motivation and justification to smoke. For example, smoking reduces their stress or enhances their pleasure. This study aimed to identify the (a) prevalence of cigarette smokers among undergraduates in Malaysia, (b) gender differences in nicotine dependence among current smokers, (c) differences in psychological problems (depression, anxiety and stress) based on the status of smoking cigarettes (current, former and non-smokers) and (d) extent to which precipitating factors (tension reduction, addiction, automatism, handling, social interaction, pleasure, and stimulation) predict the smoking behavior among current smokers.

Materials and Methods: In this study 780 undergraduate students participated from a private university in Kuala Lumpur and Selangor state in Malaysia. The Depression, Stress and Anxiety Scale, Modified Reason for Smoking Scale and Fagerstrom Nicotine Dependence Test were used to measure psychological problems, predictors of smoking behavior and nicotine dependency among current smokers.

Results: The results showed that 14.7% (n=106) of the students were smokers. Current smokers exhibited more psychological problems (depression, anxiety and stress) compared to former and non-smokers. Addiction, tension reduction, pleasure and automatism were predictors of smoking behavior among the current smoking students. Step wise regression analysis showed that smoking behavior was highly predicted by nicotine dependency or addiction. Smoking students were motivated to smoke cigarettes as they believed that it reduced their tension and enhance pleasure.

Conclusions: Hence, there is a need for health promotion and anti-tobacco prevention as cigarette smokers experience more psychological problems. Nicotine dependency or addiction was one of the major causes for smoking behavior among the student population in Malaysia.

Keywords: Psychological problems, smoking, prevalence, precipitating factors.
A randomized control study of psychological intervention to reduce anxiety, amotivation and psychological distress among medical students

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Abstract

Background: Test anxiety aggravates psychological distress and reduces the motivation among graduate students. This study aimed to identify psychological intervention for test anxiety, which reduces the level of psychological distress, amotivation and increases the intrinsic and extrinsic motivation among medical students.

Materials and Methods: West side test anxiety scale, Kessler Perceived Stress Scale and Academic Motivation Scale were used to measure test anxiety, psychological distress and motivation on 436 1(st) year medical students. Out of 436 students, 74 students who exhibited moderate to high test anxiety were randomly divided into either experimental or waiting list group. In this true randomized experimental study, 32 participants from the intervention group received five sessions of psychological intervention consist of psychoeducation, relaxation therapy and systematic desensitization. Thirty-three students from waiting list received one session of advice and suggestions.

Results: After received psychological intervention participants from the intervention group experienced less anxiety, psychological distress, and amotivation (P < 0.01) and high intrinsic and extrinsic motivation (P < 0.01) in the post assessment compared with their preassessment scores.

Conclusion: Overall psychological intervention is effective to reduce anxiety scores and its related variables.

Keywords: Anxiety; motivation; psychological distress.

**Medical students’ experience of and reaction to stress: The role of depression and anxiety**

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**Abstract**

**Background:** Medical school is recognized as a stressful environment that often has a negative effect on students’ academic performance, physical health, and psychosocial well-being. Previous studies have not identified differences between depressed and non depressed and anxious and non anxious medical students’ experiences of stress or their reactions to stressors. The present study aimed to identify the prevalence of depression and anxiety among a sample of 358 medical students attending a private university in Malaysia and to examine differences according to participants’ gender, year of study, and stage of training (preclinical and clinical). Additionally, this study examined the extent to which stress predicts depression and anxiety, differences between depressed and non depressed medical students’ experiences of and reactions to stressors, and differences between anxious and non anxious medical students’ experiences of and reactions to stressors.

**Methods:** The Student Life Stress Inventory was used to measure stress and reaction to stressors and the Depression, Anxiety, and Stress Scale was used to measure depression and anxiety.

**Results:** The results showed that 44% ($n = 158$) of the students were anxious and 34.9% ($n = 125$) were depressed. More female students exhibited anxiety compared to male students. Stress is a predictor for depression and anxiety. A significant difference was found between depressed and non depressed and anxious and non anxious students’ experience of stressors due to frustration, change, and their emotional reaction to stressors.

**Conclusion:** Overall, depressed and anxious students were found to experience more stress and react differently to stressors compared to non depressed and non anxious students.

**Formulation optimization, scale up technique and stability analysis of naproxen loaded lipospheres**

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**Abstract**

The objective of this research was to formulate the anti-inflammatory drug (naproxen) to provide controlled release and minimizing local side effect by avoiding the drug release in the stomach region. Naproxen was entrapped with lipid-like cetyl alcohol, glyceryl mono stearate and stearic acid using melt dispersion technique. Effect of various formulation and process variables such as concentration of surfactant, concentration of co-surfactant, on formulation parameters such as morphology, entrapment efficiency, and *in vitro* release of naproxen were studied. The lipospheres were characterized for particle size, photo microscopy, scanning electron microscopy, FT-IR spectroscopy, drug entrapment efficiency, *in vitro* release studies, and *in vitro* release kinetics. The shape of microspheres was found to be spherical, drug entrapment efficiency of various batches of microspheres was found to be ranging from 80 to 90%. The *in vitro* drug release studies of optimized batches were carried out for up to 24 h using phosphate buffer pH 7.4 showed 80-85% drug release. The optimized formulation batch was considered for scale up process. The lipospheres obtained from the scale up were then characterized for particle size, drug loading and morphology and compared with non-scaled up optimized batch, thereby establishing successful process scale-up.

**Keywords:** naproxen, liposphere, scale up technique, optimization, encapsulation efficiency.
Whole grain consumption among adolescents (13-14 years) in Kuala Lumpur

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Abstract
The aim of the study is to find out the whole grain consumption among adolescents (13 -14 years) in Kuala Lumpur, Malaysia.

Methods: Data was collected from 105 adolescents aged 13-14 years from a national school in Kuala Lumpur and were categorized into low, medium and non whole grain consumers. Dietary intake was estimated through 3 day food record. Original Healthy Eating Index (HEI) was used to determine the diet quality of the subjects. Anthropometry measurements were used to find out their BMI and a questionnaire was administered to access lifestyle factors and socio-demographic status of the subjects.

Results: Only 26 % of subjects consume whole grain food products and the mean intake was 0.20±0.34 servings per day. Sixty three percent of non whole grain consumers engaged in physical activity and consume multivitamin respectively. The subjects who consumed more servings of whole grains achieved a higher HEI score. HEI score and dietary fibre intake was positively correlated with whole grain intake of subjects and there was significant association between parents educational level and taste preference of whole grain.

Conclusion: The mean intake of whole grain among adolescents (13-14years) was much lesser than the recommended intake by Malaysia Dietary Guidelines 2010.

Keywords: whole grain consumption, adolescents, Healthy Eating Index.

**Food insecurity and the metabolic syndrome among women from low income communities in Malaysia**

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**Abstract**

This cross-sectional study examined the relationship between household food insecurity and the metabolic syndrome (MetS) among reproductive-aged women (n=625) in low income communities. The Radimer/Cornell Hunger and Food Insecurity instrument was utilized to assess food insecurity. Anthropometry, diet diversity, blood pressure and fasting venous blood for lipid and glucose profile were also obtained. MetS was defined as having at least 3 risk factors and is in accordance with the Harmonized criteria. The prevalence of food insecurity and MetS was 78.4% (household food insecure, 26.7%; individual food insecure, 25.3%; child hunger, 26.4%) and 25.6%, respectively. While more food secure than food insecure women had elevated glucose (food secure, 54.8% vs food insecure, 37.3-46.1%), total cholesterol (food secure, 54.1% vs food insecure, 32.1-40.7%) and LDL-cholesterol (food secure, 63.7% vs food insecure, 40.6-48.7%), the percentage of women with overweight/obesity, abdominal obesity, hypertension, high triglyceride, low HDL-cholesterol and MetS did not vary significantly by food insecurity status. However, after controlling for demographic and socioeconomic covariates, women in food insecure households were less likely to have MetS (individual food insecure and child hunger) (p<0.05), abdominal obesity (individual food insecure and child hunger) (p<0.01), elevated glucose (household food insecure), total cholesterol (child hunger) (p<0.05) and LDL-cholesterol (household food insecure and child hunger) (p<0.05) compared to food secure women. Efforts to improve food insecurity of low income households undergoing nutrition transition should address availability and accessibility to healthy food choices and nutrition education that could reduce the risk of diet-related chronic diseases.

**Keywords:** metabolic syndrome, food insecurity, harmonized criteria, low income communities, reproductive age women.

**Comparative study on attitudes and psychological problems of mothers towards their children with developmental disability**

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**Abstract**

**Objective:** Parents' positive attitudes and psychological wellbeing play an important role in the development of the children with developmental disability. This study aimed to measure the prevalence of psychological problems among mothers of children with autism disorder, intellectual disability, and Down syndrome. The second aim was to assess the differences in mothers’ attitudes and psychological problems among their children with intellectual disability, autism disorder, and Down syndrome. The third aim was to identify whether negative attitude was a predictor of psychological problems in these mothers.

**Methods:** In this study, 112 mothers of children having mild and moderate levels of autism disorder, Down syndrome, and intellectual disability were assessed using the Parental Attitude Scale and General Health Questionnaire–28.

**Results:** Overall, mothers of children with intellectual disability were found to have the most negative attitude towards their child. Mothers of children with autism disorder exhibited higher scores on somatic symptoms, anxiety, and social dysfunction when compared with their counterparts with Down syndrome and intellectual disability. Negative attitude was a significant predictor of psychological problems.

**Conclusion:** Parental attitudes and psychological problems would vary among mothers of children with different types of developmental disability.

**Keywords:** Autistic disorder; Down syndrome; Intellectual disability; Mothers.

Oral appliance therapy for the management of obstructive sleep apnea

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Abstract

In recent years, the medical profession has begun to recognize the role of sleep hygiene as it pertains to patient health. Types of sleep disordered breathing (SDB) include snoring, obstructive sleep apnea (OSA), central sleep apnea and a mix of obstructive and central apnea. OSA is the most common category of SDB. The apneas are now known affect cardiovascular health and neuro-behavioral issues. In recent years, the dental profession has become involved in managing snoring and certain OSA problems using oral appliance therapy (OAT). This treatment by dentists is now well accepted by the medical profession. This paper will review the basics of OSA, and how the dentist may be involved in providing OAT for these patients.

Keywords: oral appliance (OA), oral appliance therapy (OAT), snoring, sleep disordered breathing (SDB), obstructive sleep apnea (OSA), Temporomandibular Joint (TMJ).

**Metabolic syndrome, abnormal glucose tolerance and high sensitivity - C - reactive protein among women with a history of gestational diabetes mellitus**

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**Abstract**

**Background:** Gestational Diabetes Mellitus (GDM) is a risk factor for diabetes and cardiovascular diseases. Early detection of cardio-metabolic risks is recommended for management. This study evaluated the associations between Metabolic Syndrome (MetS), abnormal glucose tolerance and cardiovascular risk factors in Malaysian women with prior GDM.

**Method:** Seventy-seven, non-diabetic women post-GDM, aged 20-40 years (mean BMI: 26.4 ± 4.6kg/m²) with high type 2 diabetes risks, were evaluated at a median of four months postpartum. Their anthropometric and biochemical measurements were obtained.

**Results:** The overall prevalence of MetS and dysglycaemia were 22% and 29% respectively. Dysglycaemic was predominantly impaired glucose tolerance (IGT: 77%). MetS was higher among dysglycaemic subjects although also detected in 13% of normoglycaemic subjects. Eighty percent of IGT subjects did not have MetS. Sixty-eight percent of subjects had intermediate or high CVD risks (hsCRP>1mg/L). hsCRP increased with obesity and was not associated with glycaemic status. Infant birth weight, maternal age and triglycerides were independent predictors of dysglycaemia (p<0.05).

**Conclusion:** Despite the low prevalence of MetS, elevated levels of hsCRP among these women with prior GDM was highly prevalent. Normoglycaemic subjects with MetS demonstrated intermediate to high risk hsCRP levels. The findings also emphasize the importance of performing OGTT mainly in older post-GDM women, with higher triglycerides and infants who are large for gestational age.

**Keywords:** Gestational diabetes mellitus; Type 2 diabetes; Metabolic syndrome; Cardiovascular risks; Dysglycaemia; Dyslipidaemia.
Formulation and evaluation of topical pentoxifylline-hydroxypropyl methylcellulose gels for wound healing application

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Abstract

Objectives: Oral pentoxifylline shows modest, non-significant effect on the healing rates of chronic wounds. The present research aimed to formulate topical pentoxifylline-hydroxypropyl methylcellulose (HPMC) gels and evaluate their physico-chemical properties, in vitro release characteristics and in vivo wound healing effects.

Methods: Six gel formulations containing pentoxifylline (F1-F6) were prepared using HPMC with varying grades and concentrations. The physicochemical properties of gel formulations were evaluated in term of drug content, spreadability, rheological properties, swelling, and release characteristics. The efficacy of optimized formulation was further evaluated using in vivo excision wound models in rats.

Results: The spreadability, flow index and swelling percentage of gel formulations ranged 10.71-12.24 gcm/sec, 0.33-0.91 and 148.61-8011.61%, respectively. The rheological study of the prepared formulations exhibited pseudoplastic behavior, which is a characteristic feature of topical gels. Swelling results of F5 and F6 deduced that the cross-linked structures were formed between the polymeric chains. The in vitro drug release profiles of all formulations were found to be followed Higuchi model. The in vivo evaluation performed using rat excision wound model showed significant difference (P < 0.05) in the percentage reduction of wound size between treatment and control groups. The treatment group exhibited complete healing by day 13 as compared with day 15 in the control group.

Conclusions: These findings indicated that F5 gel formulation had demonstrated effective release profile for pentoxifylline. The in vivo results confirmed that F5 has pronounced wound healing effects when employed topically.

Keywords: Hydroxypropyl methylcellulose, Pentoxifylline, Topical gel, In vitro drug release, Wound healing.

The relationship between learning preferences (styles and approaches) and learning outcomes among pre-clinical undergraduate medical students

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Abstract

**Background:** Learning styles and approaches of individual undergraduate medical students vary considerably and as a consequence, their learning needs also differ from one student to another. This study was conducted to identify different learning styles and approaches of preclinical, undergraduate medical students and also to determine the relationships of learning preferences with performances in the summative examinations.

**Methods:** A cross-sectional study was conducted among randomly selected 419 pre-clinical, undergraduate medical students of the International Medical University (IMU) in Kuala Lumpur. The number of students from Year 2 was 217 while that from Year 3 was 202. The Visual, Auditory Read/Write, Kinesthetic (VARK) and the Approaches and Study Skills Inventory for Students (ASSIST) questionnaires were used for data collection

**Results:** This study revealed that 343 students (81.9%) had unimodal learning style, while the remaining 76 (18.1%) used a multimodal learning style. Among the unimodal learners, a majority (30.1%) were of Kinesthetic (K) type. Among the middle and high achievers in summative examinations, a majority had unimodal (Kinaesthetic) learning style (30.5%) and were also strategic/deep learners (79.4%). However, the learning styles and approaches did not contribute significantly towards the learning outcomes in summative examinations.

**Conclusions:** A majority of the students in this study had Unimodal (Kinesthetic) learning style. The learning preferences (styles and approaches) did not contribute significantly to the learning outcomes. Future work to re-assess the viability of these learning preferences (styles and approaches) after the incorporation of teaching-learning instructions tailored specifically to the students will be beneficial to help medical teachers in facilitating students to become more capable learners.

**Keywords:** Learning, Styles, Approach, Assist, Vark, Medical, Students.

**A review on advanced serotyping methods for identification of *Klebsiella pneumoniae* capsular serotypes**

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**Abstract**

Identification of an organism plays an important role in diagnosis of diseases to understand the pathogenicity of that particular organism. Microorganisms differentiated by antigenic differences which are known as 'serotypes'. Liver abscess was recently recognized as a new invasive syndrome and serotyping serves as an important tool to distinguish strains of unusually virulent. During last ten years, highly reported incidents of liver abscess are of *Klebsiella pneumonia* which can be identified by using new advanced methods for serotyping of *Klebsiella pneumoniae*. Recent advanced capsular serotyping methods, more specifically molecular-based capsular serotyping methods. Even though, molecular serotyping has its limitation especially in sequencing, the limitations may be resolved with next generation sequencing (NGS). Advancement of serotyping is possible by development of convenient DNA microarray rapid kits to detect the highly virulent serotypes of *Klebsiella pneumonia*.

**Keywords:** Serotypes, liver abscess, *Klebsiella pneumoniae*. 

**Effects of radiation on patient’s health during imaging diagnostics**

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**Abstract**

Radiation from imaging diagnostic had caused many detrimental effects to patients. Imaging diagnostic is the largest manmade source of radiation exposure. Dose-response models have aided the study of effects of radiation from imaging diagnostic. Certain imaging tools have caused more radiation hazard towards patients such as computed tomography. Non-ionizing radiation imaging modalities have represented safer alternative. Medical practitioners should adopt as low as reasonably achievable principle during imaging diagnostic to avoid health hazard to patients.

**Keywords**: Radiation, Imaging diagnostics, Dose-response models, Modality specific effects.
Allergy: Effects on health and quality of life

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Abstract

Food allergy has been extensively studied with the advancement of technology and research strategy which gives more insight to the etiology of the condition. The comparative study of various diagnostic and therapeutic methods are crucial to develop a comprehensive management plan for allergic reaction triggered by the accidental food consumption. The diagnosis is based on cumulative results from SPT, IgE titration and oral food challenge. Food induced allergic reaction and immunotherapy provides an alternative to the use of symptom-relieving anti-histamine injector. Long term study is needed to evaluate the efficacy of OIT since it is yet to be concluded that the therapy induces permanent tolerance or simply short-term desensitization to the food. Phase II clinical trial should be carried out for the complementary medicine approach. Latest discovery of using interferon-gamma for tolerance induction was enlighten, but its mechanism and other strategy to prolong the tolerance effect remained to be elucidated. Multiparameter study should be included in future therapeutic study, which may include genetic analysis, histological examination, proteomics and bioinformatics, to assess the pathophysiology and the changes at the molecular, cellular and histological level in order to better equip us towards diagnosis and management of the condition.

Keywords: Allergy, food, health, disorders.

**Spectrum of HDM allergic rhinitis and asthma in Malaysia**

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**Abstract**

**Introduction:** Asthma prevalence is increasing worldwide. Its incidence is highest in the West and less common in developing countries. Allergic rhinitis and asthma prevalence is increasing in Malaysia as it progresses towards developed nation status. Careful assessment of clinical history and symptoms provide clues to the causative allergen but more definitive data is needed on the aetiological agents.

**Objective:** This paper reviews the spectrum of HDM related AR and asthma in Malaysia based on results of SPT.

**Method:** A Google Scholar search was undertaken of all published literature on HDM allergy in Malaysia.

**Results:** A total of 14 papers comprising 7 on AR, and 6 on asthma were published during the years 1992 to 2011. In the 7 studies comprising 1563 patients with AR, SPT for HD was positive in a mean of 71% (range 60 – 86%) of cases. In the 6 studies on asthma comprising 380 patients, the SPT for HDM was positive in a mean of 76% (range 50 – 90%) of cases. In another study (ref), positive SPTs with mite extracts were detected in more than 80% of asthmatic and rhinitis patients. Several HDM surveys suggested that *Dermatophagoides* species are an important source for the allergic sensitisation, but *Blomia tropicalis* has recently been identified as the most common and abundant species of HDM. Thirty five percentage of patients’ seeking treatment at Otorhinolaryngology Clinics in Malaysia suffer from allergic rhinitis. Allergic rhinitis and asthma often coexist.

**Conclusion:** There is increasing prevalence of AR and asthma associated with HDM sensitivity in Malaysia and the region. This is attributed to improvement in socioeconomic conditions, Westernized life styles and home environments conducive to proliferation of HDM and related HDM sensitivity.
Paediatric use of IV magnesium sulphate in severe asthma exacerbation: Report of a case and review of the literature

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Abstract
Nebulization with B-agonist and administration of systemic corticosteroids are standard treatments for severe asthma exacerbations, but corticosteroids take several hours to become effective. IV magnesium sulphate (MgSO4) acts faster and has both anti-inflammatory and bronchodilating properties. It appears to have played a pivotal role in the successful management of a child with severe asthma exacerbation and atelectasis unresponsive to conventional therapy. A literature review reveals that the results of IV MgSO4 are much greater in children than in adults, and can avoid the need to hospitalize 25% of children presenting with severe asthma. Magnesium sulphate appears safe to use.

Keywords: intravenous magnesium sulphate, asthma exacerbation, pulmonary atelectasis.

**Therapeutic effect of curcumin supplementation in the modulation of NF-κB responsive genes in a collagen-induced arthritis rat model**

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**Abstract**

**Aims:** To assess the therapeutic effect of curcumin supplementation in modulating the expression of NF-κB in the joints of collagen-induced arthritis (CIA) rats.

**Place and Duration of Study:** Department of Postgraduate Studies and Research, International Medical University, between July 2011 and May 2012.

**Methodology:** Arthritis was induced in each group of Dark Agouti (DA) rats, by intradermal injection with collagen emulsified in complete Freund’s adjuvant. Treatment groups which were induced with CIA were treated with: 500 mg/kg curcumin; 1000 mg/kg curcumin; 2000 mg/kg curcumin; 25 mg/kg aspirin. Combination treatment groups which were induced with CIA were treated with: 500 mg/kg curcumin and 25 mg/kg aspirin; 1000 mg/kg curcumin and 25 mg/kg aspirin; 2000 mg/kg curcumin and 25 mg/kg aspirin from day 25 to 38. Efficacy was assessed based on ability to reduce paw oedema, histopathological changes, NF-κB expression, serum tumour necrosis factor alpha (TNF-α), interleukin 1-beta (IL-1β) and glutathione peroxidase (GPx) levels.

**Results:** Based on histopathological study, immunohistochemical scoring of NF-κB and ELISA analysis of TNF-α, IL-1β and GPx levels, our study found that curcumin given after arthritis in high doses, shows effects of healing and this results were comparable to positive control group, which is the arthritic group treated with 25 mg/kg aspirin. Curcumin given in combination with aspirin, showed better reduction in pathology in arthritic group compared to positive control group, especially with higher doses of curcumin.

**Conclusion:** Curcumin was effective in reducing inflammatory changes seen in CIA joints which were proved through histopathological, immunohistochemical and biochemical analysis, however only at high doses.

**Keywords:** Curcumin; nuclear factor kappa B; collagen-induced arthritis; rheumatoid arthritis; glutathione peroxidase; tumour necrosis factor alpha; interleukin 1-beta.

Cytotoxic and antimicrobial activity of Ipomoea obscura

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Abstract

Background: The present study was aimed to investigate cytotoxicity and antimicrobial activities of successive extracts of Ipomoea obscura. Cytotoxic activity of successive plant extracts were tested against three human cancerous and three normal cell lines by using MTT and SRB assays. The CTC50 (the concentration that kills cells growth by 50%) was calculated for each extract. Antimicrobial activity of Ipomoea obscura extracts was evaluated against four different bacterial and two fungal strains using cup plate method and the zone of inhibition was calculated for each microorganism.

Results: Among the extracts tested, the successive methanol extract showed promising cytotoxic and moderate antimicrobial activities against human cancer cell lines and microbial strains, respectively.

Conclusion: This study contributes to the knowledge of anticancer efficacy of Ipomoea obscura from southern India.

Keywords: Cytotoxic, Antimicrobial Activity, Ipomoea obscura.
Large group teaching, an effective and efficient teaching methodology

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Abstract

In general sense, education is form of learning in which there is transfer of knowledge, skills and attitude from generation to generation by the means of teaching, training, research, or by self-directed learning. (Dewey, 1916/1944) The word teaching is defined in Oxford dictionary as “to impart knowledge to or instruct (someone) as to how to do something”. Dolmens defines learning as a collaborative, constructive, contextual and self directed process. (Dolmans et al., 2005) Large group teaching is a commonly utilized methods deployed for imparting quality teaching. With the use of lectures, efficient transfer of knowledge and concepts can be ensured. The main objective behind using Large group teaching has been to achieve better student understanding of concepts and help them acquire the core subject knowledge; give them a direction for self-directed learning. Better motivation of student is known to have positive impact upon their desire to learn. 4 Medical education has been known to utilize LECTURES and LARGE GROUP TEACHING methods for undergraduate/postgraduate teaching. Imparting core knowledge of new concepts in life sciences can be tough for new learners as well as the conventional teacher. Lectures constitute an efficient means for achieving the curriculum aims and objectives. A good learning experience may depend upon involvement of students by problem solving practices, learning activities during sessions to motivate deep subject learning rather than just have superficial or strategic knowledge base or an achieving type only.

Keywords: Large group teaching, Teaching learning methodologies, Medical education, Lecture.
Phospholipids as versatile polymer in drug delivery system: Review

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Abstract
Phospholipids become more and more important as pharmaceutical excipients. This review article summarizes meticulous features of phospholipids and their application in various drug delivery systems and elucidates numerous techniques to improve the bioavailability and disposition of drugs administered through various routes. The advantages of phospholipid based drug delivery systems not only enhance the bioavailability of drugs with poor aqueous solubility, membrane penetration, and also enhancement or alteration of uptake and release of drugs, protection of sensitive drugs from degradation in the gastrointestinal tract, reduction of gastrointestinal side effects and even masking of bitter taste of orally administered drugs. Various formulation strategies to achieve these effects are highly diverse and offer various possibilities of liquid, semi-solid and solid lipid-based formulations for drug delivery optimization such as liposomes, lipospheres, lipid nanoparticles, micelles, nanoemulsions, solid dispersion etc.,

Keywords: Phospholipid, Lecithin, Emulsifier, Permeation enhancer, Drug release, Carrier.

**Flavonoids with M-1 muscarinic acetylcholine receptor binding activity**

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**Abstract**

Muscarinic acetylcholine receptor-active compounds have potential for the treatment of Alzheimer’s disease. In this study, a series of natural and synthetic flavones and flavonols was assayed in vitro for their ability to inhibit radioligand binding at human cloned M1 muscarinic receptors. Several compounds were found to possess competitive binding affinity (Ki = 40–110 μM), comparable to that of acetylcholine (Ki = 59 μM). Despite the fact that these compounds lack a positively-charged ammonium group under physiological conditions, molecular modelling studies suggested that they bind to the orthosteric site of the receptor, mainly through non-polar interactions.

**Keywords:** Alzheimer’s disease; muscarinic acetylcholine receptor; binding activity; flavonoids; molecular modelling.
A qualitative insight of HIV/AIDS patients' perspective on disease and disclosure

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Abstract

Background: Understanding patients' knowledge and belief towards disease could play a vital role from an outcome perspective of disease management and HIV/AIDS patients are not exception to that.

Methods: Qualitative methodology was used to explore Malaysian HIV/AIDS patients' perspectives on disease and status disclosure. A semi structured interview guide was used to interview the patients and a saturation point was reached after the 13th interview. All interviews were audio-recorded and subjected to a standard content analysis framework.

Results: Understandings and beliefs towards HIV/AIDS and Perspective on disease disclosures were two main themes derived from patients' data. Beliefs towards causes and cure emerged as sub-themes under disease understandings while reasons for disclosure and non-disclosure were resulted as main sub-themes under disease disclosure. Majority of patients apprehended HIV/AIDS and its causes to acceptable extent, there were elements of spirituality and lack of education involved with such understandings. Though beliefs existed that knowing status is better than being ignorant, fear of stigma and discrimination, social consequences and family emotions were found important elements linked to disease non-disclosure.

Conclusions: The outcomes provided basic information about patients' perceptions towards disease and status disclosure among HIV/AIDS patients which can help in the designing and improvising existing strategies to enhance disease awareness and acceptance and will also serve as baseline data for future research further focusing on this subject.

Keywords: HIV/AIDS; disease disclosure; patients’ perspectives; qualitative exploration.

**Upregulation of insulin secretion and downregulation of pro-inflammatory cytokines, oxidative stress and hyperglycemia in STZ-nicotinamide-induced type 2 diabetic rats by *Pseuduvaria monticola* bark extract**

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**Abstract**

The current study aimed to ascertain the antidiabetic potential of *Pseuduvaria monticola* bark methanolic extract (PMm) using in vitro mechanistic study models. In particular, the study determined the effect of PMm on cellular viability, 2-NBDG glucose uptake, insulin secretion, and NF-jB translocation in mouse pancreatic insulinoma cells (NIT-1). Furthermore, in vivo acute toxicity and antidiabetic studies were performed using streptozotocin (STZ)-induced type 1 and STZ-nicotinamide-induced type 2 diabetic rat models to evaluate various biochemical parameters and markers of oxidative stress and pro-inflammatory cytokines. Five isoquinoline alkaloids and three phenolic compounds were tentatively identified in the PMm by LC/MS Triple TOF. The study results showed that PMm is non-toxic to NIT-1 cells and significantly increased the glucose uptake and insulin secretion without affecting the translocation of NF-jB. Moreover, the non-toxic effects of PMm were confirmed through an in vivo acute toxicity study, which revealed that the serum insulin and C-peptide levels were significantly upregulated in type 2 diabetic rats and that no significant changes were observed in type 1 diabetic rats. Similarly, PMm was found to downregulate the levels of oxidative stress and pro-inflammatory cytokines in type 2 diabetic rats by alleviating hyperglycemia. Therefore, we conclude that PMm may be developed as an antidiabetic agent for the treatment of type 2 diabetes-associated conditions.

**Keywords:** Diabetes mellitus, Type 2 diabetes, Cytokines, *Pseuduvaria monticola*, Antioxidant, Oxidative stress.

**Effect of Costus igneus: The insulin plant, on prediabetes and diabetes in neonatal streptozotocin rats**

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**Abstract**

**Introduction**: Pre-diabetes is a condition that persists for a considerable duration before progressing into type 2 diabetes mellitus (T2DM). Development of resistance to insulin is the underlying cause of pre-diabetes, preventive measures such as diagnosis, treatment and exercise will preclude its development into T2DM. The present study aims at studying the effect of pre-treatment and post-treatment with isolated fraction of Costus igneus on prediabetes and diabetes in neonatal streptozotocin (STZ) induced T2DM.

**Methods**: Neonatal rats were treated with STZ and differentiated for pre-treatment and post-treatment. Rats of pre-treated group were treated with isolated fraction of Costus igneus (CIF) from 4th week after STZ administration and after 12th week in non-treated rats of post-treatment group. The antihyperglycemic was studied on 7th and 12th week after STZ treatment using oral glucose tolerance test and the hypoglycemic effect was studied on day 1, 7, 14 and 21 of treatment after 12th week of STZ treatment in both pre and post treated groups.

**Results**: Oral glucose tolerance test on 7th and 12th week had shown a protective effect against increase in blood glucose levels in pre-treated groups whereas, no such significant decrease was observed in non-treated groups. In the effect on hypoglycemia, a reduction in blood glucose levels was observed on treatment with CIF in both pre and post treated rats on 14th and 21st day.

**Conclusions**: Treatment with CIF in pre-diabetic stage could reduce the chances of progression into T2DM and is also beneficial in diabetic rats, which could be due to increase in the peripheral utilization of glucose and the insulin mimetic effect of Costus igneus.

**Keywords**: Prediabetes; Type 2 Diabetes mellitus; Costus igneus; streptozotocin; neonatal.
Salt stress-induced protein pattern associated with photosynthetic parameters and andrographolide content in *Andrographis paniculata*. Nees

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Abstract

*Andrographis paniculata* is a multifunctional medicinal plant and a potent source of bioactive compounds. Impact of environmental stresses such as salinity on protein diversification, as well as the consequent changes in the photosynthetic parameters and andrographolide content (AG) of the herb, has not yet been thoroughly investigated. The present study showed that the salinity affects the protein pattern, and subsequently, it decreased the photosynthetic parameters, protein content, total dry weight, and total crude extract. Exceptionally, the AG content was increased ($p \leq 0.01$). Moreover, it was noticed that the salinity at 12 dS m$^{-1}$ led to the maximum increase in AG content in all accessions. Interestingly, the leaf protein analysis revealed that the two polymorphic protein bands as low- and medium-sized of 17 and 45 kDa acted as the activator agents for the photosynthetic parameters and AG content. Protein sequencing and proteomic analysis can be conducted based on the present findings in the future. Impact of salinity on the protein pattern, photosynthetic parameters and andrographolide content in *Andrographis paniculata* Nees.

Keywords: *Andrographis paniculata*, andrographolide content (AG), leaf protein, net photosynthetic rate, salinity stress.

**Elucidating the roles of miR-372 in cell proliferation and apoptosis of nasopharyngeal carcinoma TW01 cells**

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**Abstract**

**Aim:** Deregulation of microRNA has been associated with cancer progression and the modification of cancer phenotypes could be achieved by targeting microRNA expression. This study aimed to determine the effects of miR-372 on cell progression and gene expression in nasopharyngeal carcinoma cell line, TW01.

**Materials and Methods:** NPC TW01 cells were transfected with the miR-372 precursor molecules. Gene expression studies were conducted using RT-PCR assays for nine cancer related genes. The effects of miR-372 on cell proliferation, cell cycle arrest and apoptosis were also investigated.

**Results:** Expression of miR-372 caused cell cycle arrest at the S phase that was accompanied by an overall decrease of cells entering the G2/M phase. miR-372 did not have any significant effect on apoptosis. Of the nine genes studied, four were up-regulated, namely CDKN1A, INCA1, LATS2 and BIRC5. The other five genes — CDK2, CCNA1, TP53, BAX and BCL2 were down-regulated by miR-372.

**Conclusion:** This preliminary study indicated the tumor suppressing roles of miR-372 in cell cycle progression of TW01 cells, possibly via the down-regulation of CDK2 and CCNA1 as well as the up-regulation of CDKN1A and INCA1.

**Keywords:** apoptosis, microRNA, nasopharyngeal carcinoma, miR-372, CDK2, CCNA1.
Knowledge, attitude and practice on dengue among rural communities in Rembau and Bukit Pelanduk, Negeri Sembilan, Malaysia

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Abstract

Aims: The aim of the study was to assess the level of knowledge, attitude and practices concerning dengue among rural communities of Rembau and Bukit Pelanduk district, Negeri Sembilan, Malaysia.

Study Design: This was a community based cross-sectional study.

Place and Duration of Study: The study was conducted among household members in two villages from Rembau and Bukit Pelanduk districts respectively in Negeri Sembilan, Malaysia in August 2010.

Methodology: A total of 400 respondents were included in the study with 100 respondents from each of the four villages. Data was collected by a face-to-face interview of all residents aged 18 years and above in the selected households using a pretested structured questionnaire. The questionnaire consist of three sections; the first section concerned with knowledge comprising of 10 questions, the second part related to attitude comprised of six questions and the third part concerned with practice with seven questions.

Results: It was found that knowledge among the respondent was only adequate. The main source of information on dengue was from the television or radio (88.5%). The respondents’ attitude was good and most was supportive of Aedes control measures. There was significant association between knowledge and attitude (P<0.001) with an Odds Ratio of 3.8 (95% CI: 2.2, 6.7). Knowledge was associated with age, ethnicity and educational level; attitude was associated with ethnicity and educational level while practice was associated with ethnicity and marital status.

Conclusion: Attitude and practice among respondents were good but knowledge was poor. However, isolated knowledge on symptoms and prevention was adequate. The results are useful as a baseline data for future health education and promotion intervention programs for rural communities.

Keywords: Dengue; aedes; socio-demographic; rural community; Malaysia.

**MARK’s Quadrant scoring system: A symptom-based targeted screening tool for gastric cancer**

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**Abstract**

**Background**: Gastric cancer is notably one of the leading causes of cancer-related death in the world. In Malaysia, these patients present in the advanced stage, thus narrowing the treatment options and making the surgery nearly impossible for successful curative resection. Failure to identify high-risk patients and delay in diagnostic endoscope procedure contributed to the delay in diagnosis. The aim of the study was to develop and validate a scoring system (MARK’s Quadrant) which can identify symptomatic patients who are at risk for gastric cancer.

**Methods**: A 3-phase approach was undertaken: Phase 1: development of the weighted scoring system; Phase 2: estimating positive predicting value of MARK’s Quadrant; and Phase 3: a) testing the validity of MARK’s Quadrant in an open-access endoscope system; and b) comparing its usefulness compared to conventional referral system.

**Results**: In phases 1 and 2, MARK’s Quadrant with weighted symptoms was developed. The sensitivity of MARK’s Quadrant is 88% and the specificity is 45.5% to detect cancerous and precancerous lesions of gastric. This was confirmed by the prospective data from phase 3 of this study where the diagnostic yield of MARK’s Quadrant to detect any pathological lesion was 95.2%. This score has a high accuracy efficiency of 75%, hence comparing to routine referral system it has an odds ratio (95%CI) of 10.98 (4.63-26.00), 6.71 (4.46-10.09) and 0.95 (0.06-0.15) (P<0.001 respectively) for cancer, precancerous lesion and benign lesion diagnosis respectively.

**Conclusion**: MARK’s Quadrant is a useful tool to detect early gastric cancer among symptomatic patients in a low incidence region.

**Keywords**: Open-access endoscope, targeted screening, early gastric cancer.
Bacterial constituents of indoor air in a high throughput building in the tropics

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Abstract
Airborne bacteria are significant biotic constituents of bioaerosol. Bacteria at high concentrations in the air can compromise indoor air quality (IAQ) and result in many diseases. In tropical environments like Malaysia that extensively utilize air-conditioning systems, this is particularly significant due to continuous recirculation of indoor air and the potential implications for human health. Currently, there is a lack of knowledge regarding the impact of airborne bacteria on IAQ in Malaysia. This study was prompted by a need for reliable baseline data on airborne bacteria in the indoor environment of tropical equatorial Malaysia that may be used as a reference for further investigations on the potential role played by airborne bacteria as an agent of disease in this region. It was further necessitated due to the threat of bioterrorism with the potentiality of release of exotic pathogenic microorganisms into indoor or outdoor air. Before scientists can detect the latter, a gauge of the common microorganisms in indoor (as well as outdoor) air needs to be ascertained, hence the expediency of this study. Bacterial counts from the broad-based and targeted study were generally in the order of 10² colony-forming units (CFU) per m³ of air. The most prevalent airborne bacteria found in the broad-based study that encompassed all five levels of the building were Gram-positive cocci (67.73%), followed by Gram-positive rods (24.26%) and Gram-negative rods (7.10%). Gram negative cocci were rarely detected (0.71%). Amongst the genera identified, Kyrtococcus sp., Micrococcus sp., Staphylococcus sp., Leifsonia sp., Bacillus sp. and Corynebacterium sp. predominated in indoor air. The most dominant bacterial species were Kyrtococcus sedentarius, Staphylococcus epidermidis and Micrococcus luteus. The opportunistic and nosocomial pathogen, Stenotrophomonas maltophilia was also discovered at a high percentage in the cafeteria. The bacteria isolated in this study have been increasingly documented to cause opportunistic infections in immuno-compromised patients, sometimes with fatal outcomes. Furthermore, some of them are becoming increasingly resistant to antibiotics. Hence, we propose that indoor reservoirs of these bacteria and their associated clinical and more subtle health effects, if any, be investigated further.
Bibliography of clinical research in Malaysia: Methods and brief results

Cheong Lieng Teng, Zuhanariah Mohd Nordin, Chun Sien NG, Cheng Chun Goh.

International Medical University, Malaysia.

Abstract
This article describes the methodology of this bibliography. A search was conducted on the following: (1) bibliographic databases (PubMed, Scopus, and other databases) using search terms that maximize the retrieval of Malaysian publications; (2) Individual journal search of Malaysian healthrelated journals; (3) A targeted search of Google and Google Scholar; (4) Searching of Malaysian institutional repositories; (5) Searching of Ministry of Health and Clinical Research Centre website. The publication years were limited to 2000-2013. The citations were imported or manually entered into bibliographic software Refworks. After removing duplicates, and correcting data entry errors, PubMed’s Medical Subject Headings (MeSH terms) were added. Clinical research is coded using the definition “patient-oriented-research or research conducted with human subjects (or on material of human origin) for which the investigator directly interacts with the human subjects at some point during the study.” A bibliography of citations [n=2056] that fit the criteria of clinical research in Malaysia in selected topics within five domains was generated: Cancers [589], Cardiovascular diseases [432], Infections [795], Injuries [142], and Mental Health [582]. This is done by retrieving citations with the appropriate MESH terms, as follow: For cancers (Breast Neoplasms; Colorectal Neoplasms; Uterine Cervical Neoplasms), for cardiovascular diseases (Coronary Disease; Hypertension; Stroke), for infections (Dengue; Enterovirus Infections, HIV Infections; Malaria; Nipah Virus; Tuberculosis), for injuries (Accidents, Occupational; Accidents, Traffic; Child Abuse; Occupational Injuries), for mental health (Depression; Depressive Disorder; Depressive Disorder, Major; Drug Users; Psychotic Disorders; Suicide; Suicide, Attempted; Suicidal Ideation; Substance-Related Disorders).
Antibiotic prescribing for upper respiratory tract infection in the Asia-Pacific region: A brief review

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Abstract
This review highlights the high prevalence of antibiotic use for upper respiratory tract infections (URTIs) in a larger part of the Asia-Pacific region. Since URTIs are one of the common reasons for primary care consultations in this region, inappropriate use of antibiotic in both quantity and drug choice has greatly influenced the development of antibiotic resistance. Notwithstanding the paucity of Asia-Pacific data on the above issues, the available information suggests urgent actions needed to be taken to promote judicious antibiotic use at the point-of-care through a multipronged approach targeting the patients/consumers (or parents), healthcare providers and health care systems.
Pre-emptive intraperitoneal local anaesthesia: An effective method in immediate post-operative pain management and metabolic stress response in laparoscopic appendicectomy, a randomized, double-blinded, placebo-controlled study

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Abstract

Background: Although laparoscopic surgeries are associated with reduced surgical stress response and shortened post-operative recovery, intense pain and high analgesia requirements in the immediate post-operative period are often the chief complaints.

Aim: The aim of this study was to evaluate the effect of pre-emptive intraperitoneal local anaesthetic drugs on post-operative pain management and metabolic stress response in laparoscopic appendicectomy.

Method: The method used was a randomized double-blinded placebo-controlled study. Patients with clinical diagnosis of acute appendicitis who fulfilled the criteria, were taken into this study. Primary outcomes investigated were consumption of patient controlled analgesia during the immediate post-operative period (first 6 h) and subsequent 18 h as well as serum cortisol sampling.

Results: Total of 120 patients were recruited into three different treatment groups (placebo, ropivacaine, levobupivacaine). In order to maintain visual analogue score of 0–1 during the immediate post-operative period, patients in the placebo group required significantly ($P < 0.001$) higher dose of analgesia (morphine/mg) – 11 mg (8.3–15.5) as compared with ropivacaine – 4 mg (3.0–6.0) and levobupivacaine – 3.5 mg (2.0–5.0). The immediate post-operative serum cortisol showed a significant increase in serum cortisol in the placebo group ($P = 0.001$) as compared with ropivacaine and levobupivacaine groups.

Conclusion: Pre-emptive intraperitoneal local anaesthesia in laparoscopy surgery is a safe, non-invasive procedure that can benefit patients by reducing the immediate post-operative pain intensity and metabolic stress response of the body.

Keywords: intraperitoneal local anaesthesia, metabolic stress response, pre-emptive analgesia.

**Some unusual asthma triggers in tropical climes: An evidence-based review**

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**Abstract**

**Introduction:** Malaysia, a multi-racial country embraces different religious practices and customs. In this bazaar, we identified some unique asthma triggers that need sharing with other doctors. Awareness of these triggers can lead to better prevention and management.

**Objectives:** This study reviews the evidence incriminating chichak, frankincense and myrrh, durian, *Ascaris*, and spices as asthma triggers.

**Methods:** A search was carried on these agents’ relationship to asthma using Google Scholar.

**Results:** Chichak (*Hemidactylus frenatus*). In tropical countries, chichak droppings accumulate behind furniture, pictures, and along walls. The faeces may contain *salmonella* and crypto-sporidiosis. Over time fungi growing on it liberate spores into the air causing allergies and asthma exacerbation. Frankincense and myrrh. Arabian incense burning is a known common asthma trigger among asthmatic Omani children. A report in the Bethlehem Journal of Medicine reveals that can cause ailments including asthma. Durian. This fruit known to “taste like heaven but smells like hell” is revolting and may cause anaphylaxis, but has not been proven to cause asthma. *Ascaris*. A large study on the interrelationships between asthma, atopy and helminthic infection in children from asthmatic families in rural China has shown that *Ascariasis* is closely associated with increased risk of childhood asthma, increased airway responsiveness to methacholine and was independent of sensitization to common aeroallergens. Spices. With globalization, curry is popular internationally. Capsaicin causes bronchoconstriction. As authentic curries are not tolerated by all, restaurateurs add tartrazine, a well-known trigger for asthma.

**Conclusion:** There is adequate objective evidence to label chichak, frankincense, *Ascaris* and spices, but not durian as asthma triggers. Preventive measures can reduce acute asthmatic attacks in sensitive individuals.

**Inhibitory potency of 8-methoxypsoralen on cytochrome P450 2A6 (CYP2A6) allelic variants CYP2A6*15, CYP2A6*16, CYP2A6*21 and CYP2A6*22: Differential susceptibility due to different sequence locations of the mutations**

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**Abstract**

Human cytochrome P450 2A6 (CYP2A6) is a highly polymorphic isoform of CYP2A subfamily. Our previous kinetic study on four CYP2A6 allelic variants (CYP2A6*15, CYP2A6*16, CYP2A6*21 and CYP2A6*22) have unveiled the functional significance of sequence mutations in these variants on coumarin 7-hydroxylation activity. In the present study, we further explored the ability of a typical CYP2A6 inhibitor, 8-methoxypsoralen (8-MOP), in inhibition of these alleles and we hypothesized that translational mutations in these variants are likely to give impact on 8-MOP inhibitory potency. The CYP2A6 variant and the wild type proteins were subjected to 8-MOP inhibition to yield IC50 values. In general, a similar trend of change in the IC50 and Km values was noted among the four mutants towards coumarin oxidation. With the exception of CYP2A6*16, differences in IC50 values were highly significant which implied compromised interaction of the mutants with 8-MOP. Molecular models of CYP2A6 were subsequently constructed and ligand-docking experiments were performed to rationalize experimental data. Our docking study has shown that mutations have induced enlargement of the active site volume in all mutants with the exception of CYP2A6*16. Furthermore, loss of hydrogen bond between 8-MOP and active site residue Asn297 was evidenced in all mutants. Our data indicate that the structural changes elicited by the sequence mutations could affect 8-MOP binding to yield differential enzymatic activities in the mutant CYP2A6 proteins.
Health innovation project: A concept paper on a virtual health promotion program for men

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Abstract

Many causes of mortality and morbidities in men are preventable. Men's poor engagement in health-promoting activities has been attributed to the socially constructed male gender identity. Hence, health innovations to promote men's health have to take into the account their social identity and health-seeking behavior. The innovation should be flexible, interactive, discreet, informative, and user-friendly. It should also facilitate self-care. Innovations that deploy information and computer technology (ICT) are promising. MyMan, a future web and mobile application that incorporates self-assessment, individual risk calculation, projection of future health status, and tailored advice, is in the process of prototype development for testing in the community. The main concern about this application is that it may have limited usefulness to an ICT-naive population. However, this may be overcome by having a similar application in health clinics where assistance in using the technology can be provided. A randomized controlled trial will be conducted to examine the effectiveness of this innovation, which takes into account men's needs for convenience and privacy. Given the widespread use and flexibility of ICT, it has great potential and deserves further evaluation.

Keywords: health promotion; health-seeking behavior; information and computer technologies; masculinities; men's health.
Cyclamen europaeum extract for acute sinusitis (Protocol)

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Abstract
This is the protocol for a review and there is no abstract. The objectives are as follows: To assess the effectiveness of topical intranasal Cyclamen europaeum extract on clinical response in adults and children with acute sinusitis.

A classical genetic solution to enhance the biosynthesis of anticancer phytochemicals in *Andrographis paniculata* Nees

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Abstract

Andrographolides, the diterpene lactones, are major bioactive phytochemicals which could be found in different parts of the medicinal herb *Andrographis paniculata*. A number of such compounds namely andrographolide (AG), neandrographolide (NAG), and 14-deoxy-11,12 didehydroandrographolide (DDAG) have already attracted a great deal of attention due to their potential therapeutic effects in hard-to-treat diseases such as cancers and HIV. Recently, they have also been considered as substrates for the discovery of novel pharmaceutical compounds. Nevertheless, there is still a huge gap in knowledge on the genetic pattern of the biosynthesis of these bioactive compounds. Hence, the present study aimed to investigate the genetic mechanisms controlling the biosynthesis of these phytochemicals using a diallel analysis. The high performance liquid chromatography analysis of the three andrographolides in 210 F1 progenies confirmed that the biosynthesis of these andrographolides was considerably increased via intraspecific hybridization. The results revealed high, moderate and low heterosis for DDAG, AG and NAG, respectively. Furthermore, the preponderance of non-additive gene actions was affirmed in the enhancement of the three andrographolides contents. The consequence of this type of gene action was the occurrence of high broad-sense and low narrow-sense heritabilities for the above mentioned andrographolides. The prevalence of non-additive gene action suggests the suitability of heterosis breeding and hybrid seed production as a preferred option to produce new plant varieties with higher andrographolide contents using the wild accessions of *A. paniculata*. Moreover, from an evolutionary point of view, the occurrence of population bottlenecks in the Malaysian accessions of *A. paniculata* was unveiled by observing a low level of additive genetic variance (VA) for all the andrographolides.

**A case of prolonged fever and a diagnosis obscured by an opaque sinus**

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**Abstract**

Prolonged fever in patients can be a diagnostic challenge. Clinicians generally consider infectious diseases, malignant diseases and collagen vascular diseases as possible causes of pyrexia of unknown origin (PUO). Even after extensive evaluation as many as 15 percent of patients with prolonged fever may remain undiagnosed. This case report describes subacute thyroiditis as a cause of prolonged fever and documents how that diagnosis was finally made after 40 days of fever.

**Keywords:** Fever of Unknown Origin; Thyroiditis, subacute.

An assessment of the level of awareness, attitudes, opinions of pharmacy students concerning HIV and AIDS in Malaysia

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Abstract

Aims: HIV and AIDS spreading wide and causing serious threats and deaths among Malaysian residents. A nationwide cross-sectional survey was conducted to assess the awareness, attitudes and opinions about HIV and AIDS among pharmacy students.

Methods: A total of 316 pharmacy students of year three and onwards took part in the survey. Students were asked to fill in questionnaires with consent forms. The results were analyzed by using SPSS version 17.

Results: The data indicated that awareness about HIV and AIDS was moderate. High level of awareness was seen for major routes of HIV transmissions, but lower level of awareness was seen for other modes of transmission like circumcision, visiting barbers, and blood splashes on outer body surface. Only 19.3% and 13.3% of respondents were aware about HIV prevention by sex abstinence and by staying faithful to one partner respectively. The respondents had doubts in keeping HIV and AIDS patients in close vicinity to them and their family.

Conclusion: According to the findings, the respondents had a few misconceptions about HIV transmission and prevention. Data from this survey may be useful to hold programs and campaigns designed to convey accurate information about HIV transmission and prevention. Talks and media campaigns should also be carried out to change their attitudes and opinions about HIV and AIDS.

Keywords: HIV and AIDS; awareness; attitudes; opinions; pharmacy students.

**Review on treatment of premenstrual syndrome: From conventional to alternative approach**

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**Abstract**

Premenstrual syndrome (PMS) is the most common problem associated with women’s health. Most women take alternative therapies for the treatment of PMS along with conventional therapies. A literature search was conducted which investigated various conventional and alternative therapies for the treatment of PMS. Web- and manual-based literature surveys were conducted to assess the information available on conventional and alternative treatment of PMS. PubMed, Scopus, and Google scholar databases were screened, using the terms ‘PMS and its management’, ‘pharmacotherapy of PMS’, ‘Alternative therapies for the treatment of PMS’. Publications with abstract/full articles and books were reviewed. Based on the available literature, there have been randomized clinical trials (RCTs) and high levels of evidence studies. The review addressed that drosperrnone with ethinylestradiol has shown great improvement in symptoms of PMS in various RCTs. Among the alternative therapies use of micronutrients and herbs were found effective in treatment for symptoms of PMS.

**Keywords:** alternative therapies; herbs; micronutrients; premenstrual syndrome.
Role of pioglitazone on progression of atherosclerosis in prediabetes

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Abstract
Prediabetes is an intermediate stage between normal glycemia and clinical diabetes. Individual with prediabetes condition are more prone to diabetes and its associated cardiovascular disorder. Early intervention of prediabetes subjects reduces the development of diabetes and cardiovascular disease. Pioglitazone, a thiazolidinedione (TZD) insulin sensitizer, is known to reduce risk of atherosclerosis in prediabetic and diabetic subjects. Various preclinical and clinical studies have been shown the protective effect of Pioglitazone on atherosclerosis in prediabetic and type 2 diabetic patients. Neutralization of cardiovascular risk factor associated with insulin resistance was turn out to be more important than its effect on blood glucose in spite of its controversy of bladder cancer.

Keywords: Prediabetes, Pioglitazone, Atherosclerosis.

**Textaphrenia: An emerging silent pandemic**

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**Abstract**

We read the article by Ramlall et al (2013) with great interest which presents one of the few studies conducted on African population for prevalence of Dementia and Minimal Cognitive Deficits. The study brings to the fore some important data regarding the prevalence of Minimal cognitive impairment (MCI) and dementia in the African population as well as their socio-demographic profiles. Additionally the authors have also detailed the associated medical problems with these disorders in the backdrop of the available literature. However, we would humbly like to point out an important lacuna in the diagnostic evaluations used in the study which is common to earlier prevalence studies of dementia and MCI.

**Keywords:** Dementia; Lewy Body Disease; Minimal Cognitive Impairment.
Socio-demographic correlates of unipolar major depression among the Malay elderly in Klang Valley, Malaysia: An intensive study

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Abstract

Objectives: The present study was carried out with the following aims: To determine the prevalence of unipolar major depression among the Malay elderly in Klang Valley, Malaysia; to study the socio-demographic correlates of unipolar major depression in Malay ethnic group; and to study the chronic co-morbid conditions associated with unipolar major depression in Malay ethnic group.

Methods: A cross-sectional study was conducted within Klang Valley region, Malaysia, and subjects recruited were elderly Malay aged 60 and above. WHO validated questionnaire (English version) was chosen and translated into Malay, and the Malay version of the questionnaire was used to identify the status of unipolar major depression.

Results: The prevalence of unipolar major depression among the Malay elderly living in Klang Valley, Malaysia was found to be 20.9%. Using multi variant analysis, type of family (joint/extended), smoking habits (smoker), acknowledgement of memory problem/depressed mood (acknowledged), and positive status of well-being (poor) were determined to be significantly associated with depression.

Conclusion: The prevalence of unipolar major depression among Malay elderly within Klang Valley, Malaysia appears to be much higher than studies done in previous years, but is comparable to other countries. Prevention of depression is essential to be done among the elderly, as this age group of individuals is very susceptible to depression.

Keywords: Depression, Epidemiology, WHO (five) well-being index, Major (ICD-10) Depression Inventory, The 6-CIT Dementia Test, elderly Malay, Malaysia.

**Socio-demographic correlates of Unipolar Major Depression among the Chinese elderly in Klang Valley, Malaysia: An epidemiological study**

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**Abstract**

**Background:** Depression, as one of the most disabling diseases around the world, had caught the global concern with its rising prevalence rate. There is a growing need of detecting depression, particularly in the old age population which is often left being overlooked.

**Methods:** We conducted a cross-sectional community-based study which included 150 Chinese elderly aged 60 and above within Klang Valley area. We obtained the sociodemographic profiles and assessed the status of well-being, depression, and cognitive function of the participants with the help of instruments: WHO Five-Item Well-Being Index, Major (ICD-10) Depression Inventory, and 6-Item Cognitive Impairment Test.

**Results:** We found that the prevalence of depression among the Chinese elderly within Klang Valley region was 10.7%. With multiple logistic regression, decision to consult doctor on depressed mood or memory problem and presence of cognitive impairment were shown to be significantly associated with unipolar major depression, whereas wellbeing status was also found to be statistically correlated with depression in univariate analysis.

**Conclusion:** The prevalence of unipolar depression among Chinese elderly within Klang Valley, Malaysia presented that there was an increased trend compared to the previous studies.

Herbal medicines used in the traditional Indian medicinal system as a therapeutic treatment option for overweight and obesity management: A review

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Abstract
In recent years, obesity has become a major health problem worldwide, affecting people across all ages, sex, ethnicities, and races, and its prevalence has been increasing at an alarming rate. Currently, pharmacologic agents available to treat obesity carry high costs and serious side effects. In contrast, natural products used in the conventional Indian medicinal system have been applied effectively in clinical practice and may be potential targets in the development of future cost effective anti-obesity drugs with less side effects. A comprehensive chemical and pharmacological review of numerous bioactive constituents established in Indian medicinal plants used to treat obesity was performed. Data on 30 medicinal plants were reviewed, taking into consideration their biological sources, anti-obesity active principles, and pharmacological test results, which are typically applied in the indigenous Indian system of medicine. In the modern era, various medicines have been developed for overweight and obese people, but nearly all are chemical or biochemical agents. There is a need to create awareness regarding the evidence for and use of herbal medicines in the management and treatment of obesity.

Keywords: Obesity; Overweight management; Traditional Indian medicine; Natural medicine; Randomised clinical trial; Clinician-Pharmacist expectations; Appropriate herbal formulation; Potential risks.
An assessment of the level of awareness, attitudes, and opinions of the medical students concerning HIV and AIDS in Malaysia

Rohit Kumar Verma¹, Shradha Batuk Bavisi¹, Syed Imran Ahmed¹ and Ankur Barua².

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²Department of Community Medicine, International Medical University, Kuala Lumpur, Malaysia – 57000, Malaysia.

Abstract

Aims: HIV and AIDS spreading wide and causing serious threats and deaths among Malaysian residents. A nationwide cross-sectional survey was conducted to assess the awareness, attitudes and opinions about HIV and AIDS among pharmacy students.

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Conclusion: According to the findings, the respondents had a few misconceptions about HIV transmission and prevention. Data from this survey may be useful to hold programs and campaigns designed to convey accurate information about HIV transmission and prevention. Talks and media campaigns should also be carried out to change their attitudes and opinions about HIV and AIDS.

Keywords: HIV and AIDS; awareness; attitudes; opinions; pharmacy students.
Neurocysticercosis

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Abstract

A 19-year-old Chinese man presented with progressive ascending weakness of his left lower limb for 1 week. There was no loss of sensation. His other limbs were unaffected. He also complained of progressive, painless blurring of vision in his left eye for the past 1 month. He has an affinity for wild boar meat from local Chinese restaurants, which he has been consuming on a daily basis for the last 2 years. He denied any fever, headache, high risk behaviour for acquisition of human immunodeficiency virus (HIV) infection or recent travels. He had bronchial asthma in childhood, but the symptoms are minimal now and there was no recent acute exacerbations. Physical examination was unremarkable except for the left lower limb power of 3/5 and bilateral papilloedema on direct ophthalmoscopy. A Contrast-enhanced computed tomography (CECT) scan of the brain (Image 1) and Magnetic resonance imaging (MRI) of the brain (Images 2 and 3) were performed. The total leucocyte count was 9.2x10⁹/L, C-reactive protein was 1.2 and erythrocyte sedimentation rate was 6 mm/h. Human immunodeficiency virus screening was negative, anti-toxoplasma antibodies were not detected and serological testing for anti-cysticercal antibodies via enzyme linked immunosorbent assay (ELISA) did not produce a positive yield. He was treated with oral albendazole for 28 days and corticosteroids, which led to rapid and total resolution of his neurological deficits and CT findings within 6 weeks.

Keywords: neurocysticercosis, Taenia solium, wild boar meat.

**In vitro differentiation of mesenchymal stem cells into mesangial cells when co-cultured with injured mesangial cells**

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**Abstract**

Mesangial cells are one of the three major cell types of the kidney glomerulus that provide physical support for the glomerular capillary lumen of the kidney. Loss of mesangial cells due to pathologic conditions, such as glomerulonephritis and diabetic nephropathy, can impair renal function. Mesenchymal stem cells (MSC) are attractive candidates for kidney repair therapy since they can enhance recovery and protect against kidney failure. MSC can differentiate into mesangial cells in vivo. We have investigated the ability of MSC to differentiate into mesangial cells in vitro; they were co-cultured with oxidant-injured mesangial cells before being analysed by flow cytometry and for contractility. MSC co-cultured with injured mesangial cells had a mesangial cell-like morphology and contracted in response to angiotensin II. They expressed CD54⁺CD62E⁺ in direct contrast to the CD54⁻CD62E⁺ of pure MSC. In conclusion, MSC can differentiate into mesangial cells in vitro when co-cultured with injured mesangial cells.

**Keywords:** co-culture; in vitro differentiation; mesenchymal stem cell; mesangial cell; kidney injury.
Anti-adipogenic effects of *Ficus deltoidea* var. deltoidea and var. angustifolia on 3T3-L1 adipocytes

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**Abstract**

**Objective:** This study examined the anti-adipogenic effects of extracts of *Ficus deltoidea* var. deltoidea and var. angustifolia, a natural slimming aid, on 3T3-L1 adipocytes.

**Methods:** Methanol and water extracts of leaves of the *F. deltoidea* varieties were analyzed to determine their total flavonoid content (TFC) and total phenolic content (TPC), respectively. The study was initiated by determining the maximum non-toxic dose (MNTD) of the methanol and water extracts for 3T3-L1 preadipocytes. Possible anti-adipogenic effects were then examined by treating 2-d post confluent 3T3-L1 preadipocytes with either methanol extract or water extract at MNTD and half MNTD (½MNTD), after which the preadipocytces were induced to form mature adipocytes. Visualization and quantification of lipid content in mature adipocytes were carried out through oil red O staining and measurement of optical density (OD) at 520 nm, respectively.

**Results:** The TFCs of the methanol extracts were 1.36 and 1.97 g quercetin equivalents (QE)/100 g dry weight (DW), while the TPCs of the water extracts were 5.61 and 2.73 g gallic acid equivalents (GAE)/100 g DW for var. deltoidea and var. angustifolia, respectively. The MNTDs determined for methanol and water extracts were (300.0±28.3) and (225.0±21.2) μg/ml, respectively, for var. *deltoidea*, while much lower MNTDs [(60.0±2.0) μg/ml for methanol extracts and (8.0±1.0) μg/ml for water extracts] were recorded for var. *angustifolia*. Studies revealed that the methanol extracts of both varieties and the water extracts of var. *angustifolia* at either MNTD or ½MNTD significantly inhibited the maturation of preadipocytes.

**Conclusions:** The inhibition of the formation of mature adipocytes indicated that leaf extracts of *F. deltoidea* could have potential anti-obesity effects.

**Keywords:** Adipogenesis, *Ficus deltoidea*, Flavonoids, Natural products, Obesity.
Factors influencing macrosomia in pregnant women in a tertiary care hospital in Malaysia

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Abstract
Aim: To identify the risk factors influencing the development of macrosomia among pregnant women and to develop a regression model to predict macrosomia.

Methods: A cross-sectional study was conducted in a tertiary hospital in Malaysia involving 2332 pregnant women. The data was retrospectively collected from the obstetrics and gynecology department. The factors that influence fetal weight were collected from the antenatal cards and any additional information was collected by face-to-face interview using a questionnaire. A multiple regression model was developed to predict macrosomia using SPSS ver. 18.

Results: The significant variables that influence macrosomia in this study were mother’s age, mother’s body mass index (BMI), weight gain, parity, mother’s ethnicity, father’s BMI, gestational week, diabetes during pregnancy and neonatal sex. Diabetes during pregnancy is an important risk factor for macrosomia; by using this parameter alone the risk of macrosomia can be predicted with a sensitivity rate of 70% and specificity of 70%. By including other maternal factors such as maternal age, pre-pregnancy BMI, weight gain, parity, ethnicity, as well as father’s BMI, gestational weeks and neonate sex, the sensitivity and specificity were improved to 80% and 75%, respectively.

Conclusion: A regression model was developed and this could be used in health centers to predict macrosomia for purpose of referral to higher centers.

Keywords: large baby; maternal factors; predictors of birthweight.
Salmonella septic arthritis of the knee in a child

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Abstract
Infection with Salmonella spp can result in a variety of presentations such as enteric fever, septicemia, gastroenteritis, and septic arthritis. The common organisms seen in septic arthritis are Staphylococcus aureus and Streptococci which accounts for about 67% and 20% respectively. Salmonella spp however is less commonly seen in septic arthritis and it is usually associated with immunosuppression conditions and underlying chronic debilitating diseases such as malignancy, hemoglobinopathy, diabetes mellitus, and HIV. We report a case of septic arthritis in a healthy child caused by Salmonella spp in a hospital. A Similar incidence of salmonella spp arthritis is reported in Africa.
Factors influencing acute exacerbation of bronchial asthma among children in Malaysia

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²International Medical University, Bukit Jali, Malaysia

Abstract
The aim of this study was to determine the factors influencing acute exacerbation of bronchial asthma among children in Malaysia. A cross-sectional study was done to identify the factors influencing acute exacerbation of asthma in the University Malaya Medical Centre. In this study 103 known asthmatic children between the ages of 2 to 12 years were analysed. Among the children, 60% had a family history of asthma, 39% allergic rhinitis and only 17% eczema. The main complaints were coryza (84%) and shortness of breath (88%). Majority of the patients were treated as out-patient (58%) and only two were admitted in Intensive Care Unit. The factors that were significantly associated with mild exacerbation compared to a moderate to severe exacerbation was well-controlled asthmatic, good compliance to medications and those who had regular follow up.

Keywords: Bronchial asthma, exacerbation, factors associated.

**Unsafe riding practice among electric bikers in Suzhou, China: An observational study**

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**Abstract**

**Background:** Electric bike (E-bike)-related deaths have been increasing rapidly in China and such injuries may be partly attributable to unsafe riding practice.

**Objectives:** To describe potentially unsafe riding behaviours among electric bikers (E-bikers) and to investigate factors influencing these practices in China.

**Methods:** In September 2012, a cross-sectional observation study including a speed measurement component was conducted in Wuzhong (an urban district) and Zhangjiagang (a rural district) of Suzhou, Jiangsu Province, China. Hand-held radar speed metres were used to read travelling speeds of E-bikes and a pro forma observation checklist was used to collect data on road riding practice. Mixed-effect logistic regressions were used to calculate adjusted ORs and 95% CIs for the association between speeding, road rule violations and helmet use and their influencing factors.

**Results:** Among 800 E-bikes with a speed reading, 70.9% exceeded the designed speed limit of 20 km/h. Among a further 20,647 E-bikers observed, 38.3% did not comply with the road rules when entering intersections; and only 2.2% wore helmets. No regional variation was identified between urban and rural areas. Male E-bikers were associated with more speeding and road rule violations, whereas riding a pedal-equipped E-bike was associated with less road rule violations and less helmet use.

**Conclusions:** Unsafe riding practices such as speeding, road rule violations and lack of helmet use were commonplace among E-bikers, especially among men. The study findings indicate that measures aimed at improving E-bike safety are required in China.

**Prevalence of energy intake misreporting in Malay children varies based on application of different cut-points**

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**Abstract**

This study aimed to identify the prevalence of energy misreporting amongst a sample of Malay children aged 9–11 years (n=14) using a range of commonly used cut points. Participants were interviewed using repeated 24 h dietary recalls over three occasions. The Goldberg equations (1991 and 2000), Torun cut points and the Black and Cole method were applied to the data. Up to 11 of 14 children were classified as misreporters, with more under-reporters (between seven and eight children) than over-reporters (four or less children). There were significant differences in the proportion of children classified as energy misreporters when applying basal metabolic rate calculated using FAO/UNU/WHO (1985) and Malaysian specific equations (p<0.05). The results show that energy misreporting is common amongst Malay children, varying according to cut point chosen. Objective evaluation of total energy expenditure would help identify which cut point is appropriate for use in Malay paediatric populations.

Quality of dietary intake methodology and reporting in epidemiology studies examining relationship between dietary patterns and childhood obesity in Asian developing countries: A systematic review

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Abstract

Aim: The dramatic rise in childhood obesity incidence in developing countries is related to nutrition and lifestyle transition. The aim of this review was to evaluate the quality and reporting of dietary assessment methods used in studies examining the relationship between dietary outcome and childhood obesity in developing Asian countries.

Methods: A three-step search strategy was conducted in databases between inception and 2011 with an English language restriction. Inclusion criteria were any cross-sectional or cohort studies in children ≤ 18 years who resided in developing countries in Asian region that included reporting on dietary intake. Papers were screened with standardised tools for quality and dietary methodology reporting.

Results: The search process identified 2080 studies and 15 studies (in 16 articles) met inclusion criteria. The most commonly used dietary assessment method was dietary questionnaires (n = 10), followed by 24-hour diet recall (n = 4), food frequency questionnaire (n = 3) and an unweighted food record (n = 1). For dietary methodology reporting, 12 out of 16 articles were rated as ‘poor’, 3 rated as ‘acceptable’ and 1 as ‘excellent’.

Conclusions: The quality rating was influenced by the dietary assessment tool chosen, and a quality rating of ‘poor’ was mostly obtained by studies using non-standardised, non-validated study-specific dietary questionnaires. Significant gaps were identified in dietary intake methodological quality and hence, there is an urgent need for valid dietary measures and reporting of dietary intake among overweight children for studies conducted in Asian region.

Keywords: children, developing country, dietary intake, obesity, systematic review.
Acclimatisation-induced stress influenced host metabolic and gut microbial composition change

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Abstract
Understanding the basal gut bacterial community structure and the host metabolic composition is pivotal for the interpretation of laboratory treatments designed to answer questions pertinent to host–microbe interactions. In this study, we report for the first time the underlying gut microbiota and systemic metabolic composition in BALB/c mice during the acclimatisation period. Our results showed that stress levels were reduced in the first three days of the study when the animals were subjected to repetitive handling daily but the stress levels were increased when handling was carried out at lower frequencies (weekly). We also observed a strong influence of stress on the host metabolism and commensal compositional variability. In addition, temporal biological compartmental variations in the responses were observed. Based on these results, we suggest that consistency in the frequency and duration of laboratory handling is crucial in murine models to minimise the impact of stress levels on the commensal and host metabolism dynamics. Furthermore, caution is advised in consideration of the temporal delay effect when integrating metagenomics and metabonomics data across different biological matrices (i.e. faeces and urine).
Membrane disruption and anti-quorum sensing effects of synergistic interaction between *Lavandula angustifolia* (lavender oil) in combination with antibiotic against plasmid-conferred multi-drug-resistant *Escherichia coli*  


**Membrane disruption and anti-quorum sensing effects of synergistic interaction between *Lavandula angustifolia* (lavender oil) in combination with antibiotic against plasmid-conferred multi-drug-resistant *Escherichia coli***

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**Abstract**

**Aim:** The aim of this study was to investigate the mode of action of the lavender essential oil (LV) on antimicrobial activity against multi-drug-resistant *Escherichia coli* J53 R1 when used singly and in combination with piperacillin.

**Method and Results:** In the time-kill analysis, a complete killing of bacteria was observed based on colony counts within 4 h when LV was combined with piperacillin during exposure at determined FIC concentrations. Analysis of the membrane permeabilizing effects of LV on treated cultures through their stability against sodium dodecyl sulphate revealed that the LV played a role in disrupting the bacterial cell membrane. The finding is further supported by scanning electron microscopy analysis and zeta potential measurement. In addition, reduction in light production expression of *E. coli* [pSB1075] by the LV showed the presence of potential quorum sensing (QS) inhibitors.

**Conclusions:** These results indicated that the LV has the potential to reverse bacterial resistance to piperacillin in *E. coli* J53 R1. It may operate via two mechanisms: alteration of outer membrane permeability and inhibition of bacterial QS.

**Significance and Impact of the Study:** These findings offer a novel approach to develop a new option of phytopharmaceuticals against multi-drug-resistant *E. coli*.

**Keywords:** antibacterial activity; chemical composition; essential oil; *Lavandula angustifolia*; membrane permeability; quorum sensing.

**Essential oils, a new horizon in combating bacterial antibiotic resistance**

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**Abstract**

For many years, the battle between humans and the multitudes of infection and disease causing pathogens continues. Emerging at the battlefield as some of the most significant challenges to human health are bacterial resistance and its rapid rise. These have become a major concern in global public health invigorating the need for new antimicrobial compounds. A rational approach to deal with antibiotic resistance problems requires detailed knowledge of the different biological and non-biological factors that affect the rate and extent of resistance development. Combination therapy combining conventional antibiotics and essential oils is currently blooming and represents a potential area for future investigations. This new generation of phytopharmaceuticals may shed light on the development of new pharmacological regimes in combating antibiotic resistance. This review consolidated and described the observed synergistic outcome between essential oils and antibiotics, and highlighted the possibilities of essential oils as the potential resistance modifying agent.

**Keywords:** Antibiotic resistance, combination therapy, essential oils, resistance modifying agents.
Yap RMD, Lim PKC, Chan LL, Wong SF, Mak JW. Characterization of cyst and trophozoite proteins of environmental isolates of Acanthamoeba castellani by two-dimensional gel electrophoresis. Southeast Asian Journal of Tropical Medicine and Public Health, 2014; 45: 249-258. [IMU Internal Grant BMS 1-02/2011 (08)]. (ISI IF: 0.61; SCI IF: 0.729; H-index: 30; Tier: Q2).

Characterization of cyst and trophozoite proteins of environmental isolates of Acanthamoeba castellani by two-dimensional gel electrophoresis

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Abstract
Acanthamoeba castellanii has been known to possess pathogenic properties, such as acanthamoebic keratitis and granulomatous amoebic encephalitis. The role of proteases and proteins in the pathogenesis of these infections is still poorly understood. As Acanthamoeba sp is a ubiquitous protozoan found in the natural environment they can potentially cause human infections. This study characterized cyst and trophozoite proteins of 3 environmental A. castellanii isolates in comparison with a clinical isolate, ATCC 50492. The latter and environmental IMU1 isolate had 100% genotype identity with A. castellanii and demonstrated protein spots with higher molecular weights (> 95 kDa) at relatively higher isoelectric values (> pI 7.00) compared to the two other environmental isolates (IMU4 and IMU5) that had 99% genotype identity to A. castellanii based on 16 S rDNA sequence. Thus such trophozoite proteins may be involved with the parasite’s ability to cause acanthamoebic keratitis.

Keywords: Acanthamoeba castellanii, cyst, trophozoite protein, two-dimensional gel-electrophoresis.

Edible bird's nest ameliorates oxidative stress-induced apoptosis in SH-SY5Y human neuroblastoma cells

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Abstract

Background: Parkinson’s disease (PD) is the second most common neurodegenerative disorder affecting the senile population with manifestation of motor disability and cognitive impairment. Reactive oxygen species (ROS) is implicated in the progression of oxidative stress-related apoptosis and cell death of the midbrain dopaminergic neurons. Its interplay with mitochondrial functionality constitutes an important aspect of neuronal survival in the perspective of PD. Edible bird’s nest (EBN) is an animal-derived natural food product made of saliva secreted by swiftlets from the Aerodamus genus. It contains bioactive compounds which might confer neuroprotective effects to the neurons. Hence this study aims to investigate the neuroprotective effect of EBN extracts in the neurotoxin-induced in vitro PD model.

Methods: EBN was first prepared into pancreatin-digested crude extract and water extract. In vitro PD model was generated by exposing SH-SY5Y cells to neurotoxin 6-hydroxydopamine (6-OHDA). Cytotoxicity of the extracts on SH-SY5Y cells was tested using MTT assay. Then, microscopic morphological and nuclear examination, cell viability test and ROS assay were performed to assess the protective effect of EBN extracts against 6-OHDA-induced cellular injury. Apoptotic event was later analysed with Annexin V-propidium iodide flow cytometry. To understand whether the mechanism underlying the neuroprotective effect of EBN was mediated via mitochondrial or caspase-dependent pathway, mitochondrial membrane potential (MMP) measurement and caspase-3 quantification were carried out.

Results: Cytotoxicity results showed that crude EBN extract did not cause SH-SY5Y cell death at concentrations up to 75 μg/ml while the maximum non-toxic dose (MNTD) of water extract was double of that of crude extract. Morphological observation and nuclear staining suggested that EBN treatment reduced the level of 6-OHDA-induced apoptotic changes in SH-SY5Y cells. MTT study further confirmed that cell viability was better improved with crude EBN extract. However, water extract exhibited higher efficacy in ameliorating ROS build up, early apoptotic membrane phosphatidylserine externalization as well as inhibition of caspase-3 cleavage. None of the EBN treatment had any effect on MMP.

Conclusions: Current findings suggest that EBN extracts might confer neuroprotective effect against 6-OHDA-induced degeneration of dopaminergic neurons, particularly through inhibition of apoptosis. Thus EBN may be a viable nutraceutical option to protect against oxidative stress-related neurodegenerative disorders such as PD.
Keywords: Edible bird’s nest, Apoptosis, SH-SY5Y, 6-OHDA, Neurodegenerative disorder, Parkinson’s disease, Neuroprotection.

**Acute appendicitis in pregnancy: A diagnostic and management challenge**

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**Abstract**

Acute appendicitis is the most common extra-uterine surgical emergency encountered during pregnancy, but an accurate diagnosis is still an enigma. Anatomical shifting of the appendix by the enlarging uterus makes the clinical and sonographic diagnosis difficult. Prompt diagnosis and treatment are essential to prevent perforation, which increases the risk of fetal and maternal death. Surgical intervention, either by an open laparotomy or laparoscopy is the most appropriate treatment for appendicitis. This article reviews the epidemiology, clinical diagnosis, investigation, complications and treatment of acute appendicitis in pregnancy.

**Keywords:** Appendicitis, pregnancy, epidemiology, diagnosis, investigation, treatment.