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Editorial Information

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

ORAL PRESENTATION

OP101

Tracing the Concentration and the Distance Travelled by the Airborne Droplet Nuclei in an Educational Centre

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ABSTRACT

Introduction: It is known that droplet nuclei are the source of airborne respiratory diseases. Cells, electrolytes, and occasionally contagious bacteria and viruses are naturally present in the water drops that come from human breathing, sneezing, coughing, and even perspiration. The core of droplets with a diameter of less than 5 µm stays suspended in the air and moves with the air current, whereas droplets with a larger diameter tend to descend to the ground by gravity. **Methods:** The propagation distance of droplet nuclei with a diameter of 5 to 6 µm is examined using computational fluid dynamics Ansys-Fluent software that employs discrete phase modelling. The investigation occurred in an infiltrated classroom and an educational theatre where pandemic standard precautions were lifted. **Results:** It is discovered that at the first 2 m distance, the droplet nuclei concentration is 0.025 to 0.044 kg/m^3 and scattered freely with the airflow. In a 30 to 60-second time-flow simulation, the droplet nuclei travel up to 9 m suspended alongside the direction of the airflow. **Conclusion:** Directing the contaminated 'used air' out with exhaust airflow is preferable with the concentrations dropping to 0.014 kg/m^3.

Keywords: Computational fluid dynamics, Droplet nuclei, Air distribution

OP104

Environmental Molecular Detection and Culture for Surveillance of *Burkholderia pseudomallei* as a Cause of Melioidosis in Perak, Malaysia

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ABSTRACT

Introduction: Melioidosis is an infectious disease caused by saprophytic soil bacteria, *Burkholderia pseudomallei* mainly found in tropical region. *B. pseudomallei* can be transmitted predominantly through contaminated soil and water. The aim of the study were to determine the distribution of *B. pseudomallei* by molecular detection and culture of *B. pseudomallei* from selected localities in Perak. **Methods:** A total of 42 soil samples were taken from the surface and 30cm depth. The soil samples were processed for bacterial DNA extraction for genotypic molecular detection by portable RT-PCR thermocycler by using suitable primers and culture method for phenotypic characteristic. Broth culture media and *B. pseudomallei* Selective Agar (BPSA) were used by mixing with gentamicin. Forty-two soil samples were taken from three different land use were school field, paddy field and rubber plantation. Nine samples were positive for BPSA culture media and 14 samples were positive for RT-PCR method. **Results:** The paddy field has the highest detection of *B. pseudomallei* among all three locations. School field comes in second followed by rubber plantation. **Conclusion:** Agricultural areas and school fields remains the potential health hazard for melioisosis and precautionary measures need to be address in the prevention of melioidosis.

Keywords: Melioidosis, *Burkhlderia pseudomallei*, Surveillance, RT-PCR, DNA extraction

OP105

Unilateral Conjunctivitis in Primary Varicella Infection

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ABSTRACT

Introduction: Primary varicella infection or more widely known as chickenpox is a very common communicable disease. It is caused by the varicella zoster virus, a human alpha herpes virus containing linear DNA genome which circularise upon infecting a host cell. After an incubation period of approximately 2 weeks, the infection typically presents with a polymorphic centrifugal skin eruption with evolving morphology from maculopapular to vesicular and heals with scab formation. Uncommonly, chickenpox can also present with ocular manifestations which ranges from benign (lid lesions, conjunctivitis) to sight-threatening conditions (acute anterior uveitis, acute retinal necrosis). **Methods:** We report a case of unilateral conjunctivitis with bilateral eyelid lesions in a 6-year-old boy diagnosed with chickenpox. He has no chronic illnesses, achieving all his neurodevelopmental milestones and is fully vaccinated as per schedule. He presented with typical cutaneous eruptions of chicken pox, also involving the face and both eyelids. On day 2 of the rash, he developed a right sided conjunctivitis. The conjunctivitis and both eyelid lesions resolved spontaneously by day 5 of skin eruption. **Results:** No further ocular complications developed post-infection. This case highlights the importance of recognising ocular manifestations of chickenpox and to rule out sight-threatening complications which may accompany this infection. Conjunctivitis is not an uncommon ocular manifestation of chickenpox but unilateral conjunctivitis is unusual. The course of varicella conjunctivitis is usually benign and generally antiviral therapy is not required. However, topical acyclovir with or without prophylactic topical antibiotic has been used in this condition. Other modes of pharmacological therapy are discussed.

Keywords: gB/gH-gLcomplex, T-cell associated viraemia, Cutaneous lymphocyte antigen (CLA) positive (+) memory T lymphocytes, Guanosine analogue, Pyrophosphate analogue, Acyclic nucleoside phosphonates

OP106

Extracellular Matrix Dysregulation in Lung Squamous Cell Carcinoma (LUSC) *In Vivo*: A RNA Sequencing Analysis

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ABSTRACT

Introduction: Lung squamous cell carcinoma (LUSC) is still associated with a high mortality rate, due to lack of advanced targeted therapies. Therefore, elucidating the molecular mechanisms of LUSC *in vivo* is essential for the development of effective and novel drugs. **Methods:** LUSC in mice was developed using a carcinogen; N-nitroso-tris-chloroethylurea (NTCU). 12 BALB/c mice were divided into two groups (n=6): cancer group (Receiving 25 µL of 0.04 M NTCU) and control group (Receiving 25 µL of 70% acetone). The treatment was given via skin painting, twice a week for 30 weeks. After that, the lung tissues were harvested and subjected to RNA sequencing. The list of Differentially Expressed Genes (DEGs) was identified using EdgeR and subsequent enrichment analysis was performed using three online enrichment predictive tools; g: Profiler, DAVID, and ToppGene Suite. DEGs and Enriched pathways with p*adj*-value ≤ 0.05 were considered statistically significant. **Results:** A total of 805 significant DEGs were identified in the mice LUSC tissues. Three most upregulated genes expressed are *Orm1, Thbs1*, and *Cd14*. While, three most downregulated genes are *Kit, Bex2*, and *Esm1*. Gene Ontology (GO) revealed cancer-related terms to be significantly enriched and most of them are associated with Extracellular matrix (ECM). Similarly, signaling pathway analysis using KEGG and Reactome revealed ECM-associated pathways to be significantly enriched such as ECM-receptor interaction, ECM organization, and ECM proteoglycan. **Conclusion:** This study provides valuable insight into the underpinned role of ECM in LUSC pathobiology, which might help direct the development of ECM-targeted therapies for LUSC in the future.

Keywords: Lung squamous cell carcinoma (LUSC), N-nitroso-tris-chloroethylurea (NTCU), RNA sequencing, Gene ontology, Extracellular matrix

OP107

The Leaves of *Annona muricata* L. as Potential Natural Immunotherapy

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ABSTRACT

Introduction: *Annona muricata* L. has gained massive interest from researchers due to its diverse pharmacological aspects, mainly the remarkable anti-inflammatory and anticancer properties. Numerous parts of *A. muricata* have been extensively used by traditional practitioners in treating various diseases including cancer, inflammation, and diabetes. However, the impact of *A. muricata* on the immune system has not been extensively studied. **Methods:** Therefore, the present study was carried out to investigate the immunosuppressive effects of 80% ethanol extract of leaves of *A. muricata* at 100, 200, and 400 mg/kg on the innate immune responses in male Wistar rats (n=6 for each group). LC-MS/MS was performed to profile the secondary metabolites present in *A. muricata*. **Results:** The sub-chronic toxicity study indicated that *A. muricata* leaf extract did not possess any toxic effect on the vital organs of treated animals. *A. muricata* demonstrated strong immunosuppressive effects on the innate immune parameters by significantly inhibiting the migration of neutrophils, expressions of Mac-1, phagocytic activity, production of reactive oxygen species, and the expressions of lysozyme and ceruloplasmin in the rat plasma in a dose-dependent manner. **Conclusion:** *A. muricata* leaves extract revealed remarkable inhibitory effects on the innate immune responses. Thus, *A. muricata* has potential to be developed as an agent for the treatment of immune-related disorders.

Keywords: *Annona muricata* L., Autoimmune diseases, Immunosuppressant

OP108

Mangiferin Ameliorates 3-Nitropropionic Acid Induced Behavioral Impairments and Oxidative Stress Alteration in Rats

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ABSTRACT

Introduction: Huntington's disease (HD), a neurodegenerative disease, normally starts in the prime of adult life, followed by a gradual occurrence of psychiatric disturbances, cognitive and motor dysfunction. The daily performances and life quality of HD patients have been severely interfered by these clinical signs and symptoms until the last stage of neuronal cell death. To the best of our knowledge, no treatment is available to completely mitigate the progression of HD. Mangiferin, a naturally occurring potent glucoxilxanthone, is mainly isolated from the *Mangifera indica* plant. Considerable studies have confirmed the medicinal benefits of mangiferin against memory and cognitive impairment in neurodegenerative experimental models such as Alzheimer's and Parkinson's diseases. Therefore, this study aims to evaluate the neuroprotective effect of mangiferin against 3-NP induced HD-like behavioral and oxidative stress changes in rat models. **Methods:** Adult Wistar rats (n = 32) were randomly allocated into four groups. Treatment with mangiferin was given for 14 days, whereas 3-NP was given for 7 days to induce HD-like symptoms. Rats were assessed for cognitive and motor functions using OFT, NOR and rotarod tests. Oxidative stress markers were also evaluated. **Results:** 3-NP triggered anxiety, decreased recognition memory, reduced locomotor activity and declined rotarod performance were alleviated by mangiferin treatment. Further, a significant depletion in brain MDA level, an increase in GSH level, SDH, SOD and CAT activities, were observed in mangiferin treated groups. **Conclusion:** The findings from the present investigation provide a new possibility of mangiferin as an alternate neuroprotective agent in treating HD.

Keywords: 3-nitropropionic acid, Huntington's disease, Mangiferin, Natural product, Neuroprotective

OP109

Assessment of Serum Digoxin Concentration Measurement in Patients with Heart Failure and Atrial Fibrillation

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ABSTRACT

Introduction: Digoxin continues to find application in the management of chronic atrial fibrillation (AF) and mild to moderate congestive heart failure (CHF), albeit with reduced frequency compared to the past. To ensure the effective and safe use of digoxin, therapeutic drug monitoring (TDM) is imperative, given its intricate pharmacokinetic profile, narrow therapeutic range, and toxicity potential. This study is aimed to investigate proportion of atrial fibrillation and congestive heart failure patients who achieved desired serum digoxin concentration (SDC), to evaluate SDC monitoring in terms of its indication and sampling time. **Methods:** A retrospective study was conducted among patients in Hospital Canselor Tuanku Muhriz who underwent digoxin monitoring from January 2016 until December 2022. A total of 162 patients were recruited in this study. **Results:** The majority of patients did not achieve therapeutic level of serum digoxin concentration (65.4%), whereby most of the levels were subtherapeutic (49.4%). Only 41.4% of blood samples were taken at the appropriate timing. The top three SDC monitoring indications were to assess clinical response (42.6%), to assess factors altering pharmacokinetic of digoxin (22.8%) and for confirmation of toxicity (18.5%). **Conclusion:** This study underscores the importance of regular training for healthcare personnel and early recognition of patients' underlying risk factors when administering digoxin for AF and CHF treatment. These measures can help minimise the incidence of non-therapeutic SDC levels.

Keywords: Digoxin, Serum digoxin concentration, Therapeutic drug monitoring

OP110

Lab-On-A-Tip for Colorimetric Biosensing of Uric Acid in Urine Samples using Smartphone-Based Instruments

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ABSTRACT

Introduction: The creation of disposable and user-friendly sensing platforms is a trending topic in the field of analytical chemistry. Among others, colorimetric approaches exhibit high versatility for achieving this goal, for instance, the commercial pregnancy test is an obvious success. However, providing fully integrated and reagent-free methods is always a leitmotiv. In this work, we evaluated the use of a disposable pipette tip, opportunely configured to demonstrate a prototype colorimetric biosensing system in a pipette tip using a smartphone-based instrument. **Methods:** The combination of a pipette tip, enzyme, and pH indicator immobilised on paper, allows the construction of a novel colorimetric platform that is disposable, and user-friendly. To demonstrate the feasibility of this novel approach, uric acid is detected in urine samples using a smartphone as an instrument. **Results:** The experimental setup that is built inside the pipette tip is allowed to 1) load/release sample for the biosensing, 2) no need for the operating task, and 3) perform colorimetric detection. With optimised experimental parameters, the lab-on-a-tip allows the detection of uric acid linearly up to 90 mg/L with a detection limit of 8.367 mg/L. The effectiveness of the platform was confirmed by testing several urine samples, with high accuracy. **Conclusion:** The novel concept can be easily implemented as point-of-care testing in clinical diagnostics and other fields.

Keywords: Lab-on-a-paper, Biosensors, Uric acid, Uricase, Colorimetric, Smartphone

OP111

Synthesis, Cytotoxic Activity and DNA Intercalation of New N2-Benzylated-β-Carbolineum Bromate Derivatives

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ABSTRACT

Introduction: β-Carboline alkaloids are widely distributed in natural products and represent a promising drug-like scaffold for drug and bioactive molecule discovery. In this study, we utilised the structural simplification strategy to synthesis a new series of N^2-benzylated-β-carbolineum bromate derivatives and to investigate the *in vitro* cytotoxic effects of these derivatives on the human chronic myeloid leukemia, K562 cell line. **Methods:** The new series of N^2-benzylated-β-carbolineum bromate derivatives were synthesised from L-tryptophan using four-step reaction in good yields (>70%). The structures of all synthesised derivatives were confirmed by ^{1}H-NMR, ^{13}C-NMR and LC-MS (ESI-MS) spectral analysis. All derivatives were evaluated for their *in vitro* anticancer activity against K562. Spectroscopic UV-Vis and *in silico* docking studies were conducted to investigate the binding mode of these derivatives to DNA. **Results:** The results showed that compounds 4a-f exerted excellent cytotoxic activity with IC_{50} values of 0.20-0.73 μM against K562 as compared to doxorubicin (DOX), which was employed as a positive control (IC_{50} at 0.77 μM). Spectroscopic UV-Vis and *in silico* docking results revealed that the most active derivatives 4f (IC_{50} at 0.36 μM) interacts with DNA by intercalation. **Conclusion:** Based on the present results, it was suggested that the new series of N^2-benzylated-β-carbolineum bromate, derivatives has great potential to be developed as new anticancer agent.

Keywords: L-tryptophan, β-carboline, N^2-benzylated-β-carbolineum bromate, Anticancer

OP112

Changing Optics from Tunnel Vision of Super Specialist to Complete Field of Generalist Improves Quality of Life in Heart Failure Patients: Demostrative Case Reports

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ABSTRACT

Introduction: Heart failure (HF) requiring repeated hospitalisations results in severe morbidity and high mortality in patients above 65 years of age, imposing a significant cost burden on society. Cardiologists tend to focus on specific cardiac issues and at times overlook non cardiac issues. Two demonstrative cases are hereby presented. **Methods:** A 65-year-old female had cerebrovascular accident (CVA) three year ago and had reduced activities due to residual hemiparesis. As patient developed pedal oedema, cardiac opinion was sought to rule out congestive heart failure. **Results:** Examination confirmed that the oedema was non pitting type, mood was depressed and the face was slightly swollen, arousing the suspicion of hypothyroidism. Lab tests confirmed the same and after six months of treatment she became more mobile despite hemiparesis. A 67-year-old male, known case of old anterior wall myocardial infarction with severe left ventricular systolic dysfunction presented with pedal oedema. Chest examination revealed bilateral basal crepitations indicating decompensation. Baseline blood pressure was 90/60 mmHg. As haemoglobin was only 11 gm% iron tests were advised and as ferritin was low parenteral iron therapy was started followed oral iron along with low doses of standard anti failure medication. On follow up a month later, patient reported being more energetic and BP improved to 118/84 mmHg. **Conclusion:** Addressing peripheral issues like hypothyroidism and anaemia can lead to optimisation of physiology with resultant improvement in the functional capacity leading to alleviation of symptoms and improvement in the quality of life of heart failure patients.

Keywords: Heart failure, Hypothyroidism, Anaemia

OP113

A Cross Sectional Study of the Knowledge, Attitude, and Practice of Over-The-Counter Medications among the General Public in Perak

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ABSTRACT

Introduction: Over-the-counter (OTC) medications are non-prescription drugs, that are accessible in any pharmacy and widely practiced as self-medication to treat minor ailments. The aim of this study is to assess the correlation between sociodemographic factors and the knowledge, attitude, and practice (KAP) of OTC drugs among the public in Perak. **Methods:** A cross-sectional study was conducted by convenience sampling method and the data were collected and analysed by using SPSS®. Chi-square analysis was conducted to determine the association between KAP and OTC medication use. Spearman's correlation test was used to assess correlation between the KAP variables. (P-value <0.05) was considered statistically significant. **Results:** A total of 280 respondents participated in the study, majority of them is aged between 18 to 28 years old (n=153, 54%), and 258 (92.1%) respondents have no presence of chronic disease. Among 280 respondents, 169 (60.4%) had a good knowledge, 161 (57.5%) had a positive attitude and 208 (74.3%) had a responsible practice towards self-medicate with OTC medications. By using Chi-square, there was correlation between level of knowledge with educational level (P= 0.017) and presence of chronic disease (P= 0.026), level of attitude with employment status (P= 0.017) and age (P= 0.004). **Conclusion:** The study concludes that the public in Perak have a good knowledge, positive attitude, and responsible practice of OTC medications. There is a significant correlation between sociodemographic factors with the KAP of OTC drugs among the public in Perak.

Keywords: Cross-sectional study, Public, Over-the-counter, Perak, Self-medication

OP114

Effect of Diaphragmatic Muscle Strengthening in Supine Lying Position on Chest Expansion and Peak Expiratory Flow Rate among High Body Mass Index UniKL RCMP Students

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ABSTRACT

Introduction: Diaphragm is a major inspiratory respiratory muscle, and its role in the respiratory system cannot be overstated in terms of its importance to healthy breathing. A loss of muscle power in the diaphragm, which prevents it from generating the essential pressure for optimal ventilation, is what medical professionals refer to as a diaphragmatic defect. **Methods:** A total of 30 participants were selected among high BMI students at UniKL RCMP and put into two groups through convenient random sampling. Participants will be divided into two groups. The first experimental group consisted of 15 participants for diaphragmatic strengthening exercises. Another control group consists of 15 participants for diaphragmatic breathing only. The differences between two intervention groups, the control group and the experiment group, Eight weeks of the experiment were conducted to monitor changes. **Results:** The findings reveal that the chest expansion pre-post axillary for the control group (mean -0.23, SD 0.56), pre-post lateral costal (mean -0.43, SD 0.49), and pre-post diaphragm are significantly different from one another (mean -0.70, SD 0.45). For experiments, pre- and post-axillary (mean -0.33, SD 0.12), pre-post lateral costal (mean -0.53, SD 0.17), pre-post diaphragm (mean -0.63, SD 0.09). **Conclusion:** Diaphragmatic breathing exercise paired with diaphragmatic muscle strengthening exercise has the potential to promote chest expansion in people with a high body mass index (BMI). According to these results, those who have decreased chest expansion should engage in exercises that focus on diaphragmatic breathing to enhance chest expansion.

Keywords: Diaphragm, Strengthening, Chest expansion, High body mass index, Peak expiratory flow rate

OP115

Development and Validation of a Patient Information Booklet on Endocrine Therapy for Breast Cancer Patients

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ABSTRACT

Introduction: Breast cancer is the most common cancer affecting women worldwide and the use of adjuvant endocrine therapy (i.e., tamoxifen and aromatase inhibitors) has improved the overall survival for post-menopausal breast cancer women with hormone receptor-positive status. Our preliminary work at a single hospital setting found that more than half of patients were non-adherent to their adjuvant endocrine therapy. Building on to our previous research, we aim to develop and validate an information support tool for post-menopausal women with breast cancer on adjuvant endocrine treatment. **Methods:** First, extensive literature review was performed to identify relevant information to be included in the booklet. Next, semi-structured interviews were conducted to identify information needs on adjuvant endocrine therapy among breast cancer patients. Finally, an infodemiology study was conducted to gather misinformation on breast cancer prevention and treatment from Twitter. Findings from all these studies were triangulated and incorporated into the booklet and evaluated by experts for content validity. **Results:** The following topics were included in the booklet: Endocrine therapy, anti-estrogen, aromatase inhibitors, coping with side effects, traditional and complementary medicines, healthy lifestyle and navigating online information. The content validity was acceptable (>0.8); with S-CVIs of 0.854 and 0.868 for clarity and relevance, respectively. **Conclusion:** The booklet was developed utilising a novel approach consisting of multi-method research and validated for its content. It can be used for patient education in clinical practice and future research to elucidate its effects on knowledge and adherence towards adjuvant endocrine therapy among breast cancer patients.

Keywords: Breast cancer, Endocrine therapy, Education tool, Validation

OP116

Views, Knowledge, and Practices of Hospital Pharmacists about using Clinical Pharmacokinetics to Optimise Pharmaceutical Care Services: A Descriptive Cross-Sectional Study at Two Specialists' Public Hospitals in Perak

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ABSTRACT

Introduction: Clinical Pharmacokinetics simply meant that pharmacists implemented the principles of pharmacokinetics of specific drugs to specific patients. This study aimed to investigate the views on pharmacokinetics courses received during pharmacy education, and knowledge, and practices of hospital pharmacists about using clinical pharmacokinetics to optimise pharmaceutical care services at two specialist's public hospitals in Perak. **Methods:** A cross-sectional survey was conducted among 144 hospital pharmacists at two specialist's public hospitals in Perak using a self-administered, structured questionnaire. Descriptive analysis was used to summarise the socio-demographic characteristics. Chi-square test was used to identify the association between independent and dependent variables. **Results:** This study found that hospital pharmacists have a moderate view (n= 107, 74.3%) on pharmacokinetics courses they received during their pharmacy education, moderate knowledge (n= 79, 54.9%) and good practices (n= 66, 45.8%) towards usage of clinical pharmacokinetics to optimise pharmaceutical care services. There was an association between hospital pharmacists' highest academic qualification with continuing education courses related to pharmacokinetics received after completion of pharmacy degree ($p< 0.05$) and clinical pharmacokinetics practise in hospital pharmacist's current role with their current working department ($p< 0.05$). This study also revealed a positive relationship between views, knowledge, and practices of hospital pharmacists towards usage clinical pharmacokinetics to optimise pharmaceutical care services ($p<0.05$). **Conclusion:** The awareness on pharmacokinetics knowledge and abilities in optimising pharmaceutical services to hospitalised patients might be improved by integrating pharmacokinetics themes within other relevant courses and adopting more clinically oriented methods for learning.

Keywords: Clinical pharmacokinetics, Views, Knowledge, Practices

OP117

Physical Stability of Ciprofloxacin or Levofloxacin Parenteral Preparations in Polypropylene Plastic Containers

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ABSTRACT

Introduction: The use of polypropylene plastic (PP) containers as an alternative to glass containers in the primary packaging of injection preparations can interact with the preparations during the wet heat sterilisation process. The research aims to evaluate the physical stability of parenteral preparations with the active ingredients ciprofloxacin or levofloxacin packaged in PP containers after a wet heat sterilisation process. **Methods:** Injection preparations were made by dissolving the active ingredient ciprofloxacin lactate or levofloxacin hemihydrate in water for injection solvent. The solution was packaged in PP containers with a volume of 100 mL and sterilised using the wet heat method at 115 °C for 30 minutes. The physical stability of the preparation was tested, including the preparation's weight, pH, clarity, number of particles, and sterility. Physical quality parameters before and after the sterilisation process were compared. Data were analysed by one-way ANOVA with α 0.05. **Results:** The results showed that the injection preparations were sterile and had no different physical stability than before the wet heat sterilisation process except for the number of particles. However, the number of particles in the preparation still meets the requirements. **Conclusion:** Ciprofloxacin or levofloxacin injection preparations in PP containers meet the physical stability requirements after wet heat sterilisation.

Keywords: Physical stability, Parenteral dosage forms, Polypropylene, Ciprofloxacin, Levofloxacin

OP118

Effect of Postural Stabilising Exercise on Forward Head and Rounded Shoulder Postures in University Students during Online Classes

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ABSTRACT

Introduction: : Forward Head and Rounded Shoulder Posture (FHRSP) is a common clinical postural imbalance that can result in a flexed spinal posture, that imposes a greater strain on the nerve roots and impairs the function of the upper extremities. This study aimed to investigate the impact of postural stabilising exercises on university students attending online classes with FHRSP. **Methods:** Forty-two students from UniKL RCMP with unspecified neck pain were selected using purposive sampling and enrolled in this experimental study. All participants provided informed consent and completed the Neck Disability Index Questionnaire and the SF-36 Questionnaire. The cervical range of motion was measured using goniometers. Participants were randomly divided into two groups: the experimental group (n = 21) engaged in neck stretching and strengthening exercises, while the control group (n = 21) participated in stretching exercises and a postural education program. The intervention spanned six weeks. **Results:** Significant differences were observed between pre- and post-intervention data in both groups, with improvements noted in pain reduction and cervical range of motion. Notably, the control group did not show significant changes in the quality-of-life domain related to energy and fatigue. **Conclusion:** This study provides evidence that postural stabilising exercises can effectively alleviate pain, improve cervical range of motion, and enhance the quality of life of university students with FHRSP who attend online classes. These findings underscore the importance of incorporating such exercises into the management of FHRSP, contributing to our understanding of their role in treating this common postural issue.

Keywords: Forward Head and Rounded Shoulder Posture (FHRSP), Cervical range of motion, Pain, Quality of life, Postural stabilising exercises

OP119

Association of Sleep Deprivation and Academic Performance among Pharmacy and Health Sciences Students

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ABSTRACT

Introduction: Sleep deprivation or insufficient sleep has become one of the most common and significant issues among students. It is found to be affecting cognitive performance and memory. Therefore, this study was conducted to investigate the prevalence of sleep deprivation, its associated sociodemographic factors and the association of sleep deprivation with academic performance among the Faculty of Pharmacy and Health Science (FPHS) students of UniKL-RCMP. **Methods:** This cross-sectional study included 223 students from Faculty of Pharmacy and Health Science (FPHS). A validated questionnaire approach to conduct a study and the student sociodemographic and academic performance was the study outcome. While the sleep pattern during typical school and frequency of daytime sleepiness were the variables. **Results:** The prevalence of sleep deprivation (6 hours or less of sleep) among the students was found to be 80.7% during the usual academic week and 96.1% during the final examination period. The sociodemographic profiles were observed not associated with sleep deprivation except for age $p = 0.37$ and race ($p = 0.47$) respectively. On the other side, no association was observed between sleep deprivation and academic achievement for both during the typical school week ($p = 0.576$) and around the final examination ($p = 0.120$). **Conclusion:** The results showed that high number of students were suffering from sleep deprivation, high academic workload, inconsistent sleep cycles, gadget usage, stress, and poor sleep conditions had contributed to sleep deficiency among students, and it was found that there is no association between the insufficient sleep and academic performance.

Keywords: Academic Performance, Sleep deprivation, Students

OP120

Metabolic Alteration in Streptozotocin Induced Obese-Diabetic Rat Model Treated with *Momordica charantia* Extract Via 1H-NMR-Based Metabolomics

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ABSTRACT

Introduction: *Momordica charantia* Linn (Cucurbitaceae) is used in folk medicine to treat various diseases including diabetes mellitus. It has been widely commercialised based on traditional usage as an antidiabetic product. The study investigates antidiabetic activity of *M. charantia* fruit through proton-nuclear magnetic resonance (1H-NMR) spectroscopy-based metabolomics approach. **Methods:** The 80 % ethanolic extract of *M. charantia* was force fed to obese-diabetic (ob-db) rats. Rats were divided into four groups: healthy, ob-db treated with 300 mg/kg bw metformin, ob-db treated with 300 mg/kg bw of *M. charantia* and ob-db rats. The dipeptidyl peptidase-IV (DPP-IV) inhibitory and 3T3-L1-cell glucose uptake activities were also tested for the same extract to explain its mode of action in relation to the metabolomics results. **Results:** The results showed that administration of the 80% ethanolic extract of 300 mg/kg bw for four weeks significantly ($P < 0.05$) reduced the blood glucose level. The identified biomarkers in serum and urine were 2-hydroxybutyrate, leucine, adipate, alanine, acetate, succinate, 2-oxoglutarate, dimethylamine, creatine, creatinine, betaine, glucose, taurine, phenylacetylglycine, allantoin and hippurate. **Conclusion:** The metabolomics approach indicated that the 80% ethanolic extract of *M. charantia* fruit and metformin have altered energy, amino acid, purine, creatine, bile, and gut microflora metabolisms of serum and urine profiles of the streptozotocin ob-db rats. Furthermore, it was found that the energy metabolism was ameliorated through the improvement of 3T3-L1-cell glucose uptake and inhibition DPP-IV.

Keywords: Metabolomics, *Momordica charantia*, Diabetes, Obese-diabetic rat

OP121

Revisiting Flavonoid Combinations as an Adjuvant Therapy for Inflammatory Disorders *In Vivo* and *In Vitro*

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ABSTRACT

Introduction: Flavonoids are a class of plant-derived compounds that have been shown to exhibit a variety of health benefits, including anti-inflammatory effects. Previous studies demonstrated that flavonoids could inhibit the production of pro-inflammatory mediators, such as nitric oxide (NO), prostaglandin E2 (PGE2), and tumor necrosis factor-alpha (TNF-α). However, it is unclear whether the anti-inflammatory effects of flavonoids are additive or synergistic when they are combined. **Methods:** The inhibitory effects of seven flavonoids against NO, PGE2 and TNF-α secretion from lipopolysaccharides (LPS)-induced macrophage cells (RAW 264.7) were assessed. The IC50 values were obtained. Flavonoids that showed significant inhibitory effects were combined in a series of fixed IC50 ratios and re-evaluated for synergistic effects. Dose–response curves were generated, and interactions were analysed using isobolograms. To study the effects of combination treatment on severe sepsis, mice were subjected to cecal ligation and puncture (CLP) procedure. Septic mice survival was monitored, and the levels of key pro-inflammatory mediators and markers, such as aspartate aminotransferase (AST), TNF-α, myeloperoxidase (MPO), and NO in sera samples were determined at different time points after CLP. **Results:** The experiments showed that chrysin, kaempferol, morin, and silibinin have highly significant synergistic effects. **Conclusion:** The findings of this study suggest that flavonoid combinations may be a promising new approach for the treatment of inflammatory disorders. Particularly, chrysin and kaempferol significantly synergised in their inhibitory effect upon NO, PGE2 and TNF-α secretion. Further research is needed to identify more optimal flavonoids combinations for therapeutic use.

Keywords: Flavonoid, Synergy, Isobologram

OP122

Modulation of Metabolic Alterations of Obese Diabetic Rats upon Treatment with *Cosmos caudatus* Leaves Extract using 1H-NMR-Based Metabolomics

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ABSTRACT

Introduction: The global prevalence of type 2 diabetes mellitus (T2DM) is on a rapid rise, characterised by impaired insulin secretion and reduced insulin sensitivity in target tissues. This study aims to assess the differences in metabolite profiles present in the urine of rats subjected to 80% ethanol extract of Cosmos caudatus (EECC) treatment, using a Proton Nuclear Magnetic Resonance (1H-NMR)-based metabolomics approach. **Methods:** Diabetes was induced in the rats by administering streptozotocin (STZ), resulting in an obese-diabetic (ob-db) rat model. The rats were administered with 200 mg/kg EECC, while 300 mg/kg metformin group served as the positive control. Multivariate data analysis, including Partial Least Squares Discriminant Analysis (PLS-DA), was employed to statistically correlate ^{1}H-NMR spectra of serum and urine samples of the rats. This analysis aimed to differentiate between the experimental groups and identify the metabolites responsible for these distinctions. **Results:** The PLS-DA analysis of ^{1}H-NMR spectra from both serum and urine samples indicated that EECC had a pronounced normalising effect on diabetic rats compared to metformin. Elevated glucose levels observed in diabetic rats were effectively reduced to within the normal range by EECC treatment. Furthermore, urine metabolite levels, including allantoin, creatine, creatinine, and N-phenylacetylglycine, were restored to normal ranges by EECC treatment. **Conclusion:** These findings suggest that EECC exhibits significant potential as a therapeutic agent for T2DM.

Keywords: Metabolomics, Cosmos caudatus, Diabetes, PLS-DA, ^{1}H-NMR, Obese-diabetic rat

OP123

Chitosan-Benzaldehyde Beads for the Adsorption of Cu^{2+} and Ni^{2+} Ions in Batch Adsorption Study

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ABSTRACT

Introduction: Pollution caused by copper and nickel has garnered much attention as both heavy metals are extensively used in many industrial applications ranging from metal finishing to electroplating. At an elevated level in the human body, copper and nickel can cause health disorders and even fatalities. Biosorbent such as chitosan has been widely used to treat various pollutants such as heavy metal ions, coloring agents, and phenols. In this study, chitosan-benzaldehyde (CB) beads were prepared as the imine bond in the beads can form favourable complexes with metal ions. **Methods:** The effects of initial pH, agitation periods, adsorbent dosages, and initial concentrations of Cu^{2+} and Ni^{2+} ions on the adsorption capacity of CB beads were investigated and optimised. **Results:** It was found that chemisorption was the rate-controlling step during the removal of both heavy metal ions. This implied that the electron-rich functional groups found on CB beads were able to form tetrahedral complexes with Cu^{2+} and Ni^{2+} ions. The isotherm models revealed that the removal process of both heavy metal ions also involved physisorption. Therefore, the adsorption of Cu^{2+} and Ni^{2+} ions onto CB beads evolved from monolayered chemisorption and subsequently into multilayered physisorption. The maximum capacities of the beads for Cu^{2+} and Ni^{2+} ions based on the Langmuir isotherm model were 81.76 and 30.34 mg/g, respectively. **Conclusion:** Overall, the CB beads exhibited a higher affinity for Cu^{2+} ions due to the electron configuration of Cu^{2+} ions, which form stronger bonds with the hard ligands found on CB beads.

Keywords: Chitosan-benzaldehyde, Heavy metal ions, Isotherm, Kinetics, Mechanism

OP124

The Potency of 5-O-Acetylpinostrobin as Agent of Breast Cancer with Estrogen Receptor Alpha: *In Silico* and *In Vitro* Study

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ABSTRACT

Introduction: Breast cancer is currently one of the most common causes of death in women all over the world. Estrogen receptor alpha (ER-α) plays a major role in breast cancer pathogenesis because about 75% of breast cancers are associated with estrogen receptor 1 (ESR1) expression. The purpose of this study is to determine the cytotoxic activity of a pinostrobin derivative, 5-*O*-acetylpinostrobin, against breast cancer and normal cells, as well as to determine its interaction with ER-α by molecular docking and molecular dynamics. **Methods:** Cytotoxicity was tested using the MTT method against T47D and Vero cell lines. Molecular docking was determined using the Molecular Operating Environment (MOE) 2022.02 program. Furthermore, AMBER 6 was used for molecular dynamics. **Results:** The results showed that the IC_{50} and CC_{50} values of the compound 5-*O*-acetylpinostrobin were 0.34 mM and 1.16 mM, respectively. The selectivity index (SI) value of 5-*O*-acetylpinostrobin is greater than pinostrobin, with an SI value of 3. Molecular docking results showed an interaction between the ligand and ER-α (PDB ID: 5W9C) through the formation of hydrogen bonds with amino acid His524 and clarified by binding affinity of ligand-receptors with a slightly different score (S) of the compounds 5-*O*-acetylpinostrobin (-7.262 kcal/mol) and co-crystal ligand OHT_601 (-10.662 kcal/mol). Moreover, it has a stable interaction using 50 ns molecular dynamics with a total bond energy value -10.436 kcal/mol. **Conclusion:** It can be concluded that 5-*O*-acetylpinostrobin has the potential as an anti-breast cancer candidate with ER-α expression that works selectively.

Keywords: 5-O-acetylpinostrobin, Breast cancer, Estrogen, Cytotoxic, Molecular docking, Molecular dynamics

OP126

Family Support and Medication Adherence in Tuberculosis Patients at Primary Health Care Center

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ABSTRACT

Introduction: Tuberculosis is a communicable disease caused by *Mycobacterium tuberculosis*. Based on the tuberculosis control strategy with a Directly Observed Treatment Shortcourse, the patient is given free medication with the fixed-dose combination antituberculosis drug at the primary health care center for six months. This study aims to determine the relationship of family support to medication adherence in tuberculosis patients. **Methods:** This cross-sectional study employed a non-random sampling technique in the form of accidental sampling. The family support questionnaire instrument from Nurwulan 2017 was used to measure family support and adherence to refill. Medication scale questionnaire from Kripalani et al., 2009 with modification from Aulia 2021 was also used to measure adherence. This study involves 56 patients with tuberculosis at the Perak Timur Primary Health Care Center, Surabaya City who met all the inclusion criteria from March 2023 until May 2023. **Results:** The results of the correlation analysis using the Charles Spearman test obtained was p=0.000 and r=-0.453 for overall family support, which means that there was a significant relationship between family support both as a whole and family support in tuberculosis patients. **Conclusion:** Health workers are expected to be able to provide information not only to patients with tuberculosis, but also to the patient's family to provide support and monitor patients in using antituberculosis drugs.

Keywords: Family support, Medication adherence, Tuberculosis patients, Primary health care center, Fixed-dose combination antituberculosis drug

OP127

Ex Vivo and *In Vivo* Evaluation Studies of Cyclosporine-Loaded Nanoemulsion for Topical Anti-Psoriatic Treatment

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ABSTRACT

Introduction: Psoriasis, a widespread chronic skin disease like has been linked to several other life-threatening illnesses. The disease can be treated by oral cyclosporine and topical medication of corticosteroids in major cases. However, oral cyclosporine is associated with dose-dependent toxic effects for long-term usage while conventional topical medication may be less effective due to the physicochemical nature of diseased stratum corneum. Therefore, topical nanoemulsion containing cyclosporine specifically for topical treatment is believed to safely treat psoriasis-like symptoms while avoiding possible adverse effects of systemic treatments. **Methods:** The optimised cyclosporine-loaded nanoemulsion was investigated for ex vivo cytotoxicity in HaCaT cells. Antipsoriatic potential of cyclosporine-loaded nanoemulsion using imiquimod-induced psoriatic BALB/c mouse model was determined by psoriasis area severity index (PASI) score, epidermal thickness measurement, spleen-to-body weight ratio and histopathological examination. **Results:** Cyclosporine-loaded nanoemulsion was cytocompatible towards HaCaT cells when tested by MTT assay. The highest percentage of psoriasis reduction was recorded by imiquimod-treated nanoemulsion group with 75.54% compared to blank nanoemulsion (34.07%) and positive control (18.58%) groups, revealing superior antipsoriatic efficacy of the formulation. Skin histologic of imiquimod-treated nanoemulsion group showed reduction in acanthosis, hyperkeratosis, papillomatosis and marked decrease in epidermal thickness. Moreover, the spleen histology in treatment groups is almost identical to negative control, which was proven by a reduction in spleen-to-body weight ratio. The nanoemulsion containing cyclosporine being the best formulation to revert back both skin and spleen tissues equivalent to negative control group. **Conclusion:** It was suggested that cyclosporine-loaded nanoemulsion provides an effective alternative for psoriasis treatment.

Keywords: Cyclosporine, Nanoemulsion, Psoriasis, Topical delivery, Imiquimod-induced psoriasis model

OP129

Mobile Pharmacy as Community Pharmacy Value-Added Services (CPVAS): A Narrative Review of Advantages and Challenges

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ABSTRACT

Introduction: Mobile pharmacy services have the potential to revolutionise the way we access and manage medications. They offer unparalleled convenience, accessibility, and tools for medication management. The use of mobile pharmacy services has become increasingly popular and convenient in recent years, and it has brought several advantages as well as some challenges. This review aimed to identify the advantages and challenges faced by mobile pharmacy services as community pharmacy value-added services. **Methods:** Selected articles discussing mobile pharmacy services in community pharmacies were reviewed and summarised. These articles were retrieved from searches of computerised databases and search engines using the keywords "*mobile pharmacy*", "*community pharmacy VAS*", "*mobile value-added services in pharmacy*" and "*mobile pharmacy as value-added services*". **Results:** The review found that the advantages of mobile pharmacy include convenience for patients, can be easily accessed, timesaving for patients, keep patients' privacy and improved medication management (dose reminders, drug interactions alert and increased adherence). But the services also face challenges such as security concerns, regulatory compliance, medication verification, limited personal interaction and delivery delays. **Conclusion:** Mobile pharmacy services are evolving, but they also face challenges. The need for a balance of convenience and personalised care will be essential to address the challenges while maximising the benefits.

Keywords: Mobile pharmacy, Community pharmacy, Pharmacy value-added services

OP130

The Antibiofilm Activities of Ciprofloxacin-Loaded Gold Nanoparticles Against *Pseudomonas aeruginosa*

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ABSTRACT

Introduction: *Pseudomonas aeruginosa* is a common multidrug-resistant bacteria that causes nosocomial infections. A virulence factor that leads to drug resistance is the biofilm formation. Currently, metal nanoparticles showed great biofilm inhibition capability. The objective of this study is to synthesize ciprofloxacin-gold nanoparticles (Cipro-AuNPs) conjugates and characterised to study the antibacterial and biofilm inhibitory capabilities. **Methods:** AuNPs were synthesised by chemical reduction method, then conjugated with ciprofloxacin HCl for 6 hours. After characterising the conjugates, the antibiofilm and antibacterial abilities of Cipro-AuNP against *P. aeruginosa* (PAO1) were studied. **Results:** The minimum inhibitory concentration (MIC) of Cipro-AuNP and ciprofloxacin HCL showed similar MIC at 0.08mM, however, Cipro-AuNP showed overall higher biofilm inhibition than ciprofloxacin HCl. AuNP does not kill the bacteria, but the biofilm formation was inhibited. **Conclusion:** Cipro-AuNP works effectively by first breaking down the biofilm of PAO1 by AuNP, and then eliminating the bacteria by ciprofloxacin HCl.

Keywords: *P. aeruginosa*, Biofilm, Gold nanoparticle, Antibacterial

OP131

Multitarget Molecular Docking, *In Silico* Pharmacokinetics and Drug-Likeness of Coumaric and Salicylic Acid Derivatives Targeting Proteins in Platelet Aggregation Pathway

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ABSTRACT

Introduction: Drugs that inhibit platelet function are antithrombotic agents used in management of arterial thrombosis. Aspirin (acetylsalicylic acid), which blocks platelet is an irreversible inhibitor of cyclooxygenase-1 (COX-1). Some derivatives of coumaric acid decreased the ability of blood clotting and were considered to work through purinergic receptors (P2Y-12). Hydroxyphenyl-carboxylic acids such as coumaric and salicylic acid analogues were great importance in designing new compounds with high antithrombotic activity. This study aimed to inspect the action of thirty designed compounds on platelet aggregation. **Methods:** Molecular Orbital Environment (MOE) program ver2022.02 was used for docking study and affinity of ligand-protein complex was determined by S-score. The target proteins involved in platelet aggregation were COX-1 (PDB-ID:1CQE), P2Y-12 receptor (PDB-ID:4NTJ), proteinase-activated receptor-1 (PAR-1, PDB-ID:3VW7), and thromboxane receptor (TXA, PDB-ID:6IIU). Top of docked compounds were selected to predict their pharmacokinetic and drug-like properties using SwissADME and OSIRIS online tools. **Results:** Eleven compounds showed high potential as antiplatelet compared with reference drugs according to their respective target proteins. CA23 showed highest in silico affinities (S< -6.005 kcal/mol) against COX-1, CA18 showed highest affinities (S< -6.144 kcal/mol) on P2Y-12, CA30 showed moderate TXA affinities (S< -7.436 kcal/mol) while all compounds showed lower affinities against PAR-1. The selected compounds possessed good pharmacokinetic profiles with five compounds showed better drug-like properties. **Conclusion:** Coumaric and salicylic acid derivatives were potential to inhibit platelet through mechanisms on COX-1 and P2Y-12. Coumaric derivatives showed high affinity for P2Y12, while salicylates more active for COX-1 inhibition.

Keywords: Phenyl-carboxylic acid, Multitarget docking, Antiplatelet, Pharmacokinetic, Drug-likeness

OP132

Evaluation of Medication Regimen Complexity and its Association with Medication Adherence Among Malaysian Older Adult Outpatients in a Teaching Hospital: A Cross-Sectional Study in Pahang, Malaysia

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ABSTRACT

Introduction: Approximately 60% of Malaysian older adults have poor medication adherence. Nonetheless, the determinants of non-adherence among the Malaysian older adult population are still lacking. This research evaluates medication regimen complexity (MRC) and its association with medication adherence among Malaysian older adults. **Methods:** A cross-sectional study was conducted in outpatient settings of a teaching hospital in Pahang, Malaysia via in-person interview. Medication Regimen Complexity Index (MRCI) and Malaysia Medication Adherence Assessment Tool (MyMAAT) were used to collect patients' medical information and medication adherence status. Univariate (χ^2 and t-test) and multivariate (logistic regression) analyses using SPSS software were applied. **Results:** A total of 429 participants were recruited, with the mean of total MRC is 17.38 ± 7.07 and the prevalence of non-adherence is 51.0% (n = 219). While adjusted for co-variables, multivariate logistic regression indicates three significant determinants of non-adherence: (1) Total MRC (adjusted odds ratio/aOR= 1.375, $p < 0.001$), (2) partially self-managed medication (aOR = 3.625, $p < 0.001$) and (3) fully managed medication by the family members/caregivers (aOR = 8.138, $p < 0.001$). The logistic regression model fit is good based on the Hosmer & Lemeshow test ($p = 0.162$) and the area under receiver operating characteristic/ROC curve is 0.917. **Conclusion:** Non-adherence might occur due to high MRC and patient's inability to manage their medications by themselves. Further studies should increase the generalisability of the Malaysian older adult population from other states in Malaysia, since the study is conducted only in a unicentric based in Pahang, Malaysia.

Keywords: Medication regimen complexity, Medication adherence, Malaysian older adult, regression analysis, Cross-sectional study

OP133

Vaccine Hesitancy: Early Development of Questionnaire as A Prediction Tool

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ABSTRACT

Introduction: Vaccine hesitancy in childhood immunisation is one health issue in which prediction can become important. The objective of this study is to develop a robust tool to enable predicting vaccine hesitancy among Malaysian parents. **Methods:** Two established questionnaires from the Parents Attitude about Childhood Vaccines (PACV) and WHO SAGE Working Group (SWGVH), were adapted and combined into a total of 26 questions. The questions are classified into 3 components namely behavioural (BE), self-efficacy (SE) and general attitude (GA). The questionnaire was reviewed by 3 expert panels. The questions were subjected to forward and backward translation (English to Malay and vice-versa) and harmonised. A pilot study involving 130 university staff members (mothers and fathers) with children under 15 years were conducted. The data was analysed for reliability using Cronbach alpha and the components were determined by Exploratory Factor Analysis (EFA). **Results:** The Content Validity Index (CVI) of the questionnaire was calculated, yielding a value was 0.99 while the Scale-Level Content Validity Index Universal Agreement was 0.92. Of 130 respondents, 6 questions were excluded due to missing data. After EFA was conducted, 6 components were extracted. However, the components were reduced to 3 after overlapping and negatively correlated items were deleted. The final questionnaire contains 9 items and Cronbach alpha of the questionnaire is 0.83 **Conclusion:** The final questionnaire is found to be reliable and valid. It will be applied in the next phase of the study.

Keywords: Vaccine hesitancy, Childhood, Immunisation, Questionnaire

OP134

Evaluating Antibacterial Properties of TAT-Peptide Conjugated Copper Oxide Nanoparticles Biosynthesised from *Aspergillus* Species

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ABSTRACT

Introduction: The increasing prevalence of antibiotic resistant bacteria and their detrimental effects have further highlighted the need to develop novel antibacterial agents. This study explored the antibacterial properties of TAT-peptide-conjugated copper oxide nanoparticles (cCuONPs) biosynthesised from Aspergillus species. **Methods:** The biosynthesis of copper oxide nanoparticles was achieved through an eco-friendly and cost-effective approach using Aspergillus species as a bio-reducing agent, followed by capping with TAT-peptide. The synthesised nanoparticles were characterised using various analytical techniques, including UV-visible spectroscopy, FTIR, TEM, SEM, TGA, and DSC. The findings reported the successful formation of cCuONPs. **Results:** The UV-Vis spectroscopy showed the characteristic absorption peak of cCuONPs at 237 nm. The FTIR results confirm the associated functional groups of cCuO NPs. TEM results revealed the particle size of cCuO NPs at a range of 5 to 10 nm; SEM results revealed cCuO NPs are of spherical nanostructures and EDX analysis confirmed the presence of elements such as Cu and O in the sample. The DSC analysis identified two peaks expressing endothermic reactions. Furthermore, the antibacterial activity of the cCuO NPs was evaluated against selected gram-positive and negative strains. **Conclusion:** The results showed a significant enhancement in antibacterial efficacy and positive synergistic activity on tested bacteria, indicating the potential of cCuONPs for targeted bacterial inhibition. Biosynthesised nanoparticles have shown promising properties and could become potential therapeutic agents for combating antibiotic resistant bacteria. Further investigations are recommended to explore their mechanism of action, toxicity profiles, for their potential applications in the biomedical and pharmaceutical fields.

Keywords: Aspergillus species, Copper oxide Nanoparticles, TAT Peptide, Capping, Characterisation, Anti-Bacterial

OP135

The Trend of Pharmaceutical Poisoning and Its Association with Sociodemographical Factors: Cases Reported to the Malaysian National Poison Centre (NPC) Before and During Covid-19 Pandemic

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ABSTRACT

Introduction: This retrospective study compares the prevalence of pharmaceutical poisoning among Malaysians before and during COVID-19 pandemic. **Methods:** The data for this study was retrieved from the National Poison Centre database under the substance code "Pharmaceuticals". Crosstabulation, univariate, and multivariate logistic regression were used to evaluate the data to determine whether there is a connection between the demographics of the Malaysian population and the frequency of pharmaceutical poisonings that took place prior to and during the COVID-19 epidemic. **Results:** Females outnumbered males in both study periods (52.2% vs. 46.0%) and during the pandemic (55.1% vs. 43.5%). Nearly all age groups had an increase in poisoning occurrences, with the Malay population accounting for the highest percentage of cases throughout both research periods—pre-pandemic (51.1%) and during pandemic (58.1%). There was a drop in cases affecting the Indian population during the pandemic period (12.3%) compared to the pre-pandemic period (16.5%) while there was no change in the Chinese population. Regarding the incident category, there was little difference in the percentage of accidental and deliberate poisoning during the pre-pandemic period (55.1% vs. 44.9%) and the pandemic period (52.9% vs. 47.1%). Nevertheless, there was a modest decrease in unintentional poisoning during the pandemic period compared to the pre-pandemic period (52.9% vs. 55.1%), and a slight increase in intentional poisoning (47.1% vs. 44.9%) during the pandemic period. **Conclusion:** Despite a drop in the overall number of poisoning cases during the pandemic period (2020–2021), there was little difference in the sociodemographic aspects of the poisoning pattern between these two periods.

Keywords: Pharmaceutical poisoning, National Poison Centre (NPC), COVID-19

OP136

Separation and Purity Determination of Fucoidan Extracted from *Sargassum* sp. by Using a Hilic HPLC-ELSD

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ABSTRACT

Introduction: Fucoidan is a type of sulphated polysaccharide mainly extracted from brown seaweed *Sargassum* sp., which has a wide variety of biological activities, including antitumor, antiviral, antioxidant, antimicrobial, and immune-inflammatory effects. Due to its complex structure with high polarity, the analytical aspect of fucoidan has been challenging. **Methods:** The aim of this study was to develop a hydrophilic interaction liquid chromatography (HILIC) using high-performance liquid chromatography with an evaporative light scattering detector (HPLC-ELSD) for the purity determination of fucoidan extracted from *Sargassum* sp. Using the ELS detector, the optimum conditions for the chromatographic separation, e.g., the influence of the mobile phase composition of acetonitrile and buffer pH, column temperature, flow rate, and sample injection volume, as well as the ELSD operational condition were investigated. Zorbax HILIC Plus 100 x 4.6 mm, 3,5 µm was used as a column. **Results:** The result showed that the optimum separation of fucoidan extracts was achieved under isocratic conditions using acetonitrile:10 mM ammonium format (75:25, v/v) pH 4.6 with flow rate of 1 mL/min, the column temperature of 30°C and the injection volume of 5 µL. The ELSD temperature of nebulisation and evaporation were 50°C and 80°C, respectively. The flow rate of nitrogen was at 1.1 standard Litre for minutes (SLM). **Conclusion:** All validation parameters met the acceptance criteria according to ICH guidelines. The method was successfully applied to determine the purity of the fucoidan extracted from *Sargassum* sp.

Keywords: HILIC HPLC- ELSD, Fucoidan, *Sargassum* sp., Separation, Method validation

OP137

Knowledge, Attitude, and Awareness of Dangers Associated with Cigarette Smoking and Vaping Among Students in UniKL RCMP

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ABSTRACT

Introduction: The New Straits, dated 27th July 2022, reported that the government has spent close to RM6.2 billion in treating three major smoking-related diseases such as lung cancer, chronic obstructive pulmonary disease, and heart disease. Considering the dangers of smoking, this study aimed to identify the knowledge, attitude and awareness of dangers related to smoking and vaping among undergraduate students. **Methods:** This study was conducted among 275 students at UniKL, Royal College of Medicine Perak. A web-based survey tool using Google Form was disseminated via WhatsApp application. It was voluntary and conducted from 5th March to 30th April 2023. **Results:** The results were analysed using the statistical software SPSS. The respondents' sociodemographic characteristics were summarised using descriptive frequency analysis. The relationship between demographic factors and knowledge, attitude and awareness levels were analysed using Chi-Square and Fischer Exact Test. Spearman's Correlation was used to determine the relationship between the dependent variables. 80.4% of the respondents had good levels of knowledge, 73.8% had good attitude and 94.9% of the respondents had good awareness of the dangers associated with cigarette smoking and vaping. There was a significant relationship between the level of education and knowledge ($p=0.019$) and attitude ($p<0.001$). **Conclusion:** Based on the study, most students had good levels of knowledge, attitude and awareness of the dangers associated with smoking and vaping. This further reinforces the belief that the Generation-End Game on tobacco usage planned by the government will be effective in controlling smoking habits among younger generation.

Keywords: Dangers, Students, Cigarette smoking, Vaping

OP138

The Implementation of Health Information from Social Media by Urban Peoples

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ABSTRACT

Introduction: Urban society has adaptive and practical characteristics, then tends to adopt things that are considered new, including health information The use of social media as a source of health information is increasing, although the credibility of information on social media is being questioned. Therefore, this research aims to identify the implementation of health information from social media by the urban society. **Methods:** A cross-sectional study was conducted through an online survey from April to May 2020. Respondent was a resident of Surabaya, at least 17 years old, and had social media accounts. Data were collected using a validated questionnaire consist of three main sections asking for type of social media, implementation of health information, dan affecting factors of implementation. The data was then analysed to see the differences between active and passive social media users. **Results:** A total of 262 peoples were participated in the survey. Based on statistical analysis using the Levine test, there is a significant difference in the implementation of health information by active social media users compared to passive social media users ($p<0.05$). Scientific justification was a factor for 19.8% (n=52) of respondents to apply health information from social media. **Conclusion:** Active social media users are more active in adopting health information from social media. This might imply a potential role for pharmacist regarding the implementation of medication information.

Keywords: Health information, Social media, Adoption, Implementation

OP139

The Effects of Intermittent Fasting Practices on Sleep Quality and Body Mass Index (BMI) Among Malaysian Undergraduate Students: A Cross-Sectional Study

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ABSTRACT

Introduction: The prevalence of overweight and obesity continues to increase, which is reported to be associated with insomnia, sleep disturbances, and daytime sleepiness. In recent years, intermittent fasting (IF) has become a promising dietary intervention for weight loss. This study was conducted to investigate various intermittent fasting practices and their relationships with sleep quality and body mass index (BMI) among Malaysian undergraduate students. **Methods:** A cross-sectional study involved 271 Malaysian undergraduate students who completed an online questionnaire comprising three sections: demographic information (Section A), details about intermittent fasting practices (Section B), and questions related to sleep quality assessed using the Pittsburgh Sleep Quality Index (PSQI) (Section C). The Chi-Square test was used to determine the association between two variables. **Results:** Results showed that the most common practice was 12 hours of fasting followed by 12 hours of eating for less than one month. This study also found that there was no significant relationship between IF practices and sleep quality. However, it showed that there is a significant relationship between IF practices and BMI. **Conclusion:** This study revealed a significant association between IF practices and BMI among Malaysian undergraduate students, highlighting the potential of IF as a weight management strategy in this population. Future research should include larger and more diverse samples, incorporating variables like nutrition, physical activity, and general health to better understand the connections between IF, sleep quality, and BMI.

Keywords: Obesity, Undergraduate students, Intermittent fasting, Body Mass Index (BMI), Pittsburgh Sleep Quality Index (PSQI)

OP140

Versatility of Curcumin in Biomedical Applications

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ABSTRACT

Introduction: Curcumin is a natural dietary polyphenol compound that is isolated from the rhizomes of turmeric. In the past few decades, mounting research evidence has proven the potential of curcumin to treat various chronic diseases. Due to its low solubility, curcumin has been engineered into nanoformulation to improve its bioavailability. The aim of this study is to report versatility of curcumin nanoparticles (Cur-NPs) in various biomedical applications based on our research findings. **Methods:** We have summarised our research findings for the past 10 years regarding Cur-NPs to treat various non-communicable diseases such as cancer. **Results:** Cur-NPs were effective to kill various cancer cells which include lung, breast, skin, colon and bone cancer while exerting negligible toxicity towards healthy cells. In general, the anti-cancer activity of Cur-NPs against all cancer cells was size dependent and followed the decreasing trend: 30nm > 100nm > 200nm. This is because smaller Cur-NPs were accumulated within nucleus, membrane and cytoplasm and caused extensive apoptosis in cells. Interestingly, Cur-NPs were non-toxic towards healthy lung cells and was capable to reduce the toxicity effect of paclitaxel against healthy cells when administered concurrently. The inhalation delivery of Cur-NPs showed promising aerosolization property with fine particle fraction (FPF) ranging between 49.7 to 52.1%. In addition, Cur-NPs were effective to attenuate inflammation via reduction of cytokine expressions in both lipopolysaccharides induced NR8383 and bacterial infected lung and bone cells model. **Conclusion:** Curcumin is a versatile compound which can be used for the treatment of non-communicable and communicable diseases.

Keywords: Curcumin, Inhalation, Bone infections, Anti-inflammation, Anti-cancer, Nanoparticles

OP141

Investigating the Potential of Cubic Platinum Nanoparticle as a Contrast Agent for Computed Tomography

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ABSTRACT

Introduction: Computed tomography (CT) imaging is a crucial diagnostic tool, often enhanced by contrast agents. However, conventional small-molecule agents like Omnipaque present limitations due to potential toxicity and side effects. This study introduces a novel approach, employing ultrasonic irradiation in a one-step one-pot process for the plant-assisted synthesis of cubic platinum nanoparticles (Pt NPs). This eco-friendly method utilises extract from *Prosopis farcta* (*P. farcta*) fruits as a reducing agent and stabiliser to enhance Hounsfield (HU) values for CT imaging. **Methods:** The synthesis process involves ultrasonic irradiation, creating highly stable, biocompatible cubic Pt NPs with the average cube diameter of 60 ± 4 nm. Cell viability tests on HEK-293 cells assess the biocompatibility of the Pt NPs at elevated concentrations. **Results:** The plant-assisted synthesis yielded cubic Pt NPs with enhanced stability and biocompatibility. HEK-293 cells-maintained viability even at high cubic Pt NPs concentrations. X-ray attenuation measurements revealed a superior HU value of 360 for the synthesised cubic Pt NPs, surpassing commercial and conventionally prepared counterparts. **Conclusion:** This study presents a pioneering method for the eco-friendly synthesis of cubic Pt NPs using plant extract, demonstrating their stability, biocompatibility, and superior X-ray attenuation for CT imaging. The approach opens new avenues for utilising plants in the creation of contrast agents, offering promising prospects for molecular imaging in medical diagnostics.

Keywords: *Prosopis farcta*, Ultrasonic irradiation, Omnipaque, Platinum nanoparticles, Hounsfield

OP142

Characterisation of Optimised Patin Fish Oil in Alginate Millibeads

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ABSTRACT

Introduction: Patin fish contains notable quantities of omega-3 and omega-6. However, consuming it as a staple dish is unpleasant for individuals, especially children. Encapsulation technique with alginate can be utilised to reduce oxidation and fishy smell in Patin fish oil. Thus, this study aims to enhance its size and sphericity. **Methods:** The impact parameters which are sodium alginate concentration, Tween 80 concentration and dripping flow rate was investigated. A Central Composite Design (CCD)-Response Methodology Surface (RSM) technique was used to optimise the characteristics of the beads, and 19 runs of formulation were performed. Bead size and sphericity index for each run were gathered and analysed using the software. **Results:** The optimised formulation was validated and found to have insignificant difference ($p>0.05$). The optimised model produced by the program was achieved using sodium alginate concentration of 3.94% (w/v), tween 80 concentration of 3.34% (v/v), and dripping flow rate of 3.07 mL/min. The optimised beads were consistent in size and sphericity index that were 4.566 ± 0.043 mm and 0.933 ± 0.015, respectively. **Conclusion:** The size of the beads is not impacted by any of the factors. On the other hand, sphericity of the beads was impacted by Tween 80 and flow rate. The beads were proven to be near spherical and have a nonporous structure through scanning electron microscope image. It is hoped that the beads can be an alternative approach to deliver Patin fish oil for a convenient consumption.

Keywords: Patin fish oil, Alginate, Encapsulation, Sphericity

OP145

Effect of High Glucose on Proliferation and Migration of Cervical Cancer Cells

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ABSTRACT

Introduction: Cervical cancer is a significant health concern among women worldwide. It is the fourth most common cause of cancer-related deaths among females, with approximately 570,000 newly diagnosed cases and over 311,000 deaths reported annually. The intricate relationship between metabolic disturbances, particularly diabetes, and cancer progression has garnered significant attention in recent years. Diabetes, characterised by abnormal blood glucose levels, has been linked to an increased risk of certain types of cancer and poorer cancer outcomes including cervical cancer. The aim of this study is to investigate the effect of hyperglycaemia on cervical cancer cells proliferation, and migration. **Methods:** Using Hela cells, we investigated the effect of different glucose conditions on cells proliferation and migration using Tryphan Blue Exclusion Assay and wound healing migration assay respectively. **Results:** Hyperglycaemia significantly increased HeLa cells proliferation by 30% in 9mM and 57.5% in 25 mM glucose condition compared to normal glucose condition (5mM). We also found that hyperglycaemic conditions (9mM and 25mM glucose concentration) promoted HeLa cells migration compared to normal glucose condition. Hyperglycemia acts as an important factor to support the rapid proliferation and migration of cervical cancer cells. **Conclusion:** Future advancements in cancer therapy are likely to involve a combination of targeted approaches that address both the genetic and metabolic aspects of malignancy, offering new hope for improved treatments and outcomes for cancer patients.

Keywords: Hyperglycaemia, Metabolic syndrome, Cervical Cancer

OP146

Lipid Lowering Effect of Olive Oil in Familial Hypercholesteremic Patients: A Systematic Review

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ABSTRACT

Introduction: There is still lack of conclusive data on dietary interventions being adopted for management of familial hypercholesterolemia (FH). Olive oil (OO), which is a vegetable oils extracted from olives, the fruit of Olea europaea has shown promising previous findings in improving the blood plasma lipid and lipoprotein profile. Thus, this systematic review aimed to examine the lipid lowering effect of olive oil among people with familial hypercholesterolemia. **Methods:** PubMed, Cochrane Library, EBSCOhost, ScienceDirect and Google Scholar were searched for randomised controlled trials based on MESH keywords. The PRISMA guideline was adhered to screen and extract of the studies identified in the search. All qualified articles were further appraised for their scientific validity and methodological quality using the CASP tool. **Results:** A total of 4 articles were further reviewed with a total sample of 170 patients. One study demonstrates the use of OO as an active comparator on plasma lipid profile in FH patients while the remaining three of the included studies only displayed the use of OO as a placebo in trials involving FH patients. No significant effect of OO in improving the plasma lipid profile of FH patients were observed. **Conclusion:** Current finding suggests that the use of OO in FH patients is limited to only as a placebo. However, the available evidence is not sufficient to conclude this finding. A few of well-designed randomised control trials experimental are required to make the conclusion with regard to the lipid lowering effect of OO in FH patients.

Keywords: Familial Hypercholesterolemia, Hyperlipidemia, Olive Oil

OP147

Evaluation of the Proliferative Effect of *Lignosus rhinocerus* Cultivar on the Leukaemogenic Tyrosine Kinase Cell Lines

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ABSTRACT

Introduction: Human leukemias are mostly associated with genetic changes that can over-activate the protein tyrosine kinase. Current conventional treatments for leukemia patients were found to produce severe side effects. The approach using a natural product has been assessed to be safe for consumption and offers an alternative cancer treatment. *Lignosus rhinocerus* has been famously used as a medicinal mushroom to treat various diseases including cancers. **Methods:** A cold-water extract (CWE) was produced by using the sclerotia powder of *Lignosus rhinocerus* cultivar (TM02®) at 4 ◦C. **Results:** It was found that the total carbohydrate and protein contents were 77.24% and 1.75% respectively. The fractionation of CWE TM02® using Sephadex G-50 gel filtration produced a high, medium and low molecular weight. The high molecular weight shows the highest number of total carbohydrates and proteins compared to the medium and low molecular weights. **Conclusion:** In comparison to the normal Ba/F3 cell, the CWE TM02® shows significant effects on exhibiting proliferation of Ba/F3 expressed MPL W515L and BCR/ABL, possibly due to the presence of phenolic compounds and antioxidant properties of TM02®.

Keywords: Leukemia, Protein tyrosine kinase, *Lignosus rhinocerus*, Medicinal mushroom

OP148

The Effect of Arsenic Exposure on the Neuroinflammatory Mediator Expression of Primarily Cultured Mouse Cortical Astrocytes

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ABSTRACT

Introduction: Arsenic contamination in groundwater is an understated health issue affecting 200 million populations worldwide. Arsenic exposure to the brain during developmental window period could lead to various neurodevelopmental disabilities. Sodium arsenite exposure reduced cell viability, glutamate AMPA receptor expression and neuritogenesis in neuronal cells. Astrocytes are highly populated glial cells which contribute to the formation of blood brain barrier. We previously reported that sodium arsenite induced astrocytic cell death by forcing unscheduled-S phase entry and morphological alteration. However, whether sodium arsenite affects the neuroinflammatory regulatory response of astrocytes is yet to be unveiled. This study aimed to investigate the effects of sodium arsenite on the mRNA expression of inflammatory mediators: glial fibrillary acidic protein (GFAP), signal transducer and activator of transcription 3 (STAT3), and nuclear factor of kappa light polypeptide gene enhancer in B cells (NFκB) in astrocytes. **Methods:** Primarily cultured cortical astrocytes derived from C57BL/6 neonatal mice were subjected to serum deprivation, followed by sodium arsenite (0-8 μM) exposure for 72 hours. Then RNA was extracted and transformed into cDNA by reverse transcription. Quantitative real-time PCR was performed to determine the mRNA expression of GFAP, STAT3, and NFκB. **Results:** There was no significant changes in mRNA expression of inflammatory mediators GFAP, STAT3 and NFκB after sodium arsenite exposure compared to control. **Conclusion:** Sodium arsenite exposure failed to induce the release of inflammatory mediators GFAP, STAT3 and NFκB from mouse cortical astrocytes. Further investigations are required to determine the astrocytic aspect of arsenic-induced neuroinflammatory regulation dysfunctions.

Keywords: Astrocytes, Sodium arsenite, Neuroinflammation

OP149

The Potential of Mangosteen Leaf Extract as an Antioxidant and Anticancer Agent

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ABSTRACT

Introduction: Antioxidants are complexes found in compounds that can bind free radicals that cause cancer. The growth of cancer cells can be triggered by the accumulation of free radicals in the body. Many flavonoid compounds are reported to have potent antioxidant activity. Mangosteen leaves contain flavonoid compounds, which can be developed into medicines for preventing cancer. This study aims to determine the antioxidant activity of mangosteen leaves and their cytotoxic activity against HEPG2 liver cancer cells. **Methods:** This research used ethanol extract from mangosteen leaves obtained by maceration using ethanol solvent. The cytotoxic testing method uses the MTT assay in eight test groups with a concentration of 100, 50, 25, 12.5, 6.25, 3,125, 1.56, and 0.78 µg/mL. The flavonoid contained in Mangosteen leaf extract was determined by Uv-vis spectrophotometry. Data and statistical analysis using SPSS One way ANOVA. **Results:** The research showed that the ethanol extract of mangosteen leaves contained 11.8% flavonoids with an IC50 of antioxidant activity of 4.09 ± 0.04 ppm, included in the potent antioxidant category. The results of the cytotoxic test of mangosteen leaf extract were cytotoxic to HEPG2 liver cancer cells with an IC_{50} value of 9.277 µg/mL. The IC50 value is included in the cytotoxic category. **Conclusion:** Based on the research above, it can be concluded that mangosteen leaves extract contains flavonoid compounds with antioxidant and cytotoxic activities.

Keywords: Antioxidants, Flavonoids, Mangosteen Leaves Extract, Cytotoxic, HEPG2

OP150

A Bibliometric Analysis of Research Trends in the Involvement of Community Pharmacists in Mental Health Services

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ABSTRACT

Introduction: The community pharmacists' involvement in the provision of mental health services is vital and continuously evolving. For steering its research frontiers and future trends, a thorough understanding of community pharmacists' involvement in mental health services is required. This bibliometric analysis study aims to provide an overview of the current state of research on community pharmacists' involvement in mental health services, offering a comprehensive understanding of the existing literature. **Methods:** A thorough review of recent publications was carried out using data from several academic sources. Screening on abstracts and keywords was done to include related literature and remove unrelated literature. **Results:** Markedly, this study analysed selected bibliometric indicators such as publication trends, frequently used keywords, collaborative networks, research focus areas, and citation patterns that engaged in community pharmacists' contributions to mental health services. The indicators were visually analysed by using VOSviewer. The analysis also emphasises how the research landscape is changing, and identifies new trends and discrepancies in the body of published work. Likewise, through citation analysis, the significance of important research publications was evaluated, revealing essential contributions to the area. The geographical distribution of research is scrutinised, revealing regional disparities and collaborations. Keyword dynamics are examined to trace shifts in terminology and research priorities over time. **Conclusion:** This bibliometric analysis may provide a comprehensive and nuanced understanding of the involvement of community pharmacists in mental health services, offering valuable references, insights and recommendations for future research, policy development, and practice in this critical domain of healthcare.

Keywords: Community pharmacist, Mental health service, Mental healthcare

OP151

Antiviral Efficacy Against Hepatitis C NS3/4A Virus Protease by Bioactive Metabolite from Malaysian Fungal Isolate

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ABSTRACT

Introduction: Hepatitis C virus (HCV) affects an estimated 150 million people, causing chronic liver disorders. In the absence of a vaccine, standard regimen for patients involves the use of Peg-IFNα in combination with ribavirin or ribavirin in conjunction with boceprevir or telaprevir. However, adverse side effects have occurred in nearly half of the individuals who receive these medications. Crude extracts from diverse Malaysian fungal isolates were evaluated for antiviral activity against HCV NS3/4A protease in the quest for a more effective antiviral medication. **Methods:** 30 Malaysian fungal isolates were subjected to fermentation in 3 different media. 90 crude fungal fractions were tested for HCV NS3/4A protease activity inhibition. Most potent crude fraction was further fractioned, and subfractions were further tested using HCV NS3/4A protease activity inhibition. Cytotoxicity and GCMS analysis were also performed. **Results:** HCV protease assay results demonstrated that three methanolic and five ethyl acetate extract samples inhibited HCV protease by more than 95%, which was comparable to quercetin (positive control). An ethyl acetate extract from inhibited HCV NS3/4A protease in a dose-dependent manner with an IC_{50} value of 64.63g/mL, while cytotoxicity action on Vero cells had a CC_{50} of 2500 g/mL. The active subfraction contained significant chemicals such as hexadecenoic acid, octadecenoic acid, and adipic acid, according to GCMS analysis. **Conclusion:** Protease assay yielded excellent results for the fermentative sub-fractions, which can be used to advance the data to a cell-based assay. This study also serves as a framework for testing antiviral activity against different Flaviviridae viruses.

Keywords: Hepatitis C, Anti-hepatitis, Fungal extract, HCV NS3/4A protease, Virus

POSTER PRESENTATION

PP101

Study on Cytotoxic Activity of Extracts from *Flacourtia indica* in Human Breast Cancer MDA-MB-231 Cell Line

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ABSTRACT

Introduction: This work studied on screening for cytotoxic activity in human breast cancer MDA-MB-231 cell line of extracts from different parts of this medicinal plant. **Methods:** MDA-MB-231 cells were cultured in DMEM supplemented with 10% FCS, 2 mM L-glutamine, 100 IU/mL penicillin and 100 µg/mL streptomycin. Cells were treated with extracts of *F. indica* at different concentrations (4 - 100 µg/mL) for 72 hours. Anti-proliferative effect was evaluated by MTT test; necrosis measured by LDH test; apoptosis activation determined by acridine orange/ethidium bromide staining, electrophoresis of DNA fragment, assays of DNA fragment and caspase 3 activity. **Results:** All extracts from root, stem and leaf of *F. indica* showed cytotoxic activity in human breast cancer MDA-MB-231 cell line as decreases in cell viability after treatment for 72h in the order: chloroform extracts > ethyl acetate extracts > aqueous extracts. For chloroform and ethyl acetate extracts of different parts, stem extracts exhibited the highest cytotoxic activity, after that root extracts > leaf extracts. The mechanism of cytotoxic activity of chloroform, ethyl acetate extracts form *F. indica* root and stem were necrosis by releasing of lactate dehydrogenase into culture medium and apoptosis activation of MDA-MB-231 cells measured as membrane bleeding, chromosome condensation as well as increases in DNA fragmentation and caspase 3 activity. **Conclusion:** All extracts of *F. indica* showed cytotoxic activity in human breast cancer MDA-MB-231 cell line by mechanism of necrosis and apoptosis activation.

Keywords: *Flacourtia indica*, Breast cancer, MDA-MB-231 cell, Apoptosis, Cytotoxic activity

PP102

High Resistance Rate of Gram-Negative Bacteria at Nhan Dan Gia Đinh Hospital Last 6 Months Of 2022

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ABSTRACT

Introduction: Antibiotic resistance is a major world-wide problem, including Vietnam. To develop an effective resistance management strategy, the characteristics of the microorganism as well as the rate of resistance are important. The aim of research is to determine the prevalence of different types of bacteria and fungi isolated at Nhan Dan Gia Dinh Hospital and assess the resistance rates of bacteria and fungi. **Methods:** A cross-sectional descriptive study was conducted on all antibiotic and antifungal susceptibility results of pathogenic bacteria and fungi isolated at Nhan Dan Gia Dinh Hospital during the last six months of 2022. **Results:** Performed on 2602 positive results for pathogens, of which gram-negative accounted for 67.1%, gram-positive 18.8%, fungi accounted for 14.1%. Among bacteria, the highest rate of isolation was *Escherichia coli* (26%), *Klebsiella pneumoniae* (16%), *Acinetobacter baumannii* (14%), *Staphylococcus aureus* (11%), *Pseudomonas aeruginosa* (9%), *Enterococcus faecium* (2%). The respiratory simples had the highest rate (28%). The MDR rate of *A. baumannii* was 43.5%, in which the rate was high resistance to Ampicillin (100%), Ticarcillin (100%), Ceftriaxone (96.1%), Ceftazidime (94.7%), Cefepim (94.7%), Imipenem (95%), Meropenem (94.2%). *P. aeruginosa* had an MDR of 18,6%. *E. coli* secreted 53% ESBL, 3.4% gen AMPC. With *Klebsiella pneumoniae*, the rate of ESBL secretion accounted for 13.9%. In the gram-positive group, *Staphylococcus aureus* occupy 49.2%, low resistance to Gentamicin (32.2%). *Enterococcus faecium* accounted for 8.6%, the rate was resistant to Teicoplanin is 45.5%, Tetracycline is 38.5%. Regarding fungi, *Non-albican* resistance rate is 30% with Fluconazole. **Conclusion:** Gram-negative bacteria are common pathogens in hospitals and have a high rate of antibiotic resistance. It is necessary to have a strategy for developing and managing antibiotic use as well as applying 4.0 technology in statistics of resistance rates and optimising drug use.

Keywords: Antibiotic resistance, MDR, Bacteria, Acinetobacter baumannii

PP103

The Effectiveness of Face Mask in Preventing the Transmission of Respiratory Tract Infections (A Rapid Review)

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ABSTRACT

Introduction: People wear a variety of face masks to protect themselves from breathing in dust, pollutants, allergies, and harmful organisms. In light of the recent Covid-19 pandemic, mask wearing has been made mandatory globally. As part of personal protective equipment and as a public health strategy to stop the spread of illnesses, wearing face masks has been advised. This rapid review was conducted to explore and analyse the effectiveness of face mask usage in preventing the transmission of respiratory tract infection. **Methods:** The review was conducted in line with Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidance. Twenty three out of 134 articles met the inclusion criteria. The types of masks in the studies were N95 mask, surgical mask, cloth mask, non-medical mask and unspecified face masks. **Results:** Upon analysis of the review, it showed that the usage of masks does indeed offer a certain degree of protection to the individual and to people around them. Therefore, policy makers should encourage the general population to use facemasks for health protection. However, more evidence is required in terms of clarifying the usage of the mask in various settings and against diverse types of infection. **Conclusion:** It is stressed that the usage of face masks in combination with other preventive measures such as washing hands and social distancing should be implemented concurrently to prevent any outbreak of respiratory tract infections.

Keywords: Effectiveness, N95 mask, Surgical mask, Transmission, Respiratory tract infection

PP104

Effects of Covid-19 Vaccines towards Menstrual Changes of Female Students in UniKL RCMP

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ABSTRACT

Introduction: There are several types of COVID-19 vaccines which are available in Malaysia. These include inactivated viral vaccines such as Sinovac, viral vector vaccines such as Janssen/Johnson&Johnson COVID-19 vaccine and genetically modified RNA and DNA vaccines such Astra Zeneca and Pfizer. The aim of this study was to determine the effects of COVID-19 vaccines towards menstrual changes of female students in Universiti Kuala Lumpur Royal College of medicine Perak (UniKL RCMP). **Methods:** This was a cross-sectional survey conducted using google form among female students of UniKL RCMP. A close-ended questionnaire was used. Information on COVID-19 vaccination, and menstrual changes three months before and three months after the vaccination were noted. A total of 300 responses were received during that period. **Results:** Our results showed a statistically significant difference in menstrual regularity prior to and after COVID-19. Prior to immunisation, the mean menstrual cycle duration was 29.46; after vaccination, it was 30.94 which was an increase in 1.48 days with a p-value of 0.004 ($p<0.05$). There was a strong correlation between the severity of dysmenorrhea prior to and following COVID-19 vaccination. Before vaccine the rate was 1.87; after vaccination it was 2.62, an increase by 0.75 with a p-value of <0.005. **Conclusion:** Therefore, this study adds to supports the evidence that menstrual changes can be recognised as one of the side effects of the Covid-19 vaccination.

Keywords: Menstrual changes, Covid-19, Vaccine effect, Dysmenorrhoea

PP105

The Study on the Effect of Betel Leaf Extract towards the Growth of *Candida albicans*

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ABSTRACT

Introduction: *Candida albicans* infection of the vagina is one of the commonest fungal which causes distresses among women all around the world. In Malaysia, most women will search for relief by going to the doctors or over the counter for anti-fungal treatment. The usual treatment will be via Nystatin or Clotrimazole pessary. However, traditionally, women have been known to use Piper betel (Sireh) leaves for quick relief. **Methods:** We extracted the active ingredients of Piper betel leaves and tested against lab-grown *C. albicans* on Potato Dextrose Agar (PDA) and Saboruad Dextrose Agar (SDA). Active ingredients from Piper betel leaves were extracted at yield concentrations of 0.2545%, 0.1273%, 0.0636%, and 0.0318%, respectively. **Results:** The extract confirmed significant anti-fungal activities against *C. albicans*. There was also a proportional effect on the anti-fungal activity to the concentration of the extract. In SDA medium, Piper betel extract had a maximum 29.0 ± 1.15 mm inhibition zone at 0.2545% concentration. When compared with 1% Clotrimazole is comparable with inhibition zone of 29.3 ± 0.02) mm ($p<0.000$). **Conclusion:** Betel leaf extract has good anti-fungal effects against *C. albicans* and is as good as existing anti-fungal drugs.

Keywords: Anti-fungal activity, Piper betel, *Candida albicans*, Sireh, Candidiasis

PP106

Effect of High-Fat Diet and High-Sugar Diet on Adrenocorticotrophic Hormone (ACTH) and Corticosterone Production in Male Sprague Dawley Rats with Mesenteric Fat Tissue Involvement

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ABSTRACT

Introduction: A sedentary lifestyle coupled with an environment of easily obtainable high fat, high sugar overnutrition contributes to metabolic syndrome. Excessive visceral fat is regarded as an important component of metabolic syndrome with disturbance in the adrenocorticotrophic hormone (ACTH) and corticosterone blood levels reported. ACTH is secreted and influences corticosterone production in adrenal glands via the hypothalamic–pituitary–adrenal (HPA) axis. ACTH and corticosterone are frequently used in research as markers of stress. Our aim is to observe which diet affects ACTH and corticosterone production and observe mesenteric tissue deposition. **Methods:** Thirty-five male Sprague Dawley rats were divided into five groups and were fed with five different types of diets, ad libitum for eight weeks. The five diets were normal rat chow, high-sugar, high-starch, high-protein, and high-fat rat feed formula. The rats were also given tap water. Post-sacrifice, the individual components of ACTH and corticosterone from blood were extracted, purified, identified, and quantified using the High-Performance Liquid Chromatography (HPLC) method. Mesenteric fat was fixed, processed and stained for viewing under a light microscope. Funded by Malaysian MOHE FRGS [ref no: FRGS/1/2018/SKK08/UNIKL/03/1]. **Results:** The results show high-fat diet and high sugar diet altered corticosterone production. Also, a high-fat diet promotes mesenteric fat proliferation when compared to other rat feed formulas. **Conclusion:** A high-fat diet alters the production of corticosterone while inducing mesenteric fat hypertrophy. A high-sugar diet also alters corticosterone production but does not affect mesenteric fat morphology.

Keywords: ACTH, Corticosterone, Mesenteric fat, Diet

PP107

Review of the Extraction and Isolation Methods for *Anaxagorea javanica* Plant

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ABSTRACT

Introduction: The promotion of natural products for their potential therapeutic properties has gained increasing attention in recent years. *Anaxagorea javanica*, commonly known as 'Sekobang Kechil' or 'Larak Lecek' in Malaysia, is an underutilised medicinal plant with a long history of use in traditional medicine. In this report, our aim is to provide comprehensive information on its extraction, isolation and purification to guide future studies for the design and development of new relevant drugs from *A. javanica*. **Methods:** Using PRISMA, we conducted a review of multiple literatures to acquire information on the extraction methods of *A. javanica* from various electronic databases (PubMed, PubMed Central, Science Direct, and Google Scholar). We used the search words with the combinations of the name of the plant, "*A. javanica*" and the word "extraction" and "isolation". Another search term that we used are the combinations of the name of compounds and the word "purification" such as "copyrine alkaloid purification" etc. **Results:** Based on the results obtained, alkaloids respond positively in acid-base extraction and then later purified using silica-gel column chromatography. Solvents such as n-hexane, 95% ethanol, hot ethanol have been found to work best for extracting alkaloids, followed by partitioning with chloroform and water. Solvents such as 1,2-dichloroethane, chloroform, diethyl ether and benzene work the best for extracting copyrine alkaloids. Sequential extraction using dichloromethane, ethyl acetate and methanol, and followed by repeated chromatography over silica gel has shown to be effective for extracting terpenes. The compounds in the leaves have shown a positive response in dichloromethane, ethyl acetate and water. **Conclusion:** Drug discovery and drug design are lengthy processes. By reviewing the extraction methods for this plant, we can streamline one aspect of the process toward designing treatments for diseases.

Keywords: *Anaxagorea javanica*, Alkaloid, Sesquiterpene, Sequential extraction, Column chromatography

PP108

Perception of Noise Pollution and its Effects on the Community's Lifestyle among Ipoh Residents

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ABSTRACT

Introduction: Noise pollution is defined as a high level of unpleasant, undesirable or unwanted sounds that pose a harmful risk to human health, yet it is frequently being neglected. People living in urban environments who are exposed to these undesired sounds potentially would have negative impacts towards their health and lifestyle that must be carefully assessed. This study aims to assess the perception of noise pollution in Ipoh, the common sources of noise pollution and its effects on the community's lifestyle among Ipoh residents. **Methods:** This is a cross-sectional descriptive study and the participants were adults 18 years and above who agreed to participate in the survey and live in Ipoh, Perak. A self-administered well-validated questionnaire consisting of 3 sections, which were socio-demographic profiles of the respondents, perception of the presence of noise pollution and lifestyle effect of noise pollution. **Results:** With a total of 407 respondents (158 males, 249 females), 55.0% (n=224) of respondents had a good perception, they recognize noise pollution and 45.0% (n=183) had a poor perception. As for the perception of noise pollution and its effect on lifestyles, 91.5% (n=372) had a good perception while 35 respondents (8.5%) with poor perception. **Conclusion:** Majority of the respondents had good perception and they well recognise noise pollution which affect their lifestyles, influenced by their occupations, residence period and educational levels. It is hoped that this study would be beneficial to alert the relevant council or authorities to monitor and take action regarding this issue in the upcoming years.

Keywords: Perception Noise, Pollution, Lifestyle effects

PP109

The Knowledge, Attitude and Practice on HPV Vaccine Taking and Pap Smear Screening among Young Adult Women in Muar, Malaysia

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ABSTRACT

Introduction: Cervical cancer is the third most common cancer among women in Malaysia. However, there is still a lack of research and information regarding the women's knowledge, attitudes, and practices regarding the acceptance of HPV vaccination, and Pap smear screening in the control program. The study aimed to determine the knowledge of young adult women in Mukim Sungai Raya, Muar District, about the knowledge, attitudes and practices of HPV vaccination and Pap smear screening as a prevention of cervical cancer in Malaysia. **Methods:** The cross-sectional study was conducted using a self-filled questionnaire among young adult women aged 19-25 years old at Mukim Sungai Raya Muar. The participants were selected conveniently based on the list provided by Mukim's Head. **Results:** The study showed that only 61.3% of respondents had low knowledge on HPV vaccination and Pap smear screening, 50.9% had a negative attitude toward it, whilst 47.7% had completed two doses of HPV vaccination but only 9.3% had performed Pap smear screening. The lower level of education was significantly associated with lower level of knowledge (p= 0.025). There was no association between level of knowledge with attitude. **Conclusion:** The knowledge, attitude and practice on HPV vaccine taking and Pap smear screening were found to be low among young adult women at Mukim Sungai Raya, Muar. Intensive health promotion program should be instituted among young women in the rural and sub-urban setting.

Keywords: KAP study, Cervical cancer, HPV vaccine, Pap smear, Muar Malaysia

PP110

Stability of Selected Paracetamol Products in Malaysia

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ABSTRACT

Introduction: In this study, stability test was done towards six months old paracetamol products in Malaysia. The objective is to compare the stability between generics and originator of paracetamol products. **Methods:** The samples are four brands of generics (G1, G2, G3 and G4) and an originator. The tests are appearance, uniformity of weight, disintegration and assay. The tests were done in triplicate. **Results:** All samples passed in appearance, uniformity of weight and disintegration test. In disintegration test, G1 (6.04 ± 1.56 mins) and G3 (4.91 ± 0.78 mins) have longer time to disintegrate compared to originator (2.98 ± 0.04 mins), while G2 (0.61 ± 0.53 mins) and G4 (1.06 ± 0.49 mins) disintegrate faster than the originator. All samples' assay are below specification (95% to 105%). Upon assay determination, originator and G3 give transparent flakes during grinding process and these flakes are insoluble in water. Temperature and humidity can deteriorate the samples and this can be the cause of the low assay result since the samples were taken from a retail pharmacy. **Conclusion:** In conclusion, generics and originator products have equivalent stability after six months. However, their assays are out of specification which might be associated with the flakes existence due to high storage temperature.

Keywords: Stability, Generic, Originator, Paracetamol, Assay

PP111

Pro and Anti-Inflammatory Cytokine in Pretreatment of Tualang Honey in NSAIDS-Induced Ulcer

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ABSTRACT

Introduction: Gastric ulcers manifest as specific lesions on the stomach's inner lining. Normally, the stomach's mucosal layer secretes hydrochloric acid (HCl) at a rate that aligns with physiological levels or is slightly lower than those found in individuals with gastric ulcers. However, a sudden surge in HCl secretion due to stress, or NSAID use triggers ulcer symptoms. Honey's recognised anti-inflammatory and antioxidant properties lend substantial support in modulating HCl secretion and vital cytokines that balance protective and aggressive factors in stomach ulcer scenarios. **Methods:** Sprague-Dawley rats (n=36) were sorted into four groups. Group 1 served as the control. Groups 1 and 2 received distilled water. Group 3 received omeprazole (OME) (40 mg/kg), and Group 4 was administered Tualang Honey (TH) (2 g/kg). After the final dose, rats in Groups 2–4 were administered 20 mg/kg indomethacin (INDO) to induce stomach ulcers, while Group 1 received distilled water. Gastric tissues were weighed and homogenised with a 0.01M PBS (pH 7.4) solution in a 1:9 ratio. The MILLIPLEX® MAP panel was utilised to quantify cytokine content. **Results:** Pre-treatment with OME, and TH led to reduced interleukin-6 (IL-6), interleukin-1 beta (IL-1β), and tumor necrosis factor-alpha (TNF-α) concentrations, with significant increases in interleukin-4 (IL-4), interleukin-10 (IL-10), and vascular endothelial growth factor (VEGF) concentrations compared to the negative control group. **Conclusion:** TH exhibited comparable efficacy to omeprazole in reducing proinflammatory cytokines while increasing anti-inflammatory cytokines and VEGF.

Keywords: Gastric ulcer, Cytokine, Tualang, Honey

PP112

In Silico Anti-Quorum, Anti-Biofilm Activity and Characterisation of Bioactive Metabolites in Herbal Extracts

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ABSTRACT

Introduction: Biofilms are aggregates of bacterial cells enclosed in self-produced extracellular polymeric substances. They are important pathogenic characteristics of pathogenic bacteria as it confers multiple levels of antibiotic resistance. New alternatives for controlling infections are to be focusing on the therapeutic properties of medicinal plants. **Methods:** In the present study, the antibiofilm activities of plant extracts such as *Punica granatum, Boerhaavia diffusa* and *Cinnamomum verum* (PBC formulation) were evaluated against clinically isolated microorganisms such as *P. aeruginosa, S. aureus* and *E. coli*. Qualitative preliminary phytochemical analysis revealed the presence of alkaloids, flavonoids, saponins, glycosides, phenolic compounds, tannins, quinones and volatile oil. The functional group such as alcohol, phenol, alkanes, aldehyde, aromatic compound, secondary alcohol, aromatic amines and halogen compound were present in the medicinal plant extract that was confirmed by Fourier-Transform Infra-Red Spectroscopy (FTIR) and thin layer chromatography. The bioactive compounds were identified through High Performance Liquid Chromatography (HPLC). **Results:** The extracts of medicinal plant formulation significantly exhibited anti-biofilm activities against *P. aeruginosa, S. aureus* and *E. coli*. The greatest biofilm inhibition was observed in *Klebsiella pneumoniae* (95%), followed by *S. aureus* (90%) and *E. coli* (80%) at 25 MIC mg/mL which was well sufficient to inhibit biofilm formation. The result showed that all selected MIC doses exhibited significant to moderate reduction in microbial biofilm formation. **Conclusion:** The herbal formulation extract could therefore be used as an alternative commercial source of anti-bacterial and anti-biofilm agents.

Keywords: *P. aeruginosa, S. aureus, E. coli*, Biofilm, Medicinal plant

PP113

Oxidative Stress Profile of Tualang Honey on Indomethacin-Induced Gastric Ulcer

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ABSTRACT

Introduction: The mechanism of indomethacin (INDO)-induced gastric injury is related to the suppression of prostaglandin (PG) synthesis through cyclooxygenase (COX) inhibition, which results in oxidative tissue damage and is the primary cause of gastric mucosa lesion. Tualang Honey (TH), a multi-floral forest honey with a high phenolic concentration, has shown a tendency to enhance antioxidant properties. **Methods:** 4 groups made up of a total of 36 male Sprague-Dawley rats starting with 220g body weight were randomly selected. As the control, the first group received distilled water. Distilled water was given to groups 1 and 2. Omeprazole (OME) 40 mg/kg was given to group 3, whereas TH 2 g/kg was given to group 4. After a two-week pre-treatment period, group 1 was administered with distilled water, whereas groups 2 to 4 were given 20 mg/kg of INDO, a drug used to induce stomach ulcers. The content and activity were examined using an ELISA kit from Elabscience Biotechnology Inc (USA). **Results:** TH exhibits the ability to regulate the stomach against INDO-induced ulcers by regulating oxidative stress activity compared with OME. This regulation involves a significant ($*p \leq 0.05$) increase in the activities of enzymes superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase (GPX). Moreover, pre-treatment with TH and OME significantly decreased the content of malondialdehyde (MDA) while increasing the protective aspect of prostaglandin E2 (PGE2). **Conclusion:** Pre-treatment with TH and OME proves effective in the reduction of INDO-induced gastric lesions. This decrease is made possible by controlling gastric mucosal injury through the modulation of oxidative stress content and activity.

Keywords: Gastric ulcer, Oxidative Stress, Tualang, Honey

PP115

Knowledge, Perception and Consumption of Vitamin C Supplements among Medical Students in UniKL RCMP

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ABSTRACT

Introduction: Vitamin C has antioxidant properties and is vital for health as it helps form and maintain bones, skin, and blood vessels. Low levels can lead to scurvy. This study aimed to determine the knowledge, perception and consumption of vitamin C supplements among medical students in UniKL Royal College of Medicine Perak and to study the association between year of study and gender with knowledge, perception and consumption of vitamin C supplements. **Methods:** This cross-sectional study was conducted using an online questionnaire (Google Form). Quota sampling with a minimum sample size of 248 (total 698 students) was utilised. The questionnaire consisted of 4 sections: demographic data, knowledge, perception and practice taking Vitamin C supplements. The results were analysed using Statistical Package for Social Sciences. Chi-square test was used to find out the associations among the study variables (significant p-value<0.05). **Results:** There were 272 respondents, with 61.8% and 60.7% having good knowledge and positive perception of vitamin C supplements respectively. The majority (87.5%) were taking vitamin C supplements. There was a significant association between the year of study with knowledge (p-value=0.010) and perception (p-value=0.002) but no significant association with consumption of vitamin C (p-value=0.643). Year 5 had the highest percentage (78.2%) with good knowledge while Year 1 had the highest percentage (74.5%) with positive perception. There were no significant association between gender and knowledge, perception and consumption of vitamin C (p-values =0.321, 0.378, 0.617 respectively). **Conclusion:** The majority of the students in the study consumed vitamin C supplements, and had good knowledge and a positive perception towards vitamin C.

Keywords: Vitamin C supplements, Knowledge, Perception, Consumption, Medical students

PP116

A Study of Lifestyle and Financial Management among Clinical MBBS Students of Two Universities in Malaysia

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ABSTRACT

Introduction: This study provides insights to the lifestyle and financial management practices among clinical MBBS students of two universities in Malaysia. University students face financial challenges in managing their lifestyle and finances. Lack of financial literacy and poor lifestyle choices can lead to financial problems. Understanding the financial management practices and lifestyle choices of university students is crucial to help them manage their finances effectively. **Methods:** This cross-sectional study was conducted from 27th February 2023 until 9th June 2023, involving 270 respondents. Simple random sampling was done using Microsoft Excel, and selected individuals not fitting the inclusion criteria were replaced by another person according to the next generated random number. Data obtained were cleaned and analysed via Statistical Package for Social Sciences (SPSS). **Results:** It was found that 48.6% of the respondents had a good lifestyle, while 44.4% of the respondents had sufficient knowledge about finances. Additionally, 50.4% of the respondents demonstrated good financial management skills. However, this study found no significant relationship between sociodemographic factors, lifestyle choices, financial literacy, and financial management. **Conclusion:** The results showed that less than 50% had sufficient knowledge about finances and a good lifestyle, and only half practicing good management skills of their finances. However, no significant associations were found between socio-demographic factors, lifestyle choices, financial literacy, and financial management. These findings provide valuable insights on the importance of teaching financial literacy to ensure the financial well-being of medical students.

Keywords: Lifestyle, Financial management, Financial literacy, MBBS students

PP117

Community Awareness on Vaping in Ipoh

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ABSTRACT

Introduction: Vaping trend had a remarkable increased in the past years becoming a concern among the community. This study included students from UniKL RCMP representing Ipoh community. This study aims to assess and explore the prevalence of vaping among UniKL RCMP students, within Ipoh community. Determining the number of people using e-cigarettes and the sociodemographic data might determines the level of awareness towards vaping. **Methods:** A total of 240 UniKL RCMP students from three different education applied and analysed by SPSS version 26. **Results:** Two hundred and forty vapers were detected. There was an association between the prevalence and sociodemographic data of the respondents. Vaping was linked to greater awareness. Social recreation as a primary reason for vaping was noted. **Conclusion:** Based on this study, the knowledge, attitude, and practise on vaping needs to be emphasised among young adults. Holistic intervention strategy and further intensive awareness education is necessary with the help of policy makers.

Keywords: Vaping prevalence, Sociodemographic, Awareness level

PP118

Remote Psychological Intervention on Mental Health among Home Quarantined COVID-19 Patients – Pilot Study

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ABSTRACT

Introduction: The COVID-19 pandemic has had a significant impact on mental health, with many individuals experiencing increased levels of stress, anxiety, and depression. In response to the challenges posed by the pandemic, remote psychological interventions have emerged as a valuable tool for delivering mental health support to COVID-19 patients. This pilot study aimed to examine the use of a locally produced psychological intervention delivered remotely to home-quarantined COVID-19 patients. **Methods:** Category 1 and 2 COVID-19 patients who were undergoing home quarantine were recruited from March 2023 till June 2023. Participants went through a three-minute audio-guided mindfulness exercise which was delivered through a video call every day for five days. Pre and post-intervention questionnaires which included a depression, anxiety, and stress scale (DASS21) were administered on day 1 and 5 of the home quarantine period respectively to assess their mental status. **Results:** A total of 19 participants, aged between 20 to 37 years, were recruited in this pilot study. Paired T-test showed a significant reduction in the mean DASS21 score before (M = 13.3, SD = 10.8) and after (M = 8.8, SD = 12.3), p = 0.017. All participants agreed that the delivery method of the intervention and assessment were helpful. **Conclusion:** A locally produced audio-guided mindfulness exercise delivered remotely can potentially reduce mental health issues, especially for conditions requiring patients to be home quarantined. The researchers have developed a system and resources that can be used on a larger scale in future research.

Keywords: COVID-19, Remote psychological intervention, Audio-guided mindfulness exercise, Home quarantine

PP120

Synergistic Effect of Calorie Restriction and Epigallocatechin-3-Gallate in Aged Rat Hepatocytes

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ABSTRACT

Introduction: Aging is caused by the accumulation of damage inflicted by reactive oxygen species which, reduces the functions of organs and tissues, thus increasing the risk of developing diseases. Curtailing energy intake or calorie restriction will have a greater impact on oxidative stress, obesity and thus aging. Therefore, this study aims to comprehend the combinatorial efficacy of Epigallocatechin-3-Gallate (EGCG) along with calorie restriction in the regulation of the antioxidant defense system in male Wistar-aged rats. **Methods:** Aged male Wistar rats were calorie-restricted and treated with EGCG (100 mg/kg of body weight per day) orally for 45 days. After the experimental period, rats were sacrificed, and the blood samples were collected in respective test tubes for the separation of plasma and serum samples. Serum lipid and lipoprotein status was determined. The levels of oxidative stress markers, and glutathione (GSH) status were assessed in liver tissue homogenate of experimental animals using standard protocols. **Results:** The results showed that EGCG up-regulates the antioxidant status, reduces the levels of serum lipid and lipoproteins, and improves the level of high-density lipoprotein (HDL) in ad libitum fed rats. However, its beneficial effect can be enhanced when combined with a calorie-restricted diet. **Conclusion:** This preliminary finding paves the way for a combinatorial approach in replenishing the antioxidant status during aging and thereby reducing the risk for age-associated degenerative diseases.

Keywords: Aging, Reactive oxygen species, Calorie restriction, EGCG

PP122

Knowledge of Hygiene Needs, Nutrition, and Communicable Diseases among Secondary School Children of the *Orang Asli* Community in Sungai Siput, Perak

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ABSTRACT

Introduction: In Malaysia, "health promotion" refers to programmes and strategies aimed at improving the health and well-being of the population. These strategies are often tailored to Malaysia's diverse cultural and racial landscape. The *Orang Asli* (indigenous people), a minority community, are a native group in Peninsular Malaysia who have sometimes been overlooked and marginalised. However, the Malaysian government has supported initiatives to enhance their access to healthcare. Recently, Malaysia has been called to prioritise the health and well-being of the *Orang Asli* community due to persistent health disparities. The study aimed to assess *Orang Asli* secondary school students' knowledge of nutrition, communicable diseases, and hygiene requirements. **Methods:** The study involved 104 respondents at an *Orang Asli* secondary school, Sekolah Agama Rakyat Nurul Hidayah, in Sungai Siput, Perak. A health promotion strategy was adopted in this intervention study using a quantitative pre-and post-test design. A 30-item self-administered questionnaire was used to gauge the knowledge of *Orang Asli* school children on various health promotion-related issues. Respondents who participated before and after the health promotion education in the study were compared. **Results:** There was a significant difference between the pre-test and post-test with a p-value of 0.001. There was a notable difference in the pre-and post-test results between respondents from all classes at that school, with pre-test p=0.001 and post-test p=0.005. **Conclusion:** This highlights the importance of sustained and dedicated health education and promotion initiatives within the *Orang Asli* community to address health disparities and improve overall well-being.

Keywords: Health promotion, *Orang Asli*, Communicable disease, Nutrition, Hygiene

PP123

Fast Food Consumption Among High School Students In Ipoh

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ABSTRACT

Introduction: Fast food consumption among teenagers is a global concern, primarily driven by its appealing taste and convenience. However, excessive consumption contributes to obesity and chronic diseases. This study aims to assess students' knowledge, attitudes, and practices regarding fast food consumption. **Methods:** We conducted a cross-sectional observational study involving 120 randomly selected secondary school students from four schools in Ipoh, Perak. A questionnaire comprising sociodemographic information, knowledge, attitudes, and practices related to fast food consumption was administered. **Results:** A majority of students recognised the health risks associated with excessive fast-food consumption, with 79.2% acknowledging its link to diseases like obesity and heart disease. However, many students exhibited poor attitudes and practices, particularly females. Notably, 91 out of 120 students indicated that food variety influenced their fast-food consumption. Fast food was frequently consumed as a snack (70.7%) and as a meal (54.2%). **Conclusion:** Understanding the expectations and preferences of secondary school students regarding fast food consumption is crucial. Research into fast food ingredients is necessary for safer consumption. Parents can play a vital role by monitoring their children's food choices and educating them about healthier eating habits. Basic knowledge about fast foods empowers teenagers to make informed dietary decisions and cultivate a healthier lifestyle.

Keywords: Fast foods, Knowledge, Practice, Attitude, High school students

PP124

Evaluation of Antimicrobacterial Effects of Different Brands of Hand Sanitizers in the Market

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ABSTRACT

Introduction: Hand sanitisers used during the pandemic claimed to kill 99.9% of the germs. This study was carried to verify the manufacturers claim and ascertain the relationship between the amount of hand sanitiser used and their capacity to reduce colonisation. **Methods:** Two methods were employed. In the agar well diffusion the susceptibility of the organism was assessed through the zone of inhibition formed around 100 microliters of hand sanitizer. In the second method, five volunteers made impressions with three fingers on nutrient agar plates, 'before' and 'after' applying a sample of hand sanitiser in specific volumes (0.6 mL, 2.0 mL, and 3.5 mL). Colony forming unit (CFU) reduction was used to assess the efficacy. **Results:** The results of the well diffusion showed three hand sanitisers were effective against all test organisms. A one way ANOVA and Tukey hoc test showed no statistical difference on inhibition of Staphylococcus aureus, Pseudomonas aeruginosa and E. coli. In the second method, Sample D showed highest CFU reduction - 82.12%, while Sample B showed lowest -50.89%. Paired t-test CFU showed significant difference of anti-microbial activity when using 3.5 mL of sanitiser A ($P = 0.038$) (p-value < 0.05,) while other showed no significant difference. **Conclusion:** Three hand sanitisers were effective against all test organisms and consisted of similar active constituents. The highest mean CFU reduction in our study was 82.12%, which was much lower than the claim by the manufacturers and required different volumes of sanitiser to achieve the desired antimicrobial efficacy.

Keywords: Hand sanitisers, S. aureus, P. aeruginosa, E. coli, % CFU reduction

PP125

Comparison of Isolation Methodology for Primary Microglia from Mouse Brain and Secondary Microglia BV2 Cell Lines

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ABSTRACT

Introduction: Explaining the role of microglia in resting and activation state during disease development and progression in the CNS complex condition is truly challenging that necessitate the requirement of genuine, well founded and reproducible techniques to isolate and culture microglia. Many different protocols are available for primary isolation of neonatal and adult brain microglia. Microglia cells can also be established using microglia BV2 cell lines as a secondary cell culture. In this study, we compare two methods namely, mild trypsinisation for secondary microglia isolation and EasySep magnetic separation for primary cell isolation. **Methods:** In this study, we described a refined protocol including enzymatic and mechanical dissociation utilising magnetic separation for microglia cells isolation. **Results:** EasySep® magnetic separation resulted in higher microglia yield when compared to other traditional primary isolation techniques and secondary cell isolation produced significantly higher microglia yield when compared to primary cell isolation. Both isolation procedure enables the use of functionally viable cells for various applications. **Conclusion:** In conclusion, primary cells offer more biologically suitable models than cell lines for analysing disease, therapeutic efficacy, and toxicity, safety, yielding more precise and therapeutically applicable findings. However, due to the significant low number of viability cells in primary isolation, BV2 cell line was preferred to use in order to downstream the experiment. Nonetheless, more research and development are required to fully investigate the effects on microglia. This research provides a comprehensive overview of current knowledge and lays the groundwork for future research and development in this rapidly evolving field.

Keywords: BV2 cell line culture, Differentiation, Microglia, Magnetic separation, Primary cell culture

PP126

Exploring the Impact of Smartphone Screen Time on Sleep Quality among Pre-Clinical Medical Students: A Cross-Sectional Study

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ABSTRACT

Introduction: Smartphones have become indispensable in everyone's daily life and with the advent of social networking, and other engaging applications, the screen time spent is on constant rise. Adding to the already sedentary lifestyle, the high screen times have been implicated as causes of poor sleep quality and other lifestyle disorders. This study aims to determine the association between smartphone screen time and sleep quality among pre-clinical medical students of UniKL RCMP. **Methods:** This is a cross-sectional study where the smartphone screen time was measured continuously via smartphone applications. Demographics and sleep quality of participants (Pittsburgh Sleep Quality Index ± PSQI) were obtained by self-reporting via an online survey. Data entry and analyses were done in Microsoft Excel, STATA and SPSS 17.0 using appropriate statistical tests, $p<0.05$ was considered significant. **Results:** The average daily screen time of the study participants was 205.4 minutes (3 hours 42 minutes) and the median screen time was 190 minutes (IQR 132.0;246.0). No significant association was observed between the higher screen time using study population and their sleep quality. Male participants were found to have 54.7 minutes more of daily screen time than females ($p=0.004$). Social media applications were the most used, followed by educational content, video streaming and games. **Conclusion:** While the study participants exhibited a substantial daily screen time, no significant association was found between higher screen time and sleep quality. These findings emphasise the need for further research with more diverse samples and objective sleep quality measures.

Keywords: Screen time, Sleep quality, Lifestyle

PP127

The Role of Pre-Exposure Prophylaxis in HIV Prevention: Insights from the Ipoh Public

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ABSTRACT

Introduction: Pre-exposure prophylaxis (PrEP), a proven method to minimise HIV risk, is a vital part of a comprehensive plan to reduce new HIV infections. Increasing appropriate PrEP use has been identified by the Malaysian Ministry of Health (MOH) as a strategy for reducing HIV infection and to put an end to the AIDS epidemic by 2030. Use of PrEP as preventive measure is still uncommon in Malaysia and there were many deliberations about implementing PrEP in Malaysia to curb HIV infection among policy makers. **Methods:** We conducted a cross-sectional study which comprises observational-based research and utilised a convenient sampling to determine the sample size. The study was conducted by distributing online questionnaires to the target respondents in public places in Ipoh, Perak. **Results:** Our findings showed that 48.5% of the respondents had good knowledge of the prevention of HIV, 38.3% of the respondents were aware of PrEP prior to the survey, 91.6% agree on implementing PrEP as a preventive measure of HIV infection and 74.4% agree on the subsidisation of PrEP. **Conclusion:** This study reveals promising levels of community support for implementing PrEP as a preventive measure against HIV infection. While there is room for increased awareness, the strong endorsement of PrEP and its subsidisation paves way forward for the fight against HIV/AIDS. With focused education and accessibility initiatives, Malaysia has the opportunity to make PrEP a cornerstone in its strategy to reduce new HIV infections.

Keywords: Pre-exposure prophylaxis (PrEP), HIV infection

PP128

Assessing Knowledge on Passive Smoking among the Ipoh Community

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ABSTRACT

Introduction: Second-hand smoke, commonly known as passive smoking occurs when non-smokers are exposed to harmful chemicals found in tobacco smoke. Children, pregnant women, and elderly people are particularly vulnerable to the adverse effects of passive smoking. Increasing awareness about the effects of passive smoking can indirectly, yet significantly contribute to lowering smoking rates. This study aimed to determine the level of knowledge on passive smoking in the community of Ipoh. **Methods:** The sample size was calculated using Open Epi. 134 respondents (aged ≥18 years old) participated in this study using convenience sampling. The respondents were required to answer questions online or in hardcopy about their socio-demographic profile, smoking status, and knowledge of passive smoking with their consent. The knowledge score was calculated and categorised as high (>75%), moderate (50-74%) and low (<50%). Data was analysed using SPSS (Version 3). **Results:** The majority of the respondents (85.8%) have a high level of knowledge on passive smoking. A similar trend is seen across the socio-demographic variables [age group:18-44 (87.7%), 45-64: 76.5% and ≥65 (66.7%); gender: male (76.1%) and female (90.9%), levels of education: secondary (83.3%) and tertiary (86.77%)]. The median score of knowledge level on passive smoking among socio-demographic variables was not statistically significant. However, there was a significant association seen between the median score of knowledge level on passive smoking and socio-demographic variables (age group: $p<0.01$, gender: $p<0.05$, levels of education: $p<0.05$). **Conclusion:** Socio-demographic factors should be considered when designing an educational campaign aimed at addressing passive smoking awareness and prevention.

Keywords: Passive smoking, Second-hand smoke, Socio-demographic

PP131

Covid-19 Antibody Testing of Staffs and Students in a Selected Private University in Ipoh, Perak, Malaysia

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ABSTRACT

Introduction: Vaccination rates vary globally, with some countries achieved full vaccination of eligible populations while others have lower percentages. In Malaysia, the percentage of vaccinated individuals among the high-risk groups for first and second doses were high however there are low percentage for booster doses. The study aim was to detect the antibody towards COVID-19 among staffs and students of different age, gender, morbidity, duration of post infections and type of vaccines received. **Methods:** A cross-sectional study was conducted using a convenience sampling method. Data collection was by a standard questionnaire and antibody detection in blood using CNAB machine. **Results:** A total of 120 respondents participated, 65.8% were students and 34.2% were staffs. The age range was between 19-65 with 20.8% males and 79.2% females, 15.8% had underlying comorbidities and all participants had been vaccinated at least one dose. Type of vaccines received were 86.7% Pfizer, 28.3% Moderna, 13.3% Sinovac and 10.8% AstraZeneca. Only 55.8% had confirmed history of infection and 100% had vaccinated. There were no significant different of antibody level between gender, staffs or students and having comorbid or not. Had history of infection or not, showed significant different of antibody level. **Conclusion:** This study showed that antibody level of COVID-19 had no different according to gender, age group and having comorbidity or not but affected by previous infection.

Keywords: COVID-19 infection, Vaccines, Antibodies

PP132

Emulgel from Ethanolic Extract of Cocoa Pod Husk as Antihyperalgesia in Diabetic Neuropathy Mice

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ABSTRACT

Introduction: Long-term hyperglycemia in Diabetes mellitus causes many complications including diabetic neuropathy (DN). This condition occurs because of damage or dysfunction of the nervous system that mediates pain and is characterised by hyperalgesia and allodynia. Nowadays topical treatments for DN are limited, so this research aimed to find a new treatment from cocoa pod husk for DN condition. **Methods:** Emulgel of ethanolic extract of cocoa pod husk was designed using three different formulas and evaluated to find the optimal formula. These formulae will be applied to the feet of mice that have been induced with DN using alloxan at a dosage of 225 mg/kg body weight. Latency time toward thermal stimulus was observed using a hot plate test. Irritation test of the optimum formula was conducted in rats and assessed at 40 min, 24 h, 26 h, and 72 h after skin application. **Results:** The optimum formula suggested in this study was formula 3. Formula 3, containing 3% cocoa pod husk ethanol extract showed the most significant reduction in hyperalgesia among DN mice and was comparable to the positive control, 0.025% capsaicin cream. Irritation test showed that there was no edema and erythema in the rat's skin after 72 h administration of 3% cocoa pod husk ethanol extract. **Conclusion:** The 3% emulgel of ethanolic extract of cocoa pod husk could reduce hyperalgesia in DN mice, comparable to capsaicin cream. Administration of the formulated emulgel is also suggested to be safe for topical use.

Keywords: Cocoa pod husk, Diabetes neuropathy (DN), Emulgel, Hyperalgesia

PP133

Preliminary Study on Antioxidant Activity and Hair Tonic Spray Formulation of Cocoa Pod Husk (*Theobroma cacao* L.) Extract

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ABSTRACT

Introduction: The global prevalence of alopecia has increased significantly in the last decade. So far, the Food and Drug Administration (FDA) has only approved finasteride and minoxidil as chemical substances to treat hair loss. Unfortunately, both drugs may cause various side effects, such as skin irritation, itching, dermatitis, erythema, allergies, and sexual disorders in men. Cream containing cocoa pod husk extract has been reported as a new preparation for hair growth. This study was conducted to test the antioxidant activity and to optimise the formulation of cocoa pod peel extract as a hair tonic spray to stimulate hair growth. **Methods:** Cocoa pod husk extract was prepared by maceration method using ethanol 96% as a solvent. Qualitative screening and antioxidant activity assay using the DPPH method were performed. The best hair tonic spray formulation was obtained based on organoleptic, pH, and viscosity tests. A sensitivity test was also carried out to ensure the safety of use. **Results:** The research showed that cocoa pod shell extract contains several active phytochemical compounds. The antioxidant activities test showed that the product has antioxidant activity with IC_{50} value of 6,508 ppm and based on sensitivity test the hair tonic spray preparation did not cause skin irritation. **Conclusion:** This product may be promising for future development, but still requires further pre-clinical and clinical testing to ensure the efficacy and safety.

Keywords: Alopecia, Cocoa, Hair tonic, Antioxidant, Sensitivity test

PP134

Design, Synthesis, *in silico* Study, and Antioxidant activity of Novel Cinnamic Acid-Tetrahydroisoquinoline Hybrids

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ABSTRACT

Introduction: In 2022, 76% of total deaths in Indonesia were caused by non-communicable diseases such as cardiovascular disease, diabetes, chronic respiratory disease, and cancer. These chronic diseases can be caused by increased oxidative stress. Cinnamic acid and its derivatives have been reported to have antioxidant, antimicrobial, anticancer, anti-inflammatory, antidiabetic, and neuroprotective activities. Structural modification of cinnamic acid has been reported to enhance the therapeutic effect of its primary structure. Several studies have reported that tetrahydroisoquinoline and its derivatives have cytotoxic, antioxidant, anti-inflammatory, neurotrophic, and antipsychotic effects. **Methods:** In the present study, the new cinnamic acid-tetrahydroisoquinoline hybrid compound (3a) was synthesised by the N-acylation reaction of 1a with 2a. The structure of target compounds was established based on IR and 1H NMR spectral data. The target compound (3a) were evaluated for their antioxidant activity by DPPH method. In addition to in vitro analysis, docking studies were employed to explore the possible interactions of these compounds with the receptor. **Results:** The antioxidant activities test showed that the compound (3a) and cinnamic acid at the same concentration were able to reduce free radicals by 44,675% ± 0,742% and 8,035% ± 0,405%. **Conclusion:** The results obtained in this study reveal that compound (3a) has better antioxidant activity compared to cinnamic acid.

Keywords: Cinnamic acid, Tetrahydroisoquinoline, Structure modification, Synthesis, Antioxidant

PP135

Knowledge and Practice of Body Mechanics Techniques among Undergraduate Nursing Students: A Cross-Sectional Study

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ABSTRACT

Introduction: The combined use of body parts to produce movement and maintain balance is called body mechanics. Body mechanics misuse increases the risk of musculoskeletal injury and back pain. Every procedure requires nurses to use body mechanic techniques. They can use body mechanics more effectively if they understand it well. Nurses worldwide suffer from back pain, primarily caused by manual lifting and handling heavy objects and patients. Back pain may cause significant disruptions in physical, social, and mental well-being, potentially affecting their occupations. This study aims to determine the knowledge and practice of body mechanics techniques among undergraduate nursing students. **Methods:** A quantitative cross-sectional study was conducted using a questionnaire to assess nursing students' knowledge and practice of body mechanics techniques. A total of 70 undergraduate nursing students participated in the study. **Results:** All 70 undergraduate nursing students (100%) understand body mechanic techniques well. Most undergraduate nursing students, 68 (97.1%), had good practice with body mechanic techniques, while 2 (2.9%) had moderate practice. There is no significant linear relationship between the level of knowledge of body mechanic techniques and the level of practice of body mechanic techniques among nursing students, with a p-value =0.587. **Conclusion:** This highlights the importance of comprehensive formal education, structured body mechanic technique programmes, and proficient practice of these techniques among students to reduce the prevalence of low back pain among nurses.

Keywords: Knowledge, Practice, Body mechanic technique, Nursing students

PP136

Awareness and Practice of Anaemia Prevention among Antenatal Women in Malaysia: A Quantitative Cross-Sectional Study

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ABSTRACT

Introduction: Anaemia is a global health crisis disproportionately affecting children and pregnant women. It greatly increases maternal mortality. According to the WHO, 40% of pregnant women worldwide are anaemic. Iron deficiency anaemia in pregnant women can lead to preterm birth, low-birth-weight newborns, and decreased iron storage in neonates, which can delay development. Failure to treat anaemia could impair millions of mothers' health, quality of life, and children's development and learning. This study aimed to determine the level of awareness and practice of anaemia prevention among antenatal women. **Methods:** A quantitative cross-sectional study using a structured self-administered questionnaire was conducted on 106 pregnant women from the antenatal ward and Obstetrics & Gynaecology Clinic at Hospital Universiti Sains Malaysia. Pearson's correlation and Chi-Square test were performed using SPSS 26. **Results:** Participants with scores of 70% or higher had a high level of awareness, 50-70% had a moderate level of awareness, and less than 50% had a low level of awareness. The results reveal that anaemia knowledge among pregnant women is moderate (40.6%), while the majority (99.1%) practice anaemic prevention. The study found no significant relationship between anaemia preventive awareness and practice, with a p-value of 0.990. The study also found no significant association between demographic data and anaemia prevention practice with a p-value > 0.05. **Conclusion:** This study sheds light on anaemia prevention awareness and practice among pregnant women. Nurses have an important role in teaching pregnant women about pregnancy anaemia to reduce the risk of maternal and neonatal mortality and morbidity.

Keywords: Anemia, Awareness, Prevention, Pregnancy, Antenatal mother

PP137

Knowledge, Attitude and Practice of Safe Handling of Chemotherapy Drugs among Nurses in a Private Hospital at Selangor, Malaysia

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ABSTRACT

Introduction: The incidence of cancer and the evolution in chemotherapy may lead to negative impact for nurses and patients being exposed to cytotoxic components during treatment. The purpose of this study is to determine the knowledge, attitude, and practice on the safe handling of chemotherapy among nurses in private hospital at Selangor, Malaysia. **Methods:** A cross-sectional study was conducted using a self-administered questionnaire to determine nurses' knowledge, attitude, and practice regarding safe handling of chemotherapy drugs. SPSS version 25 was used to obtain the descriptive statistics and Chi-square association. **Results:** This study included 71 nurses (female 93%, male 7%), age below 30 (83%) and age above 30 (17%). The results show that 93% of nurses have a high level of knowledge and 100% of nurses have appropriate attitudes in handling chemotherapy drugs. Practice levels range from good to average with 87.3% having good practice and 12.7% having average practice. Chi-square analysis shows a significant association between education needs (p=0.01) and belief in continuing education (p=0.00) towards nurses safe handling practices of chemotherapy drugs. **Conclusions:** A high score in safe handling protocols, positive attitudes towards safety, and consistent best practices indicates that the nurses are well-trained, informed, and committed to providing safe chemotherapy treatments. Continuous vigilance and education, such as refresher courses, as well as adhering to the most recent guidelines, are required to maintain nurses' knowledge, attitude, and practice regarding safe cytotoxic handling and, as a result, can ensure patient safety and well-being during chemotherapy treatments.

Keywords: Knowledge, Attitude, Practice, Nurses, Safe handling

PP138

Design, Synthesis, in silico Studies and Antiproliferative Activity of Novel Cinnamic Acid-Indoline Derivatives as Anticancer Agents

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ABSTRACT

Introduction: Breast cancer is a malignant tumor that ranks second deadliest among women and causes 18% of all cancer deaths. The effectiveness of chemotherapy has been decreased by many factors, including systemic toxicity due to lack of specificity, rapid drug metabolism, high cost of treatment, and drug resistance. Cinnamic acid and its derivatives have been shown to have antioxidant, anti-inflammatory, and anti-tumor properties. Indoline derivatives play an essential role in bioorganic chemistry and medicine. This study made efforts to find alternative therapies for breast cancer drugs by designing structural modifications of new cinnamic acid-indoline hybrid compounds (3a-c). **Methods:** The bioavailability of the designed compounds was predicted using the SwissADME. The target compound was synthesised using the N-acylation reaction on the secondary amine group of indoline. The synthesised compounds were characterised using FTIR and ^{1}H-NMR. The *in vitro* anticancer activity was carried out against MCF-7 breast cancer cells using the MTT assay. In silico studies were conducted to obtain information about the protein-ligand binding model. These tested compounds displayed good activities on MCF-7 cell lines. **Results:** The compound 3b showed the highest IC50 values (3.89 μM). These compounds exhibited more potent activities than cinnamic acid (34.20 μM). **Conclusion:** These findings may provide helpful direction for further developing novel cinnamic acid-indoline derivatives with improved pharmacological profiles for treating breast cancer.

Keywords: Cinnamic acid, Indoline, MTT assay, Breast cancer

PP139

Knowledge and Perception of Risk and Preventive Behaviour towards Premarital Sexual Practice among Young Adults in Malaysia

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ABSTRACT

Introduction: Sexual activity in Malaysia, encompassing premarital intercourse and baby abandonment, remains a contentious and alarming issue. Challenges include an increase in illegitimate children, abortions, and baby abandonment due to insufficient awareness of preventive measures. As a result, there is an urgent requirement for comprehensive sex education programmes that tackle STIs and the repercussions of risky sexual behaviors. This study seeks to explore the knowledge levels and perceptions related to risk and preventive measures among young adults in Malaysia concerning premarital sexual behaviors, HIV, STDs, condom usage, pregnancy, and abortion. **Methods:** We conducted a cross-sectional study involving 379 young adults ages 18 to 39 population in Malaysia. The objective was to evaluate their knowledge and perception concerning risk and preventive behaviors associated with premarital sexual practices, HIV, STDs, condom usage, pregnancy, and abortion. To gather data, we utilised online questionnaires. The data underwent analysis utilising SPSS software, where descriptive statistics were employed to transform the data into percentages (%) and frequencies (n). Additionally, the Chi-square test was employed to evaluate two-category data and establish correlations. **Results:** The study found that knowledge about risk and preventive behaviors for premarital sexual activity is lacking, with 45% having poor knowledge. No one had good knowledge. In terms of perception, 5% had poor perception, 52% moderate, and 43% good perception. **Conclusion:** There is an association between the level of knowledge, perceptions, and demographic data. The study highlights the need for improved education and awareness to promote safer premarital sexual practices.

Keywords: Knowledge, Perception, Premarital sexual practice, Young adult

PP140

Formulation of Acne Patch from Watermelon Rind (*Citrullus lanatus*) as an Antibacterial Against Acne

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ABSTRACT

Introduction: Acne is a chronic inflammation of the sebaceous glands due to increased sebum production, keratinisation, inflammation, and bacterial infection in the hair follicles. Increased numbers and activity of normal flora such as *Propionibacterium acnes* can trigger inflammation. One natural ingredient that can be used as an antibacterial to kill *P. acnes* is watermelon rind. The alkaloid compounds in watermelon rind have the potential to inhibit the growth of bacteria, especially *P. acnes*. The development of a formulation of watermelon rind extract as an anti-bacterial against acne is very promising, one of them is an acne patch. **Methods:** Extraction was carried out using the ultrasonication method with ethanol 96% as the solvent. The phytochemical compounds (alkaloids, tannins, flavonoids, and saponins) were identified using the standard phytochemical screening method. The extracts were formulated into acne patch. Patches were prepared into two variations of solvent to dissolve HPMC and PVP, such as Patch 1 (HPMC-PVP-aquadest) and Patch 2 (HPMC-PVP-ethanol). **Results:** The percentage yield of the extract was 31.145%. The results of phytochemical screening on the extract showed that the extract contained alkaloid compounds. Patch with ethanol as its solvent showed better results: transparent, slightly flexible, easy to peel off, and less oily. **Conclusion:** Based on this, acne patch preparations from watermelon rinds extract can be prepared with HPMC and PVP base and ethanol as its solvent.

Keywords: Acne patch, Watermelon rind extract, Ethanol

PP141

Anti-Amylase and Anti-Lipase Activities of *Guazuma ulmifolia* Leaves Fractions

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ABSTRACT

Introduction: The indigenous people of Indonesia have utilised the leaves of *Guazuma ulmifolia* for centuries as an anti-diabetic and anti-obesity remedy. It has also been demonstrated that the extract of *G. ulmifolia* leaves produces this result through amylase and lipase inhibition. In this work, the anti-amylase and anti-lipase activities of fractions from *G. ulmifolia* leaves ethanolic extract was determined. **Methods:** Fractionation was carried out using the liquid-liquid partition method using chloroform and ethyl acetate solvents. 3,5-Dinitro salicylic acid (DNSA) and *p*-nitrophenyl butyrate (*p*-NPB) were used as the substrates for a colorimetric test to measure the anti-amylase and anti-lipase activities. **Results:** The result demonstrated that the ethyl acetate fraction was more effective in inhibiting amylase and lipase than the chloroform fraction and residue fraction. **Conclusion:** It can be concluded that the ethyl acetate fraction of *G. ulmifolia* can be developed as a potential treatment for diabetes mellitus and obesity.

Keywords: *Guazuma ulmifolia*, Fraction, Anti-amylase, Anti-lipase

PP142

Controlled-Release Mucoadhesive Alginate and Carbopol® 940 Beads of Cinnarizine: Optimisation and in vitro Characterisation

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ABSTRACT

Introduction: Cinnarizine is a weakly basic drug that is extensively absorbed from the upper part of the gastrointestinal tract. Hence, developing a mucoadhesive gastro retentive delivery system will result in enhanced solubility and bioavailability of Cinnarizine. The objective of the present study was to design and evaluate alginate/Carbopol® 940 based gastro retentive beads for the controlled release of cinnarizine. **Methods:** Alginate/Carbopol® 940 beads were prepared using the ionic gelation method with alginate as the microsphere forming agent and Carbopol® 940 as the rate retardant for drug release. Eleven formulations (F1 to F11) were developed using DesignExpert software (Version 11). The concentrations of two polymers were chosen as the independent variable whereas the mucoadhesive percentage, entrapment efficiency, cumulative drug release at 2 h and 8 h were selected as the dependent variables. The formulations were evaluated for surface morphology using SEM, swelling index, mucoadhesion percentage, entrapment efficiency and in-vitro drug release by UV-Visible spectroscopy. **Results:** Microspheres varied in texture and sphericity. Microspheres with greater concentrations of Carbopol® 940 exhibited good mucoadhesive properties and swelling index whereas microspheres with higher concentrations of sodium alginate showed higher rate of drug release at 2 and 8 hours as well as entrapment efficiency. Statistical analysis were performed by DesignExpert software and the optimised formulation was interpreted as batch F4 as it fulfilled the maximum desirability as per the software. **Conclusion:** The results indicate that the optimised alginate/Carbopol 940® formulation could be used in the future as a potential gastro retentive drug delivery system for Cinnarizine.

Keywords: Cinnarizine, Gastro retentive, Alginate, Carbopol, Microsphere beads

PP143

Community Pharmacists' Roles in the Management of Mental Health in the Community: A Narrative Review

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ABSTRACT

Introduction: Community pharmacists (CPs) play a vital role in the management of mental health by assisting and supporting mental health patients and those at risk. Their roles extend beyond dispensing medications; they also serve as accessible healthcare professionals who offer guidance, education, and referrals. This review aimed to identify the interventions and roles of CPs in managing mental health in the community. **Methods**: Selected articles discussing interventions and roles of CPs in managing mental health were reviewed and summarised. The articles were retrieved from searches of computerised databases and search engines using keywords "*Community pharmacist*", "*Mental health-first aid*", "*Community pharmacist' roles and mental health*" and "*Community pharmacist' intervention in mental health*". **Results:** From the review, we found that CPs play an important role in helping those with mental health issues. Interventions given include medication management (counseling and medication synchronisation, monitoring adherence, and symptoms assessment), provide counseling and education (stigma reduction, lifestyle recommendations and suicide prevention), as well as provide referrals to psychiatrist and/or psychologist. CPs also provide early detection-services such as mental health screening for depression, insomnia, and anxiety. Meanwhile, the mental health-first aid (MHFA) programme provides training for pharmacists to enable CPs to respond to the issues effectively and offer immediate assistance prior to professional help. **Conclusion:** CPs play a crucial role in the management of mental health by providing a range of interventions, including medication management, counseling, education, and referrals. Their involvement and expertise make them valuable healthcare team members by contributing to improving the outcomes for individuals with mental health conditions.

Keywords: Community pharmacist, Mental health, Intervention, Role

PP144

Headache, a Common Clinical Problem; Study of Triggers and Remedies of This Common Problem and Prevalence of Tension Type Headache Among University Students

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ABSTRACT

Introduction: Headache is a common clinical problem. Students may be prone because of the pressure of studies. Severity may affect the quality of life, impairing their academic performance. Tension type headache (TTH) is a common cause of headaches. The objective is to study the triggers for common headaches and measures to relieve pain and to determine the prevalence of TTH and its correlation with common demographic parameters and psychiatric disorders. **Methods:** Cross-sectional study conducted in students of MBBS and Bachelor of Business (BB) at QUEST University Ipoh. Data collected through google form questionnaire. TTH diagnosis was based on standardised criteria. **Results:** Out of 342 participants (mean age 22.36 years), MBBS were 223 (65.2%), BB 119 (34.8%); males 125 (36.55%), females 217(63.45%). Lack of sleep was the most common trigger (88.01%). Rest/sleep was the commonest measure to relieve the pain (70.18%) followed by analgesics (57.02%), primarily paracetamol (63.74%). Overall prevalence of TTH was 48.83% (n=167), higher in females (51.6%; p = 0.180). Ethnic group "others" had significantly higher frequency of TTH (88.9%) followed by Chinese (58.8%). MBBS students had higher frequency of TTH (58.7%) compared to BB (p = 0.000). There was statistically significant difference among academic years, Year 5 having the highest frequency (71.2%). Majority of TTH sufferers had no psychiatric disorder (p = 0.607). **Conclusion:** The most common triggering factor for the common headache was lack of sleep with rest and paracetamol as common remedies. Prevalence of TTH was high especially in MBBS students, females, "others" and Chinese ethnicities and year 5 students. Most TTH cases had no psychiatric disorder.

Keywords: Headache, Frequency, Students, Triggering factors, Psychiatric disorders

PP145

Calendula officinalis L. Cream and Antimicrobial Evaluation against *Staphylococcus aureus, Escherichia coli, Salmonella typhimurium* and *Pseudomonas aeruginosa*

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ABSTRACT

Introduction: Wound healing is an important yet complex process initiated in response to an injury. Nonetheless, bacterial infection remains one of the vital factors that are detrimental to this occurrence. As such, both synthetic and natural ingredients have been used as wound healing agents for reconstitution of dermis. The wound healing agents should inhibit bacterial infection and proliferation at infected skin area. The present study *Calendula officinalis* L. cream was used as a wound healing agent. **Methods:** The *Calendula officinalis* L. essential oil (CEO) was prepared by hydrodistillation method and three different concentrations of: 100% (CEO1), 50% (CEO2) and 25% (CEO3), were integrated into oil-in-water (o/w) aqueous cream as an active ingredient and steric acid (emulsifier). The Calendula cream were subjected to disc diffusion assay for 24h. For this purpose, a gram-positive *Staphylococcus aureus* and three gram-negative bacteria (*Escherichia coli, Salmonella typhimurium* and *Pseudomonas aeruginosa*) were applied. Further, ampicillin (AMP2, 2 ug), penicillin (P10, 10units), ciprofloxacin (CIP10, 10 ug) and chloramphenicol (C10, 10 ug), were served as positive controls and distilled water as negative control. **Results:** The gram-positive *Staphylococcus aureu*s presented inhibition zones when tested with CEO1 (23.33 ± 1.89 mm), CEO2 (30.17 ± 0.24 mm) and CEO3 (31.17 ± 0.71 mm). The CEO2 and 3, particularly, were comparable to C10 (28.50 ± 0.71 mm) and CIP10 (28 ± 0.94 mm). **Conclusion:** As a conclusion, the findings suggest the possible use of CEO2 and 3 as promising wound healing agent against *S. aureus*. Future work should be commenced against other skin-associated bacterial infection.

Keywords: Wound healing, Antimicrobial, Calendula cream

PP146

In silico Molecular Docking Analysis of Karanjin against Alzheimer's and Parkinson's Diseases as a Potential Natural Lead Molecule for New Drug Design, Development and Therapy

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ABSTRACT

Introduction: Parkinson's disease (PD) and Alzheimer's disease (AD) are neurodegenerative disorders that have emerged as among the serious health problems of the 21st century. Karanjin is a furanoflavonoid, isolated mainly from *Pongamia pinnata* with several medicinal plants, and has been reported for numerous health benefits. To evaluate the neuroprotective effect of karanjin, extensive *in silico* studies starting with molecular docking against five putative targets for AD and four targets for PD were conducted. **Methods:** The findings were compared with three standard drugs using Auto Dock 4.1 and Molegro Virtual Docker software. Additionally, the physiochemical properties (Lipinski rule of five), drug-likeness and parameters including absorption, distribution, metabolism, elimination and toxicity (ADMET) profiles of karanjin were also studied. The molecular dynamics (MD) simulations were performed with two selective karanjin docking complexes to analyse the dynamic behaviors and binding free energy at 100 ns time scale. **Results:** Karanjin complies with all five of Lipinski's drug-likeness rules with suitable ADMET profiles for therapeutic use. The docking scores (kcal/mol) showed comparatively higher potency against AD and PD associated targets than currently used standard drugs. **Conclusion:** Overall, the potential binding affinity from molecular docking and static thermodynamics feature from MD-simulation suggest that karanjin could be considered as a suitable therapeutic lead for AD and PD treatment. However, necessary *in vivo* studies, clinical trials, bioavailability, permeability and safe dose administration, are required to use karanjin as a potential drug against AD and PD treatment, where the *in silico* results are more helpful to accelerate the drug development.

Keywords: Karanjin, Parkinson's disease, Molecular docking, Lipinski's rule, Drug-likeness

PP148

Factors Influencing Turnover Intentions of Registered Nurses in a Private Hospital in Selangor, Malaysia

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ABSTRACT

Introduction: Turnover among nurses is a major problem worldwide including in Malaysia. Shortages of nurses may lead to work overload, burnout, dissatisfaction of nurses, and compromised standards of patient care. The purpose of this study is to identify the factors that contribute to high turnover among nurses in a private hospital in Selangor, Malaysia. **Methods:** This study is a cross-sectional study conducted using a self-administered questionnaire. SPSS version 25 was used to obtain descriptive statistics and Chi-square association. **Results:** This study involves 100 nurses (female 89, male 11) with working experience of less than 5 years (56%), 6 to 10 years (27%) and more than 10 years (17%). The results show nurses have intention to leave due to better remuneration (84%), need to be closer to childcare facilities (62%), want to work closer to home (77%), better working hours (53%), want to work in the unit of choice (62%), working in hospitals with better nurse-doctor relationship (65%), work in hospitals where nurses' work is appreciated (81%), moving into teaching position (51%) and move into healthcare administration (52%). Chi-square analysis shows a significant association between working experience with leaving due to better remuneration (P=0.02). **Conclusion:** The rates of nurse turnover can be decreased through the establishment of consistent promotion policies, increased appreciation of nurses' contributions by doctors, and the provision of greater autonomy to nurses. Enhanced communication regarding policies and information accessibility, along with improved salary structures, could also play a role in decreasing turnover rates among nurses.

Keywords: Turnover, Intention, Registered nurses, Private hospital, Malaysia

PP149

Unveiling The ACE-II Inhibitors from Christia vespertilionis: A Preliminary Study Using Molecular Docking Approach for COVID-19 Drug Discovery

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ABSTRACT

Introduction: The global pandemic caused by the novel coronavirus disease (COVID-19) has spurred a relentless search for effective treatments to combat severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections. The absence of specific pharmaceutical interventions has prompted a shift towards exploring alternative avenues, with natural products emerging as promising candidates in the ongoing quest for COVID-19 therapeutics. The primary objective of this study is to assess the potential of compounds identified from *Christia vespertilionis* in inhibiting the angiotensin-converting enzyme-II (ACE-II) receptor through molecular docking analysis. **Methods:** Molecular docking, a sophisticated computational technique, was employed to scrutinise the binding interaction energy of two compounds which were apigenin-6-C-β-glucoside 40-O-α-apiofuranoside (AGA 1) and apigenin-6-C-β-[(4″,6″-O-dimalonyl)-glucoside] 40-O-α-apiofuranoside (AGA 2), identified from *C. vespertilionis* when interfacing with the ACE-II receptor. **Results:** The outcomes of our investigation revealed compelling results. The binding interaction energies for AGA 1 and AGA 2 were recorded at -71.7 kJ/mol and -91.9 kJ/mol, respectively. In comparison, the reference compound MLN-4760 exhibited a binding energy of -70.4 kJ/mol. These findings suggested that the compounds identified from *C. vespertilionis* possess robust binding affinities and hold great potential as therapeutic candidates against SARS-CoV-2. **Conclusion:** In conclusion, the molecular docking simulations have identified AGA 1 and AGA 2 as promising active compounds. These compounds exhibit substantial potential as ACE-II inhibitors for combating SARS-CoV-2 infections, thus, opening new avenues for further exploration in the development of COVID-19 therapeutics.

Keywords: ACE-II inhibitors, *Christia vespertilionis*, Molecular docking, SARS-CoV-2

PP150

Assessing Public Perceptions and Practices: A Study on Telepharmacy Services during the Covid-19 Pandemic in Malaysia

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ABSTRACT

Introduction: Telepharmacy has emerged as a crucial component of healthcare worldwide during Covid-19 pandemic, yet there is scarce literature on the acceptability of telepharmacy services in Malaysia. This study aimed to evaluate the public's knowledge, attitude, and practices (KAP) towards telepharmacy services in Malaysia during the Covid-19 pandemic. **Methods:** This cross-sectional survey included 385 participants in Malaysia who responded via an online structured, self-administered questionnaire. The authors utilised a convenience sampling methodology. The questionnaire consisted of four sections: Section A was comprised of socio-demographic profiles, while Section B, C, and D assessed respondents' knowledge, attitudes, and practices towards telepharmacy services respectively. The statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS). **Results:** The results showed that respondents possessed moderate knowledge, a positive attitude, and poor practices concerning telepharmacy services during the Covid-19 pandemic. The mean knowledge score was 3.02±1.640, while the mean attitude score, out of a maximum possible score of 30, was 25.46±3.404. The mean practice score was 2.75±0.655. A significant association was found between gender ($p=0.045$), level of education ($p=0.004$), district of residence ($p<0.001$), occupation ($p=0.013$), and the total score of practice towards telepharmacy services. This study also found a significant relationship between respondents' knowledge and attitude, knowledge and practice, and attitude and practice towards telepharmacy services during Covid-19. **Conclusions:** Telepharmacy services have been observed to have a direct correlation with a positive attitude and effective practice among the public in Malaysia.

Keywords: Pharmaceutical care, Knowledge, Attitude and practices, Covid-19 pandemic

PP151

Fear in the Time of Covid-19: Unmasking Eating Disorders among Malaysian University Students

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ABSTRACT

Introduction: The detrimental effects of the Covid-19 pandemic, particularly the psychological impact, have been widely documented. However, limited literature addresses the influence of Covid-19-related fear on the prevalence of eating disorders. This study aims explore the association between Covid-19 pandemic fear and the presence of eating disorders among university students in Malaysia. **Methods:** A cross-sectional survey incorporating the Eating Attitudes Test-26 (EAT-26) and a Covid-19 fear survey was administered to university students in Malaysia. Participants were instructed to complete surveys based on their experiences during the Covid-19 pandemic lockdown. Respondents were categorised as having or not having Covid-19 fear, which was then correlated with the presence of eating disorders, as determined by the EAT-26 survey. **Results:** A total of 405 university students met the inclusion criteria, with a predominant female representation (n=255, 63%). Among the participants, 221 (54%) reported experiencing Covid-19 fear. Years of study were significantly associated with Covid-19 fear ($p<0.05$). Similarly, 133 (32%) participants exhibited symptoms indicative of eating disorders. 85 (20.9%) participants reporting Covid-19 fear showed signs of eating disorders. Further analysis suggests that female participants reporting Covid-19 fear were likelier to have eating disorders (OR 1.65, $p<0.05$). Likewise, participants of Malaya ethnicity (OR 2.6, $p<0.01$), those in their second year of study (OR 1.9, $p=0.03$), and those with an estimated weight exceeding 98 kilograms (OR 11.6, $p<0.03$) having Covid-19 fear were statistically more prone to eating disorders. **Conclusion:** This study reports a noteworthy association between Covid-19 fear and the presence of eating disorders among university students.

Keywords: Covid-19 fear, Eating disorder, Adolescents, University students

PP152

The Career (Specialty) Preference and the Factors of Influence among the Y4 and Y5 Medical Students of UniKL RCMP

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ABSTRACT

Introduction: Medical students enter medical schools in most cases with the intention of becoming specialists in different fields of medicine. But career choices are usually influenced by the graduate's inclination before starting medical school as well as the exposure during training. Medical graduates are significantly influenced by job preferences, which are again influenced by personality traits, gender disparities, and concerns with prestige and financial benefit. Therefore, this study was planned to determine the career preference and the factors influencing their preference among the Year-4 and Year-5 medical students of UniKL RCMP. **Methods:** A cross-sectional survey was conducted among the Year-4 and Year-5 medical students of UniKL RCMP by distributing an online questionnaire in Google Form and the data were collected and analysed using appropriate statistical methods. **Results:** A total of 99 female (60.7%) and 64 male students (39.3%) responded to the questionnaire. Among them, 73.6% plan to pursue a postgraduate degree, while 12.1% plan to stay in general practice and the remaining 14.1% are still unsure about their future career. The top four specialties preferred by the respondents are family medicine, internal medicine, others, and general surgery. Among the careers listed under 'others' are administration, psychiatry, O&G as well as ENT. **Conclusion:** In this study, the specialty choices and the factors that influence these decisions are like those from studies done elsewhere. The career choice may be changed after the completion of their residency based on personal interest, peer pressure, financial status, and family background.

Keywords: Career, Medical students, Influencing factors, Malaysia

PP153

Cardiovascular Changes among Users of Facemask and Personal Protective Devices in Six-Minute Walk Test

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ABSTRACT

Introduction: Acute physical exertion is known to change physiological parameters such as heart rate (HR), blood pressure (BP), and oxygen saturation (SpO2) to accommodate the increased workload demand. With Increased habitual use of different types of personal respiratory protection, the above said cardiovascular parameters may differ in the expected variation from the physiological levels. This study was conducted to examine the variations of cardiovascular physiological parameters when a standardised physical exertion of 6-Minute Walk Test (6-MWT) was performed. **Methods:** 99 healthy young adults aged between 18 years to 24 years participated in this study. The mean BMI of the participants was 22.79±4.71 kg/m^2. The participants were randomly separated into three groups as control, with facemask, and with full body PPE. The HR, BP, and SpO_2 were measured before and after the 6-MWT. The data was analysed for variation using ANOVA. **Results:** The mean changes of HR per minute were 15.15±13.89, 20.30±13.77 and 21.96±17.15; Systolic BP in mmHg were 10.15±9.25, 12.67±14.71 and 13.30±11.55; Diastolic BP in mmHg were 7.21±10.56, 7.12±10.72 and 5.09±12.06; SpO_2 in % were 0.39±1.25, 0.33±1.24 and 0.21±0.89 among control, facemask, and PPE groups respectively. But the differences between groups were not statistically significant. **Conclusion:** This study found that the use of different kinds of respiratory protection had no significant effect in the change of cardiovascular physiologic parameters.

Keywords: Oxygen saturation, Heart rate, Blood pressure, PPE, Facemask

PP154

The Effect of Exogenous Coenzyme Q10 Supplementation on Reactive Oxygen Species Intensity of Vitrified Mouse Embryos

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ABSTRACT

Introduction: This study investigates the impact of exogenous Coenzyme Q10 (CoQ10) supplementation on the levels of reactive oxygen species (ROS) in vitrified mouse embryos. Coenzyme Q10, an antioxidant, may play a crucial role in reducing oxidative stress during the cryopreservation process. Understanding its effects on ROS intensity in vitrified embryos could offer insights into improving the success rates of Assisted Reproductive Technologies. This study aims to investigate the effect of CoQ10 supplementations in culture media on ROS intensity of vitrified embryos. **Methods:** Embryos at the two-cell stage were divided into four groups (control non-vitrified, CoQ10 non-vitrified, control vitrified, and CoQ10 vitrified) and cultured until the eight-cell stage. Subsequently, the embryos underwent vitrification using the EFS20/40 method. Then, the embryos were cultured for 2 hours in culture media following the thawing process. Next, the embryos were stained with H2DCFDA dye to assess the levels of ROS. Results were analysed using an ANOVA test. **Results:** The results demonstrated that CoQ10 supplemented embryos had significantly lower ROS intensities in both non-vitrified (23.35 ± 20.53 versus 55.37% ± 19.23) and vitrified groups (31.44 ± 6.867 versus 55.82 ± 15.02) compared to the control group (p<0.001). **Conclusion:** The supplementation of CoQ10 in the culture medium demonstrates a significant potential in reducing ROS levels in both vitrified and non-vitrified embryos. These findings suggest that CoQ10 supplementation could be an effective strategy to lower ROS levels in vitrified mouse embryos and potentially enhance the outcomes of ART.

Keywords: Coenzyme Q10, Vitrification, EFS 20/40, Embryos, ROS

PP155

Health-Seeking Behaviour among Customers of Two Community Pharmacies in Kinta District, Perak

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ABSTRACT

Introduction: Non-utilisation of health facilities leads to undesirable health-seeking behaviours which may raise morbidity and mortality rates, even for easily curable diseases. Community pharmacies are among the facilities that are easily accessible for consumers to seek care. The objective of this study is to evaluate the health-seeking behaviour among consumers of community pharmacies. **Methods:** A cross-sectional study by convenient sampling was conducted from February until April 2023 by distributing a self-administered questionnaire to consumers of two selected community pharmacies in the Kinta District, Perak. The data collected were analysed using the Statistical Package for the Social Sciences (SPSS) version 28. **Results:** A total of 127 respondents voluntarily participated in this study. Most community pharmacy consumers visit pharmacies to obtain over-the-counter medicines and dietary supplements. Moreover, the frequency of community pharmacy visits is associated with ethnicity and occupation. Among the most common factors influencing one to visit community pharmacies are due to the pharmacy location, accessibility of pharmacists and presence of minor ailments. However, medical doctors are the primary choice of consultation on health-related issues for most people. **Conclusion:** A proper understanding of the pattern of health-seeking behaviour provides a clearer vision of the identification of determinants of behaviour in the community and therefore helps in improving the healthcare system and health promotion strategies.

Keywords: Health-seeking behaviour, Community pharmacy, Utilisation, Customers

PP156

Impacts of Online Learning: Evaluation of the Graduating Nursing Students

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ABSTRACT

Introduction: The COVID-19 pandemic has disrupted education at all levels, forcing it to switch to online learning. Prompt actions were taken by the Faculty of Medicine, UniKL RCMP to change to online learning so that students could graduate on time. The objective of this survey was to explore the graduating Nursing students' perceptions of online learning and the impact of the pandemic on their education. **Methods:** A total of 52 graduating students in January Semester 2022 were invited to provide feedback on the Nursing education conducted in the "new normal". **Results:** Over 95% of students perceived online learning as less effective and preferred the conventional method of face-to-face classes. The pandemic has caused multiple stressors, including financial concerns, lack of family and peer support, isolation, role confusion, and conflicts between home and college environments when studying online. They had difficulty understanding the diseases' pathophysiology and nursing management when learning in the virtual environment, which led to a loss of interest or failure to stay focused on their study. Technical challenges, intermittent or poor internet connectivity, lack of student engagement, and camera usage remained the main limitations of online learning. **Conclusion:** Nursing education was interrupted by the COVID-19 pandemic. The evaluation showed some negative impacts of online learning among the students who preferred to learn in traditional face-to-face classes. However, students' and lecturers' experiences, their readiness for online teaching and learning, technical support, and resources needed in this new learning platform need further evaluation.

Keywords: Online learning, Remote learning, Nursing students, Nursing education, E-learning

PP158

Synthesis of New Eugenol Derivatives and Evaluation of their Antibacterial Activity against Multidrug Resistant *Acinetobacter Baumannii*

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ABSTRACT

Introduction: *Acinetobacter baumannii* is resistant to many commercially available antibacterial agents and has become a major threat to the health sector worldwide. Eugenol is a natural vanilloid. Due to its broad range of antimicrobial activities, it was targeted as a valuable starting material for the synthesis of derivatives which were hoped to have enhanced antibacterial activity against multidrug resistant (MDR) *A. baumannii*. **Methods:** 1. Synthesis of new eugenol derivatives 2. Characterisation 3. Antibacterial studies, Synergy studies and Mechanistic studies of efflux pump. **Results:** A total of nine eugenol derivatives were synthesised and characterised using 1H and 13C NMR spectroscopy. Representative clinical isolates of MDR *A. baumannii* were subjected to challenge by eugenol and its synthesised derivatives via standard antibacterial assays. All the eugenol derivatives exhibited moderate to high antibacterial potencies, with highest potency demonstrated by derivative, E7, 4-allyl-2-methoxyphenyl-2, 4, 6-trichlorobenzoate. In addition, the combined use of E7 with standard antibiotics against MDR *A. baumannii* yielded additive and synergistic antibacterial effects. The efflux pump genes adeB, adeR and adeS of the RND efflux system, AdeABC, of MDR *A. baumannii*, were subsequently detected by PCR. Using RT-qPCR, all three of these efflux genes were found to be significantly down – regulated in E7 treated MDR *A. baumannii* in comparison to untreated controls. **Conclusion:** In conclusion, this research has confirmed that eugenol derivative E7 is highly biologically active in killing MDR *A. baumannii*. Mechanistic studies have demonstrated that this compound kills via inhibition of the AdeABC efflux pump.

Keywords: Eugenol, Antibacterial activity, *Acinetobacter baumannii*, Efflux pump

PP159

Menstrual Health AD Period Poverty among Secondary School Students in Ipoh, Perak

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ABSTRACT

Introduction: Menstruation is a natural and essential part of the reproductive cycle for many individuals. However, around the world, menstrual health remains a topic often shrouded in silence, stigma, and, unfortunately, poverty. Period poverty refers to inadequate access to menstrual hygiene tools and education, often due to economic constraints. The aim of this study was to investigate the incidence of period poverty, awareness, and practice of menstrual health among secondary school girls in Ipoh, Perak. **Methods:** A cross-sectional questionnaire-based study was conducted among 210 secondary female students from three participating schools in Ipoh, Perak. The study type was a convenient study, which involved the distribution of questionnaires to all respondents. Descriptive analysis was done using SPSS version 26.0 to analyse the results. **Results:** From our study, 59% of the total respondents showed moderate understanding of menstruation and period poverty, while the other 39% and 2% of respondents demonstrated good and poor understanding respectively. 41.43% of the total respondents had good menstrual practices, 57.62% had moderate menstrual practices, and only 0.95% of respondents had poor menstrual practices. Finally, this study also found that 35 (16.67%) respondents had experienced period poverty. **Conclusion:** The majority of students are knowledgeable and well aware of period poverty and have adequate menstrual health practices. Although the prevalence of period poverty among female students was not high, this cannot be neglected as all women should be able to afford menstrual products and have access to menstrual hygiene resources.

Keywords: Period poverty, Menstrual health, Menstruation

PP160

Exploring the Knowledge and Perceptions of Organ and Tissue Donation among Undergraduate University Students in Malaysia

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ABSTRACT

Introduction: Organ transplantation is the sole treatment option for patients suffering from end-stage organ diseases. The organ donation rate in Malaysia is still far from reaching a satisfying level as many of the citizens are still reluctant to pledge as organ donors. The aim of this study is to identify the level of knowledge and attitude regarding organ and tissue donation among undergraduate university students in Malaysia as well as to investigate the relationship between sociodemographic profiles with the level of knowledge and attitude regarding organ and tissue donation. **Methods:** This study used a non-probability convenience sampling method involving 400 undergraduate university students around Malaysia. The data were analysed using SPSS software version 21. Descriptive analysis was used to assess the level of knowledge and attitude regarding organ and tissue donation. The Chi-square test was used to identify the association between the sociodemographic profiles with the level of knowledge and attitude regarding organ and tissue donation. **Results:** The majority of the respondents had a high level of knowledge (n=190, 47.5%) but a neutral attitude (n=244, 61%) toward organ and tissue donation. There were five significant associations between the respondents' ethnicity (p=0.004), university (p=0.016), programmes (p=0.000), year of study (p=0.002), and family monthly income (p=0.040). This study also found no significant association between the respondents' sociodemographic profiles with the level of attitude toward organ and tissue donation. **Conclusion:** This study demonstrates that undergraduate university students in Malaysia have a high knowledge and neutral attitude toward organ and tissue donation.

Keywords: Knowledge, Attitude, Organ donation, Transplantation, Undergraduate students

PP161

Antibacterial Potential of *Allium sativum* Essential Oil: Comparison of Sample Preparation Method

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ABSTRACT

Introduction: Essential oil (EO) isolated from plants is globally recognised to impose excellent benefits on human health including its capability to eradicate bacterial infection. The present study was performed to investigate the efficiency of an EO isolated from *Allium sativum* (garlic) against common bacteria. **Methods:** Two sets of *A. sativum* EO were prepared in different sample preparation methods, which using either fresh or oven-dried garlic bulbs. Samples were subjected to a hydrodistillation technique for 3 hours. EO was separated through a liquid-liquid extraction method using hexane at a 1:1 ratio and proceeded with a rotary evaporation. Phytoconstituents contained in the EO were detected using biochemical tests. Further validations of physiochemical analyses were performed using thin layer chromatography (TLC) and attenuated total reflection Fourier transform infrared (ATR-FTIR) spectroscopy. **Results:** The antibacterial capability of the EO was determined through the Kirby-Bauer disk-diffusion method against Staphylococcus aureus and Escherichia coli. The yield percentages from fresh and oven-dried samples were around 0.48% and 0.52%, respectively, and both samples contained terpenoids and alkaloids. Based on TLC, the EO from fresh garlic resolved extra layers as compared to oven-dried garlic. ATR-FTIR spectrum validated one missing peak at wavelength 1,710 nm^{-1}. Antibacterial study revealed that both samples produced significant inhibition zones (fresh: 16.67±2.1 mm; oven-dried: 11.7±0.5 mm) on E. coli colony treated with 20 uL of EO. However, only EO isolated from fresh garlic can inhibit S. aureus colony (6.33±0.22 mm). **Conclusion:** It was suggested that isolating EO from fresh sample is preferred to limit phytocompounds lost.

Keywords: Essential oils, Extraction methods, Phytochemicals, Antibacterial potential, *Allium sativum*

PP162

Evaluation of NLR, ALC, D-Dimer and Chest X-Ray Outcomes Following Convalescent Plasma Therapy in COVID-19 Patients

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ABSTRACT

Introduction: Convalescent plasma (CP) was recommended by WHO for COVID-19 therapy. However, studies of CP are still needed to confirm its efficacy and safety. The aim of this study is to evaluate the efficacy of CP through the NLR (Neutrophil-Lymphocyte Ratio), ALC (Absolute Lymphocyte Count), D-dimer before and after the administration of CP, and the Chest X-Ray (CXR) following CP administration. **Methods:** This was a retrospective study with data obtained from medical records of COVID-19 patients that got CP therapy at Jemursari Islamic Hospital, Surabaya, Indonesia during November 2020 – June 2021. The NLR, ALC and D-dimer data were evaluated with Wilcoxon test before and after CP therapy. The CXR after CP therapy will be compared among recovery and mortality group using the Chi-Square test. **Results:** There was no significant difference between NLR before and after CP administration in the recovery group (p= 0.29), but NLR increased in the mortality group (p= 0.0001). The ALC in the recovery group increased significantly after CP administration in the recovery group (p = 0.0001), while no significant difference was observed in the mortality group (p = 0.26). D-dimer decreased in the recovery group (p= 0.01). There was a correlation between CXR results with recovery and mortality (p=0.0001). **Conclusion:** This study showed promising results for efficacy of CP marked by significant reduced of D-Dimer and increased of ALC in recovery group, as well as significant improvement in CXR appearances of the recovery group of Covid-19 patients.

Keywords: ALC, Chest x-ray, Convalescent plasma therapy, COVID-19, d-dimer

PP163

Validation of Muscle and Nerve in Anatomical Terminologies for Traditional Malay Massage Techniques on Stroke Rehabilitation

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ABSTRACT

Introduction: The involvement of specific muscles and nerves in Traditional Malay Massage (TMM) techniques has shown to have a causal effect on body function, especially for stroke patients. Anatomical knowledge supporting the understanding and communication of TMM techniques should be explored and learnt. The study aimed to validate the anatomical terminologies involved in TMM technique for stroke condition. **Methods:** The body parts of stroke patient that are involved in TMM were triangulated through qualitative techniques and validated through a quantitative approach. The data was triangulated from: 1) interview, 2) observation, and 3) document. Two TMM practitioners, one male stroke patient and two male workshop participants were involved during the interviews and observation. For document analysis, two types of documents related to: 1) Malay's anatomical terms in TMM for stroke, and 2) anatomy in medical terminology were selected. These documents were utilised to translate anatomical terms in the Malay language into medical terms. The images from all the documents were compared and reconciled among the researchers. Eight experts conducted content validation on the extracted anatomical terms in Malay that were tabulated side by side with the English terms. **Results:** The muscle and nerves were identified, translated and categorised based on the six sections during the step-by-step TMM procedure. Fifty-five of body parts were coded as content validation items and they produced an overall high validity index. **Conclusion:** This study documented the validated anatomical terminologies of TMM for stroke condition that used in our published e-book on stroke management, available at: https://heyzine.com/flip-book/4f42d210ec.html.

Keywords: Traditional Malay massage, Anatomy, Stroke patient, Mix-methods, Content validation

PP164

Synthesis and Antimicrobial Evaluation of Some New *N*-(6′-Bromo-4′,5′dimethylbenzothiazol-2′-Yl)-2-(Substituted) Acetamide Derivatives

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ABSTRACT

Introduction: Several novel *N*-(6′-bromo-4′,5′dimethylbenzothiazol-2′-yl)-2-(substituted) acetamide derivatives (4a-c) have been designed and synthesised from 2,3-dimethylaniline through four reactions. All of the newly synthesised compounds were characterised by melting point, thin layer chromatography, structural elucidation by UV, IR, ^{1}H-NMR, ^{13}C-NMR and MS. **Methods:** This research also presents the result of the investigation antibacterial and antifungal activities of the *N*-(6′-bromo-4′,5′dimethylbenzothiazol-2′-yl)-2-(substituted)acetamide derivatives on the *Escherichia coli* (ATCC 25922), Methicillin-Resistant *Staphylococcus aureus* (MRSA) (ATCC 43300), *Pseudomonas aeruginosa* (ATCC 27853); *Streptococcus faecalis* (ATCC 29212) and *Candia albicans* (ATTC10231). The evaluation of the synthesised compounds for antibacterial and antifungal activities were carried out by using agar diffusion method. **Results:** Pathogenic inhibitions were determined by MIC (minimum inhibitory concentration), lowest concentration of the newly synthesised compounds, which prevent visible growth of bacterium and fungus. **Conclusion:** Compound 4b showed higher antibacterial effect against the MRSA (MIC_{4b}= 16 mg/mL) and antifungal effect against the *Candida albicans* (MIC_{4b} = 16 mg/mL).

Keywords: 2,3-dimethylaniline, Benzothiazole, Antibacterial, Antifungal

PP165

Burnout Prevalence and Its Associated Factors among Medical Students at a Private University in Malaysia

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ABSTRACT

Introduction: Burnout is defined using three pillars called exhaustion, cynicism, and lack of professional efficacy. Burnout has been the major driver of university dropout and psychological problems. By using the standard burnout measuring tool, this study aims to evaluate the burnout prevalence and its link with possible risk factors among medical students at a private university in Malaysia. **Methods:** A total of 174 preclinical medical students participated in this cross-sectional study. Burnout level was measured by using the Maslach Burnout Inventory – General Survey for Students [MBI-GS(S)]. The MBI-GS(S) questions were received from Mind Garden, Inc, USA. The data collection was done through distribution of online forms by using a simple random selection method. The acquired data were analysed with SPSS v. 27 and Excel 2016. The Chi-squared test was used to assess the link between burnout and predicted factors. **Results:** Based on MBI scoring system, a considerable portion of medical students suffered from burnout (40.2%). A positive link was found between burnout and year of study ($p = 0.030$). There was no correlation between burnout and gender. Interestingly, burnout was also not associated with all extracurricular activities, including hobby, exercise, and social activity. Of note, a strong association was found between burnout and lack of getting enough sleep (≥ 7 hrs./night) ($p = 0.042$), and lack of motivation ($p = 0.007$). **Conclusion:** High prevalence of burnout calls for searching early remedies. Getting enough sleep and finding ways to motivate are the key factors to cope with the intense medical curriculum.

Keywords: Burnout, Medical, Psychological, Maslach Burnout Inventory, Exhaustion

PP166

Drug-Related Problems and Quality of Life of Elderly with Chronic Disease in Besut, Terengganu

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ABSTRACT

Introduction: Drug-related problems (DRPs) are mainly influenced by physiological changes, health conditions, polypharmacy, cognitive deficits, and unusual symptoms among the elderly. It is critical to understand their health-related quality of life, DRP prevalence, features, and relevant factors in order to improve their medical treatment. This study was to measure DRP prevalence among elderly with chronic diseases in Besut, Terengganu, and to investigate the relationship between DRPs and health-related quality of life using PCNE-DRP classification v9.1 and EQ-5D-5L-VAS respectively. **Methods:** Data was collected in 76 elderly through Home Medication Review (HMR) by a trained community pharmacist from January to March 2023. **Results:** The study found the participants were taking 4.8 drugs on average with 85.53% (n=65) experiencing at least one recognised DRP. DRPs were classified using the PCNE-DRP classification v9.1, which revealed that 50.0% (n=38) fell under DRP code P1 (treatment effectiveness), 53.9% (n=41) came under DRP code P2 (treatment safety), and 5.3% (n=4) fell under DRP code P3 (others). Statistical analysis revealed significant associations between co-morbidity and polypharmacy (p = 0.000461), gender and quality of life (p = 0.039), DRP code P3 and polypharmacy (p = 0.0021), and code P2 (treatment safety) and polypharmacy (p = 0.001). However, the study found no significant associations between DRPs and age, gender, or co-morbidity. Similarly, no associations were discovered between quality of life and age, polypharmacy, comorbidity, or DRPs. **Conclusion:** This highlights the fragility of older individuals with numerous health concerns, as well as the significance of personalised therapy for better healthcare results.

Keywords: Home medication review, Elderly, Chronic disease, Drug-related problems, Quality of life

PP167

Curcumin Nanoparticles Reduce the Toxicity of Paclitaxel in Healthy Lung Cells

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ABSTRACT

Introduction: Paclitaxel (PTX) is a hydrophobic drug that is approved for cancer treatment. Owing to its low solubility in physiological condition, PTX has been engineered into nanoformulation (NP) to improve its bioavailability as well as anti-cancer efficacy. However, PTX-NPs is associated with severe toxicity towards healthy cells due to its non-specific targeting. Therefore, this study co-delivered curcumin (Cur), a polyphenolic compound, alongside PTX in attempt to reduce the toxicity of PTX-NPs in healthy lung cells. Cur is known to exert negligible effect towards healthy cells. **Methods:** The cytotoxicity effect towards Beas-2B cells were evaluated with both NP combination formulations at a final concentration of 100 µM. Analyses such ATP content, ROS, mitochondrial membrane potential (MMP) were carried out to measure the effectiveness of Cur-NPs to reduce PTX toxicity in lung cells. **Results:** MTS data demonstrated that Cur-NPs improved the viability of Beas-2B when co-administered with PTX-NPs. The IC50 of Beas-2B when treated with combination of Cur-NP and PTX-NP is 60.5 ± 1.9 µM. In comparison, the IC50 for Beas-2B with PTX-NP alone is 3.0 ± 0.1, respectively. Interestingly, Cur-NPs was not toxic towards Beas-2B cells. Other data such as ROS, MMP, ATP and were in same agreement with MTS data. **Conclusion:** The co-delivery of Cur-NPs reduced the toxicity of PTX towards Beas-2B.

Keywords: Curcumin, Paclitaxel, Nanoparticle, Toxicity, Beas-2B

PP168

Prescription to Protection: An Exploration of Medication Storage and Disposal Knowledge and Practices among Hospital Raja Permaisuri Bainun (HRPB) Discharge Pharmacy Visitors

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ABSTRACT

Introduction: The presence of medications in households can lead to irrational drug use and environmental harm. This study examines medication storage and disposal among visitors to Hospital Raja Permaisuri Bainun's Discharge Pharmacy. Objectives include exploring storage and disposal practices and assessing perspectives on the Ministry of Health's (MOH) Medication Return Program. **Methods:** The study obtained ethical approval from both Universiti Kuala Lumpur (UniKL) and the Medical Research and Ethics Committee (MREC). We employed qualitative exploratory research with 30 convenience-sampled participants undergoing semi-structured interviews comprising seven open-ended questions. Collected data were subjected to thematic analysis. **Results:** The study primarily involved Malay (n=29, 96.67%), female participants (n=22, 73%), and mostly aged 50-60 and above (n=27, 90%). Key themes emerged: storage and disposal practices, influencing factors, and use of MOH Return Your Medicine Program. Notably, 48% stored medications in kitchen cabinets, keeping them in their original packaging and ensuring they were out of reach of children. However, some participants faced challenges including confusion between old and new medications and changes in pill characteristics due to improper storage practices. For disposal, 59% chose trash disposal for its convenience. Most respondents (n=19, 63.3%), were aware of the MOH Return Your Medicine Program. about the programme, with experienced users benefiting from self-discovery and healthcare provider communication, while inexperienced users stressed the need for better promotion and accessibility. **Conclusion:** The study highlighted common medication storage practices at home, often with suboptimal disposal methods, emphasising the need for public education on proper medication handling and disposal.

Keywords: Medication, Storage, Disposal, Discharge Pharmacy

PP169

Fabrication of Cyclosporine-Loaded Nanoemulsion for Topical Psoriasis Treatment: Optimisation

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ABSTRACT

Introduction: Psoriasis is an autoimmune disease in which the symptoms obviously appeared on the patient's body with thick, red or salmon color and dry patches. This led to uncomfortable itchiness for a lifetime. Cyclosporine is a drug that is commonly used for moderate to severe cases of psoriasis. Cyclosporine cannot be continuously consumed systemically due to various clinical implications. The present study aims to formulate a nanoemulsion carrier and determine its hydration efficacy on the skin layer. **Methods:** The formulated nanoemulsion system mainly consists of oil phase (mixture of virgin coconut oil, nutmeg oil and cyclosporine), aqueous phase (deionised water, xanthan gum and preservative) and surfactant (Tween 80) was optimised through Mixture Experimental Design (MED) tool. Volunteers (female, 20 to 25 years old) with healthy skin conditions were randomly selected. The nanoemulsion was applied on the skin of both forearms and allowed to take effect within 3 hours. The water content of skin layer was analysed using a Corneometer®, before and after the application. **Results:** Two formulations were selected from the suggested list by MED with droplet size range between 110 to 160 nm. The transepidermal water loss (TEWL) and hydration studies proved the efficacy of cyclosporine-loaded nanoemulsion in increasing the water storage (37.11 to 44.07%) and reduced TEWL (32.14 to 40.1%). **Conclusion:** It was proven that MED is an efficient optimisation tool than one-time-variable technique in the formulation field. Cyclosporine-loaded nanoemulsion provides better skin hydration efficacy than the oil-vehicle, which beneficial for dry skin condition of psoriatic patients.

Keywords: Cyclosporine, Nanoemulsion, Topical, Optimisation, Mixture Experimental Design

PP170

Advanced Dome Cellulose/Alginate/Chitosan Composite Matrix Design with Gastric and Intestinal Co-Targeting Capacities

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ABSTRACT

Introduction: Dome matrix was designed with gastric and intestinal targeting capacities using melatonin and caffeine as model drugs. Alginate, chitosan and cellulose as composite materials. Caffeine piled module was capped at both ends with melatonin void modules via intermediate dispersible modules into Dome matrix. **Methods:** The release drug content characteristics of Dome matrix were evaluated using a shaker bath under a sink condition in simulated gastric fluid for 2 h and subsequently adjusted to pH 6.8 to simulate the intestinal fluid for 6 h as to mimic the gastrointestinal transit. For the colonic and cecal content was obtained from Sprague dawley rats. The released drug content was analysed by high performance liquid chromatography system. The Dome matrix changes in morphology during the drug release process were recorded by a digital camera. **Results:** The melatonin module was detachable from the Dome matrix and floated in the gastric cavity indicated that almost all of melatonin were released 8 h of dissolution. The hydroxyl-rich hydroxypropylmethylcellulose in the melatonin module could have acted as a drug solubiliser through interacting with the C5-OMethyl group via the hydrogen bonding elevated the propensity of melatonin release in the gastric medium. The disintegration of intermediate dispersible modules and detachment of melatonin modules from the Dome matrix translated to sinking of caffeine module from gastric to intestinal transit. Most caffeine was released at the simulated colonic phase. **Conclusion:** The dispersion of intermediate module detached melatonin module and had it floated in stomach providing a complete melatonin release and facilitated gastrointestinal for caffeine module to transit as a reduced size matrix, with majority of caffeine delivered in colon.

Keywords: Alginate, Cellulose, Chitosan, Dome, Drug targeting

PP171

A Study of Knowledge, Perception and Usage of Performance-Enhancing Drugs among Undergraduate Students of Universiti Kuala Lumpur Royal College of Medicine Perak Who Participated in Esports

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ABSTRACT

Introduction: Esports has become one of the fastest-growing pastimes in the recreational sector. Although this is an exciting phenomenon, there have been reports of unwelcomed social demeanours in this recreational activity which include ethical issues, corruption charges, health misadventures and doping. Esports players resort to performance-enhancing drugs (PED) to remain in the competition longer. These PEDs include illegal substances, prescription medications, dietary supplements, and a variety of chemical compounds. Studies also have found death cases due to exhaustion from dozens of hours of near-constant play due to the unsupervised and excessive use of stimulants. This study aimed to investigate the knowledge, perception, and usage of PEDs among undergraduate students of Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP) who participated in esports,. **Methods:** This cross-sectional study was conducted by using an online self-administered questionnaire via the Google Form platform. The questionnaire was validated before being distributed online. A total of 62 undergraduate students participated (N=62). Responses were analysed through descriptive frequency analysis. **Results:** From the results, 21 (33.9%) of respondents have good knowledge regarding PEDs, and 52 (83.9%) respondents have good perception level. None of the respondents resorted to the use of PEDs. **Conclusion:** It can be assumed that these respondents did resort to PEDs as they are students in medical and health-related programmes.

Keywords: Knowledge, Perception, Usage, Esports, Performance-enhancing drugs