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MEDICAL SCIENCE
(ICAMS 2019)**

**Nurturing Health Professionals in
Education and Research**

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Abstract Book



LIST OF ABSTRACTS

Keynote

NURTURING HEALTH PROFESSIONALS IN EDUCATION AND RESEARCH

Prof. Emerita Tan Sri Dr. Sharifah Hapsah Syed Hasan Shahabudin,
Professor Emerita of Medical Education and Former Vice Chancellor of Universiti
Kebangsaan Malaysia.

Plenary

PL1	IN VITRO STUDIES ON THE EFFECTS OF TOCOTRIENOL ON BONE CELLS Prof. Dr. Ima Nirwana Soelaiman, Universiti Kebangsaan Malaysia (Malaysia)
PL2	A NEW PHARMACOLOGICAL APPROACH TO PREVENTING MYOCARDIAL ISCHAEMIA/REPERFUSION INJURY Prof. Dr. Owen Woodman, RMIT University, Melbourne (Australia)
PL3	FLAVONES FROM NICOTIANA PLUMAGINIFOLIA SHOW ANALGESIC AND ANXIOLYTIC ACTIVITIES IN MICE MODEL Prof. Dr. Abdur Rashid, University of Dhaka (Bangladesh)

Symposium

S1	INTRINSIC ANDROGEN RECEPTOR INDEPENDENCE IN PROSTATE EPITHELIAL CELLS Dr. Chua Chee Wai, Shanghai Jiao Tong University (China)
S2	TEACHING AND ASSESSING CLINICAL REASONING: ARE WE DOING IT RIGHT? Prof. Datuk Dr. Harlina Halizah Siraj, Universiti Kebangsaan Malaysia (Malaysia)
S3	ENSURING JUSTICE IN FORENSIC INVESTIGATION Professor Dr. Faridah Mohd Nor, Universiti Kebangsaan Malaysia (Malaysia)
S4	THE VALUE OF PATIENTS REPORTED OUTCOMES AFTER ACUTE CORONARY SYNDROMES Associate Professor Dr. Lawrence Anchah, Universiti Malaysia Sarawak (Malaysia)
S5	OBESITY – A HUGE PROBLEM Dr. Loh Huai Heng, Universiti Malaysia Sarawak (Malaysia)
S6	POLYPHENOL RICH-EXTRACT OF ROSELLE AMELIORATES CARDIAC DYSFUNCTION AND STRUCTURAL ALTERATION IN DIABETIC RATS Prof. Dr. Siti Balkis Budin, Universiti Kebangsaan Malaysia (Malaysia)

Oral Communication

OC01	<p>SYNERGISTIC ANTIBACTERIAL EFFECT OF LEAF, ROOT, AND STEM BARK EXTRACTS OF ACACIA NILOTICA AND PSIDIUM GUAJAVA ON EXTENDED SPECTRUM BETA LACTAMASE (ESBL) PRODUCING ESCHERICHIA COLI AND KLEBSIELLA PNEUMONIA</p> <p>Salawudeen A, Agbo E.B, Tahir F, Suleiman M.A, Adamu M.T</p>
OC02	<p>FLAVONES FROM NICOTIANA PLUMBAGINIFOLIA SHOWING ANALGESIC AND ANXIOLYTIC ACTIVITIES IN MICE MODEL</p> <p>Md. Shafiullah Shajib, <u>Mohammad A. Rashid</u></p>
OC03	<p>PALMITIC RICH INTERESTERIFIED FATS ELEVATED PLASMA HDL, LARGE HDL SUB-FRACTIONS AND REGULATION OF HEPATIC GENES BY ENHANCING CHOLESTEROL CLEARANCE PATHWAY VIA REVERSE CHOLESTEROL TRANSPORT (RCT) IN A HAMSTER MODEL</p> <p><u>Gowri Nagapan</u>, Goh Yong Meng, Che Anisahs Che Idris, Noor Lida Mat Dian, Kanga Rani Selvaduray and Nagendran Balasundram</p>
OC04	<p>THE EVALUATION OF LIVER OXIDATIVE STRESS PARAMETERS IN METABOLIC SYNDROME RATS TREATED WITH TOCOTRIENOL</p> <p><u>Wong Sok Kuan</u>, Chin Kok-Yong, Ima-Nirwana Soelaiman</p>
OC05	<p>THE EFFECTS OF OIL PALM PHENOLICS (OPP) ON LIPID METABOLISM BIO-MARKERS OF HYPERLIPIDAEMIC GOLDEN SYRIAN HAMSTER</p> <p>SB Syarifah-Noratiqah, Syed Fairus, HMS Qodriyah, Isa Naina-Mohamed</p>
OC06	<p>RESVERATROL PREVENTS NICOTINE-INDUCED HYPERTENSION AND CARDIAC DYSFUNCTION IN RATS</p> <p><u>Anand Ramalingam</u>, Norsyahida Mohd. Fauzi, Siti Balkis Budin, Rebecca H. Ritchie, Satirah Zainalabidin</p>
OC07	<p>TESTOSTERONE REDUCES EXPRESSION OF MECA-79 AND NUMBER OF EMBRYO IMPLANTATION SITE IN EARLY PREGNANCY RAT MODEL</p> <p>Mohd Helmy Mokhtar, Nelli Giribabu, Naguib Salleh</p>
OC08	<p>SEXUAL DIMORPHISM OF THE SUBPUBIC ANGLE: A PRELIMINARY STUDY USING COMPUTED TOMOGRAPHY (CT) SCAN IN MALAYSIANS</p> <p><u>Siti Hanum Mohd Ali</u>, Normaliza Omar, Mohamed Swarhib Shafie, Nik Azuan Nik Ismail, Helmi Hadi, Faridah Mohd Nor</p>
OC09	<p>PAST, PRESENT AND FUTURE STATUS OF HIV/AIDS GLOBAL PANDEMIC</p> <p>Narendra Kumar Chopra, Ma Han Ni</p>
OC10	<p>AGE ESTIMATION FROM DENTAL IMAGING ON PREMOLARS IN</p>

	ADULTS Donni S, Haslinda R, Phrabhakaran N, Aspalilah A
OC11	Post-Mortem Changes of <i>Sus scrofa domestica</i> in Equatorial Climate in Sarawak, Malaysia Ting Kwong Ing, Normaizatul Afizah Ismail, Faridah Mohd Nor, Ab Halim Mansar
OC12	MICROARRAY ANALYSIS OF THE MOLECULAR MECHANISM INVOLVED IN EOPD AND LOPD PATIENTS IN MALAYSIA Nor Ilham Ainaa Muhsin, Wan Fahmi Wan Mohamad Nazarie, Ahmad Rasyadan Arshad, Muhiddin Ishak, Zamzureena Mohd Rani, Fairuz Fatin Zolkafali, Ambrose Louise, Siti Aishah Sulaiman, A Rahman A Jamal, Nor Azian Abdul Murad
OC13	PERTURBATION OF HOST-MICROBES INTERACTION IN GUT TUMOR MICRO-ENVIRONMENT: AN EVIDENCE FROM MICROBIOME SECRETOME STUDY Siok-Fong Chin, Putri Intan Hafizah Megat Mohd Azlan, Luqman Mazlan, Hui-min Neoh, Raja Affendi Raja Ali, Rahman Jamal
OC14	ENDOSCOPY AS PART OF INITIAL WORK-UP FOR ISOLATED UNINTENTIONAL WEIGHT LOSS: OESOPHAGOGASTRODUODENOSCOPY BUT NOT COLONOSCOPY SHOULD BE CONSIDERED Khairul Najmi Muhammad Nawawi, Raja Affendi Raja Ali
OC15	MORPHOMETRIC ANALYSIS OF 3D CT IMAGES OF SCAPULA FOR SEX DETERMINATION IN MALAYSIAN POPULATION Normaliza Omar

Young Investigator Award

YIA01	REGRESSION OF INVASIVE DUCTAL CARCINOMA TREATED WITH SIROLIMUS AND SUNITINIB IN NMU- INDUCED ANIMAL CANCER MODEL Nurul Fathiyatul Nabila Jaffar, Muhammad Shahidan Muhammad Sakri, Tengku Ahmad Damitri Al-Astani b Engku Daud@Tengku Din, Hasnan Jaafar
YIA02	MESENCHYMAL STEM CELLS-DERIVED NEURAL PROGENITOR STEM CELLS TREATED IMPROVES FUNCTIONAL RECOVERY IN RAT SPINAL CORD INJURY Putri Nur Hidayah Al-Zikri, Fauziah Mohamad Idris, Jafri Malin Abdullah, Hasnan Jaafar
YIA03	DYSREGULATION OF EMT MARKERS DRIVEN BY EPIGENETIC REGULATOR SETD1A IN TRIPLE NEGATIVE BREAST CANCER CELL LINES Ezane Azlina Mohamad Hanif, Paul B Mullan

YIA04	OPTIMISATION OF A PC 12 CELL-BASED <i>IN VITRO</i> STROKE MODEL FOR SCREENING POTENTIAL NEUROPROTECTIVE AGENTS Pin Fen Chua, William K. Lim
YIA05	TRPC3-NOX2 COMPLEX ACTIVATION UNDERLIES ADENOSINE TRIPHOSPHATE (ATP)-INDUCED CARDIOMYOCYTE ATROPHY <u>Suhaini Sudi</u> , Motohiro Nishida, Caroline Sunggip
YIA06	TREATMENT WITH TRF MODULATES OXIDATIVE STRESS-INDUCED OSTEOCLAST DIFFERENTIATION AND ITS ACTIVITY <i>IN VITRO</i> Nur Fathiah Mohd Radzi, Zakiah Jubri, Suzana Makpol, Ima Nirwana Soelaiman and <u>Ekram Alias</u>
YIA07	FROM DISEASED TO QUIESCENCE: THE EFFECT OF RETINOIC ACID SUPPLEMENTATION ON KERATOCONIC FIBROBLASTS <i>IN VITRO</i> UNDER SERUM-FREE CONDITION <u>Fadhilah Zainal Abidin</u> , Dimitrios Karamichos, Francisco Figueiredo, Che Connon
YIA08	PHOTOPROTECTIVE EFFECTS OF PTEROSTILBENE SUPPLEMENTATION ON MELANOGENESIS ACTIVITY AND OXIDATIVE STRESS IN UVB IRRADIATED BALB/C MICE Tava Shelan Nagapan, Dayang Fredalina Basri, Ahmad Rohi Ghazali
YIA09	ANTI-ATHEROSCLEROTIC PROPERTIES OF BERBERIS VULGARIS AQUEOUS EXTRACT IN CHOLESTEROL-FED RABBITS Nurul Huda Mohd Nor, Fauziah Othman, Sabariah Md Noor Eusni Rahayu Mohd Tohit
YIA10	ANTIOXIDANT, ANTIMICROBIAL, ANTI-DIARRHEAL AND ANALGESIC ACTIVITIES OF <i>DIOSPYROS MALABARICA</i> (DESR.) KOSTEL. Md. Moniruzzaman, <u>Mohammad Kaisarul Islam</u> , Mohammad A. Rashid
YIA11	A PRELIMINARY FORMULATION OF BIOMATERIAL BONE PASTE Penny George, Zariyantey Abd Hamid, Md. Zuki Abu Bakar Zakaria, Enoch Kumar Perimal, B.Hemabarathy Bharatham
YIA12	GOAT MILK PREVENTS AGEING-INDUCED MEMORY DECLINE VIA ENHANCING BRAIN NEUROTROPHIC FACTORS <u>Afifa Safdar</u> , Khairunnuur Fairuz Azman, Rahimah Zakaria, Che Badariah Ab Aziz and Usman Rashid
YIA13	THE ANTIHYPERTENSIVE EFFICACY OF <i>PIPER SARMENTOSUM</i> AQUEOUS EXTRACT AS COMPARED TO PERINDOPRIL IN SPONTANEOUSLY HYPERTENSIVE RATS <u>Fatimatuzzahra Hashim Fauzy</u> , Maizura Mohd Zainudin, Hidayatul Radziah Ismawi, Taher El-Shami

YIA14	<p>CHANGES IN THE HEART METABOLIC PROFILE OF MYOCARDIAL INFARCTION RATS INDUCED WITH ISOPRENALINE BY PALM TOCOTRIENOL-RICH FRACTIONS</p> <p><u>Khairul Anwar Zarkasi</u>, Satirah Zainalabidin, Tan Jen-Kit, Nur Haleeda Hakimi, Nur Zuliani Ramli, Zakiah Jubri</p>
YIA15	<p>THE EFFECTS OF KELULUT HONEY ON BLOOD PRESSURE, FASTING LIPID PROFILE AND ADIPOCYTE HISTOMORPHOMETRY IN RATS WITH METABOLIC SYNDROME INDUCED WITH HIGH CARBOHYDRATE AND HIGH FAT DIET</p> <p><u>Nur Zuliani Ramli</u>, Kok-Yong Chin, Khairul Anwar Zarkasi, Fairus Ahmad</p>
YIA16	<p>CYCLOOXYGENASE-2 INHIBITORY COMPOUNDS FROM THE LEAVES OF GLYCOSMIS PENTAPHYLLA (RETZ.) A. DC.: CHEMICAL AND IN SILICO STUDIES</p> <p>Mahfuza Afroz Soma, Md. Ruhul Kuddus and Mohammad Abdur Rashid</p>
YIA17	<p>THE RELATIONSHIP BETWEEN METABOLIC SYNDROME AND BONE HEALTH AMONG MALAYSIANS IN KLANG VALLEY</p> <p>Kok-Yong Chin, Chin Yi Chan, Subramaniam Shaanthana, Fairus Ahmad, Nor Aini Jamil, Pei Yuan Ng, Norliza Muhammad, Ima-Nirwana Soelaiman, Norazlina Mohamed</p>
YIA18	<p>PREDICTORS OF BONE HEALTH AMONG MIDDLE-AGED AND ELDERLY MALAYSIANS IN KLANG VALLEY</p> <p>Chin Yi Chan, Norazlina Mohamed, Soelaiman Ima-Nirwana and Kok-Yong Chin</p>
YIA19	<p>PREVALENCE AND CHARACTERISTIC OF YOUNG ADULTS WITH ACUTE MYOCARDIAL INFARCTION IN A SINGLE REFERRAL CENTRE IN PAHANG</p> <p><u>Mohd. Zhafri</u>, Samsul Draman, Aszrin Abdullah, Jamalludin A. Rahman, Norbaiyah M. Bakrim, Azarisman Shah M. Shah</p>
YIA20	<p>RELATIONSHIP BETWEEN PANORAMIC INDICES AND BMD OF MANDIBLE, HIP AND SPINE AMONG MALAY</p> <p><u>Noorshaida Kamaruddin</u>, Zainul Ahmad Rajion, Mohd Ezane Aziz, Asilah Yusof</p>
YIA21	<p>POST PARTUM ENDOTHELIN-1 AND ANGIOGENIC FACTORS CAUSING PERSISTENT ENDOTHELIAL DYSFUNCTION IN MOTHERS WITH HYPERTENSIVE DISORDERS OF PREGNANCY</p> <p><u>Hidayatul Radziah Ismawi</u>, Maizura Mohd Zainudin, Nurjasmine Aida Jamani, Taher FT Elshami, Tariq Abdul Razak</p>
YIA22	<p>POLYPHARMACY AMONG ELDERLY IN NURSING HOMES</p> <p>Koo Kai Xuan, <u>Marhanis-Salihah Omar</u>, Adliah Mhd-Ali, Mohd Makmor-Bakry</p>
YIA23	<p>THE PERFORMANCE OF CALCANEAL QUANTITATIVE ULTRASOUND IN OSTEOPOROSIS PREDICTION AMONG MALAYSIANS AGED 40 YEARS AND ABOVE IN KLANG VALLEY</p> <p>Subramaniam, Shaanthana, Soelaiman, Ima-Nirwana, Kok-Yong, Chin</p>

Posters

P01	Aphrodisiac Potential of Mangrove Plant in Costal Area of Sabah Extract (<i>Rhizophora Mucronata</i>) Syamimi Khalid, Sarifah Rejab, Ahmad Hazri Ab. Rashid, Noor Rabihah Aid, Aidawati Shabery, Nurul Husna Abdullah, Roslan Sulaiman
P02	ANTI-INFLAMMATORY EFFECT OF POLYGONUM MINUS FLAVONOID-RICH-FRACTION AGAINST CISPLATIN-INDUCED HEPATOTOXICITY IN SPRAGUE DAWLEY RATS <u>Nurul Raudzah Adib Ridzuan</u> , Teoh Seong Lin, Norhashima Abdul Rashid, Faizah Othman, Syarul Nataqain Baharum, Farida Hussan
P03	CYTOTOXIC ACTIVITY OF TINOSPORA CRISPA CRUDE EXTRACTS (STEM) AGAINST K562 HUMAN LEUKEMIA CELLS Normah Awang, Haziratul Iffah Ruzali, Rapidah Mohamad, Nurul Farahana Kamaludin and Chan Kok Meng
P04	MARANTODES PUMILUM LEAF EXTRACT RESTORED MECHANICAL STRENGTH OF FRACTURED TIBIA IN OSTEOPOROSIS RAT MODEL <u>Norazlina Mohamed</u> , Tijjani Rabiul Giuze, Ahmad Nazrun Shuid
P05	IN VITRO STUDY OF THE EFFECTS OF TANNIC ACID ALONE OR IN COMBINATION WITH PAMIDRONATE ON OSTEOBLAST PROLIFERATION AND MINERALIZATION <u>Hermizi Hapidin</u> , Nor Munira Hashim, Hasmah Abdullah
P06	EFFECT OF GYNURA PROCUMBENS ON CARDIAC MARKERS IN ACUTE MYOCARDIAL INFARCTION MODEL Syarifah Aisyah Syed Abd Halim, Norzana Abdul Ghafar, Srijit Das, Zakiah Jubri
P07	Dual-Crosslinked Gelatin Bioactive Scaffold as a Potential Acellular Treatment for Diabetic Foot Ulcer Mohd Yunus Mohd Heikal , Mior Azman Mior Arif, Mh Busra, Fauzi
P08	EFFECT OF TOPICAL APPLICATION OF <i>POLYGONUM MINUS</i> ESSENTIAL OIL ON WOUND HEALING OF STREPTOZOTOCIN-INDUCED DIABETIC RATS <u>Seong Lin Teoh</u> , Mohamad Ali Abdul Rahiman, Srijit Das
P09	TOCOTRIENOL PROTECTS THE BONE AGAINST LONG TERM GLUCOCORTICOID EXCESS VIA ANTIOXIDANT ACTIVITIES Elvy Suhana Mohd Ramli, Fairus Ahmad, Mohamad Fairuz Yahaya, Ima Nirwana Soelaiman
P10	THE EFFECTS OF KELULUT HONEY ON BODY FAT PERCENTAGE AND OMENTAL FAT MASS IN RATS WITH METABOLIC SYNDROME INDUCED WITH HIGH CARBOHYDRATE AND HIGH FAT DIET Fairus Ahmad, Nur Zuliani Ramli, Kok-Yong Chin, Khairul Anwar Zarkasi

P11	EFFECTS OF TOCOTRIENOL-RICH FRACTION ON STRESS-INDUCED GASTRIC MUCOSAL LESIONS AND ITS RELATION TO PROSTAGLANDINS AND COX-1 MRNA <u>Nur Azlina Mohd Fahami</u> , Kamisah Yusof, Qodriyah Mohd Saad
P12	THE TREATMENT OF DIABETIC WOUNDS AND THE ROLE OF NATURAL PRODUCTS Srijit Das, Teoh Seong Lin
P13	ANTIPYRETIC ACTIVITY OF HIBISCUS ROSA-SINENSIS STEM EXTRACT Anandarajagopal Kalusalinagm, Maisarah Binti Khairi, Abdur Rahman Auf Ali, Abdullah Khan
P14	ROSELLE ATTENUATES CARDIAC REMODELING AFTER MYOCARDIAL INFARCTION <i>IN VIVO</i> <u>Satirah Zainalabidin</u> , Lislivia Si Yiang Nee, Anand Ramalingam, Norsyahida Mohd Fauzi, Siti Balkis Budin
P15	THE EFFECTS OF ANNATTO TOCOTRIENOL DELIVERED USING SELF EMULSIFYING DRUG DELIVERY SYSTEM ON BONE MINERAL DENSITY IN AN ANIMAL MODEL OF POSTMENOPAUSAL OSTEOPOROSIS Nur Vaizura Mohamad, Ima Nirwana Soelaiman, Chin Kok Yong
P16	DISEASE ACTIVITY INDEX SCORE TO ASSESS INFLAMMATION IN A COLITIS-ASSOCIATED CANCER MOUSE MODEL Nurul Hazliana Harun, Norhazlina Abdul Wahab, Nordashima Abd Shukor, Norfilza Mohd Mokhtar, Raja Affendi Raja Ali
P17	SYNTHESIS, CHARACTERISATION AND EVALUATION OF IN-VITRO ANTIOXIDANT ACTIVITY OF NOVEL BENZOTRIAZOLE DERIVATIVES Anandarajagopal Kalusalingam, Hemala Parasuraman, Abdullah Khan
P18	CORNEAL STROMA GENE EXPRESSION IN SUPERFICIAL ABRASIVE INJURY OF BILAYER CORNEAL EQUIVALENT Norzana Abd Ghafar, Ng Sook Luan, Jemaima Che Hamzah, Chua Kien Hui
P19	SYNTHESIS AND CYTOTOXIC ACTIVITY OF ORGANOTIN(IV) BIS(2-METHOXYETHYL) DITHIOCARBAMATE IN K562 CELLS <u>Rapidah Mohamad</u> , Normah Awang, Nurul Farahana Kamaludin, Nor Fadilah Rajab, Asmah Hamid
P20	DETERMINATION OF BIOCHEMICAL MARKERS FOR PRIMARY CREATINE DISORDERS USING SYMMETRY ® C18 COLUMN AND DIRECT INJECTION ANALYSIS BY TANDEM MASS SPECTROMETRY (MS/MS) Marleena M , Ismarulyusda I, Salina AR, Ngu LH, Anasufiza H, Asmah H
P21	MOLECULAR IDENTIFICATION OF <i>CHRYSOMYA MEGACEPHALA</i>

	USING GUSTATORY RECEPTOR 1 GENE – PRELIMINARY STUDY <u>Syamsa Rizal bin Abdullah</u> , Siti Nur Akmal bt Ghazali, Emelia binti Osman
P22	OVARIAN SEROUS CYSTADENOCARCINOMA DRUG-TREATMENT TRANSCRIPTOME ANALYSIS OF TCGA DATA USING DESEQ2 Wan Fahmi Wan Mohamad Nazarie, A Rahman A Jamal, Nurul-Syakima Ab Mutalib
P23	ANTIPROLIFERATIVE AND APOPTOSIS INDUCTION ACTIVITIES OF NOVEL ORGANOTIN(IV) DITHIOCARBAMATE COMPOUNDS ON HUMAN LEUKEMIC CELL LINES <u>Norraphat Uttraphan Pim</u> , Nurul Farahana Kamaludin, Normah Awang, Yang Farina Abdul Aziz
P24	MODIFIED HIGH-CARBOHYDRATE HIGH-FAT DIET AT SHORTER DURATION INDUCES METABOLIC AND BEHAVIOURAL CHANGES IN YOUNG RATS Mohamad Fairuz Yahaya, Nurul ‘Ain Arshad, Teoh Seong Lin
P25	MOLECULAR STUDY ON DENGUE VIRUSES CIRCULATING DURING DENGUE OUTBREAKS IN SANDAKAN AND KUDAT, SABAH (2016-17) <u>Tin Sabai Aung</u> , Amalina Emran, Win Win Than, Tin Tin Thein, Mie Mie Sein, Timothy Jr Gintarong, Chua Tock Hing & Nobumichi Kobayashi
P26	VALIDATION OF AN ELECTROSPRAY IONIZATION TANDEM MASS SPECTROMETRY (ESI-MS/MS) DIAGNOSIS METHOD FOR PRIMARY CREATINE DISORDERS FOR USE IN CLINICAL LABORATORY Marleena M, Ismarulyusda I, Salina AR, Ngu LH, Anasufiza H, Asmah H
P27	GENE EXPRESSION PROFILE OF PLATINUM-RESISTANT OVARIAN SEROUS CYSTADENOCARCINOMA <u>Wan Fahmi Wan Mohamad Nazarie</u> , A Rahman A Jamal, Nurul-Syakima Ab Mutalib
P28	CARDIOMYOCYTE HYPERTROPHY INDUCTION BY ANGIOTENSIN II IN H9C2 CELLS <u>Kamisah Yusof</u> , Siti Hawa Nordin, Ahmad Asmadi Yusof, Juriyati Jalil
P29	EVALUATION OF EARLY CARDIAC REMODELING AT DIFFERENT TIME POINTS IN RAT MODEL OF MYOCARDIAL INFARCTION Shafreena Shaukat Ali, Kamisah Yusof, Satirah Zainalabidin
P30	PSYCHOSOCIAL CORRELATES OF DEPRESSION AMONG PATIENTS ON METHADONE MAINTENANCE THERAPY IN A MALAYSIAN TERTIARY SUBSTANCE ABUSE TREATMENT CENTRE Suzaily Wahab, Tee Chun Keat, Raynuha Mahadevan, Eni Rahaiza, Law Kian Boon
P31	A STUDY OF CARDIAC INVOLVEMENT IN 200 CASES OF DENGUE FEVER IN SHANTI I.D CLINIC VADODARA (GUJARAT STATE) INDIA.

	Narendra Kumar Chopra
P32	SUICIDAL BEHAVIOUR, DEPRESSION AND FUNCTIONAL DISABILITY AMONG ELDERLY INPATIENTS IN A MALAYSIAN TERTIARY CENTRE Suzaily Wahab, Tien Yong Chua, Rosdinom Razali, Zanariah Mat Saher
P33	MAINTAINING HEALTHY AGEING THROUGH NATURAL HORMONES OR BIOIDENTICAL HORMONE THERAPY Ismail Tambi, Stephanie Yang
P34	ACTIVITIES OF DAILY LIVING AMONG ELDERLY WITH LOWER BODY FRACTURE <u>Ahmad Nazrun Shuid</u> , Nurul Izzah Ibrahim, Mohd Sharkawi Ahmad, Mohamed S Zulfarina, Sharifah Nurul Aqilah Sayed Mohd Zaris, Isa Naina Mohamed, Norazlina Mohamed, Sabarul Afian Mokhtar
P35	IT IS NOT JUST THE BRAIN: ABNORMAL AUDITORY-BRAINSTEM PROCESSING IN PATIENTS WITH SCHIZOPHRENIA Noor Alaudin Abdul Wahab, Suzaily Wahab, Mohd. Normani Zakaria
P36	IT IS NOT JUST THE BRAIN II: CLICK AUDITORY BRAINSTEM RESPONSE WITH NOISE AS A POTENTIAL TEST IN SCHIZOPHRENIA PATIENTS <u>Noor Alaudin Abdul Wahab</u> , Suzaily Wahab, Mohd. Normani Zakaria
P37	MALE FACTOR INFERTILITY- IMPACT OF YOGA-BASED LIFESTYLE INTERVENTION Mehta V, Dada R, Mishra S
P38	UNUSUAL ARRAY OF NEURAL COMMUNICATIONS IN THE INFRA TEMPORAL FOSSA USEFUL FOR SKULL BASE SURGERY Gandhi S, Mehta V, Kohli M, Dada R
P39	SEROPREVALENCE AND MOLECULAR DETECTION OF TOXOPLASMOSIS AMONG HEMATO-ONCOLOGY PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA <u>Aisha Khodijah Kholib Jati</u> , Suharni Mohamad, Wan Suriana Wan Ab Rahman
P40	UTILIZATION OF EVIDENCE-BASED THERAPY FOR THE TREATMENT OF TYPE 2 DIABETES MELLITUS IN MALAYSIAN PRIVATE PRACTICE Menon BV, Kassab YW
P41	THE EFFECTS OF FICUS FELTOIDEA ON BONE MINERAL PARAMETERS IN OVARIECTOMIZED RATS Norliza Muhammad, Nancy Mary Fernandez, Norazlina Mohamed
P42	EFFECTS OF VITAMIN E ISOMERS ON BONE STRUCTURE

	Nur Farhana Mohd Fozi, James Jam Jolly, Chin Kok Yong, Chua Kien Hui, Ekram Alias, Ima Nirwana Soelaiman
P43	3-D PRINTING: ENTERING THE NEW DIMENSIONS IN FORENSIC ODONTOLOGY <u>Ranjana Garg</u>
P44	THE INFLUENCE OF PHYSICAL ACTIVITY LEVEL AND SEDENTARY BEHAVIOR ON BODY COMPOSITION COMPONENTS IN ADOLESCENTS <u>Mohamed S Zulfarina</u> , Razinah Sharif, Shuid A Nazrun, Isa Naina-Mohamed
P45	A STUDY ON PROPHYLACTIC EFFECT OF POLYHERBAL DRUG MIXTURE IN NORMAL AS WELL AS ALLOXAN- INDUCED DIABETIC RATS Tasneem Nayla Mredula, Abu Asad Chowdhury and Mohammad Shah Amran
P46	EFFECTS OF KELULUT HONEY ON OXIDATIVE STRESS AND BONE STRUCTURE OF GLUCOCORTICOID INDUCED OSTEOPOROSIS IN MALE RATS Mohd Amir Kamaruzzaman, Elvy Suhana Mohd Ramli, Ilma Nirwana Soelaiman

KEYNOTE

NURTURING HEALTH PROFESSIONALS IN EDUCATION AND RESEARCH

Prof. Emerita Tan Sri Dr. Sharifah Hapsah Syed Hasan Shahabudin,
Professor Emerita of Medical Education and Former Vice Chancellor of Universiti
Kebangsaan Malaysia.

Over the years, we have witnessed innumerable changes in medical practice, mainly due to technological innovations and socio-economic trends, which have created, reshaped and eliminated processes and even jobs. Today, the speed of change is even more phenomenal, as automation, artificial intelligence, bioscience and ageing drive innovations in most aspects of medical practice and medical education. It is predicted that 85% of jobs learners will be doing in 2030, are not even invented yet. Further, the speed of medical discoveries is shortening the half-life of knowledge, rendering information in fast changing disciplines such as molecular biology obsolete very quickly. The internet has emerged as the major source of knowledge, and social networking is facilitating sharing and learning. It is no longer necessary for medical schools to produce “industry-ready” graduates on its own. It is also foolhardy for medical teachers to try to “impart all knowledge” to students through lectures. Rather, they should focus on what technology cannot do and prepare syndicated learning experiences, that open up minds and develop the intellect, creativity and collaborative ability of everyone - students, teachers, researchers and practitioners - that will make them more future aware and adaptable to changing medical practice. Implicit is the idea of promoting curiosity, lifelong passion and skills to seek and critically appraise information from different fields and sources, to reason and logically arrive at conclusions, and to conceive fresh ideas in making out-of-the-box decisions judiciously and ethically. In a networked multicultural world, where working effectively with and for others is imperative, medical schools must also focus more on emotions, empathy, listening, communicating and respect of diversity to nurture civic responsibility, discipline and time management, leadership and integrity for students to stand out and succeed with confidence, wherever they are

PLENARY 1

IN VITRO STUDIES ON THE EFFECTS OF TOCOTRIENOL ON BONE CELLS

Ima-Nirwana S^a, Chua KH^b, Ekram A^c, Chin KY^a, Wan Nuraini WH^a, James JJ^a, Nur Farhana MF^a, Wong SK^a and Norzana AG^d.

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Introduction: Osteoporosis is a degenerative bone disease with low bone mass and deterioration of microarchitecture, leading to bone fragility. Tocotrienol was reported for its osteoprotective properties in various osteoporotic animal models.

Aims: This study aimed to investigate the osteogenic effects of annatto-derived tocotrienol (AnTT) using pre-osteoblastic cells, and to determine the effects of individual vitamin E isomers on bone cells using an in vitro skeletal microenvironment system.

Methods: In the first part of the study, murine MC3T3-E1 pre-osteoblastic cells were cultured with various doses of AnTT. The expression of osteoblastic differentiation-related markers and formation of collagen and mineralized nodules were measured. In the second part, a static three-dimensional human osteoblast-osteoclast co-culture system was established on bovine bone scaffold and treated with individual vitamin E isomers, which were determined by analysing bone microarchitecture and strength of the scaffolds. The scaffolds were subjected to scanning electron microscopy, bone histomorphometry, dual-energy X-ray absorptiometry and biomechanical strength test.

Results: The AnTT-treated pre-osteoblastic cells showed significantly higher levels of osterix, COL1 α 1, ALP and osteocalcin compared to the vehicle group ($P < 0.05$). The γ - and δ -tocotrienol-treated co-cultures on bone scaffold showed better cell attachment and proliferation, improvement in bone microstructure, histomorphometric indices, mineral density/content and compressive strength relative to other vitamin E isomers ($P < 0.05$).

Conclusion: The study confirmed the osteogenic effects of AnTT on pre-osteoblastic cells and the γ - and δ -tocotrienol were found to be the most effective isomers in improving bone quality. In brief, tocotrienol may be considered as a potential therapeutic agent for osteoporosis.

PLENARY 2

A NEW PHARMACOLOGICAL APPROACH TO PREVENTING MYOCARDIAL
ISCHAEMIA/REPERFUSION INJURY

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In the treatment of acute myocardial infarction, early reperfusion of the blocked coronary artery is critical to restore the blood flow to the ischaemic myocardium to prevent further tissue injury, and to improve clinical outcome. This reperfusion strategy after a period of ischaemia, however, may elicit further myocardial damage referred to as myocardial reperfusion injury. The manifestations of reperfusion injury include arrhythmias, myocardial stunning and microvascular dysfunction, in addition to significant cardiomyocyte death. It is suggested that an overproduction of reactive oxygen species, intracellular calcium overload and inflammatory cell infiltration are the most important contributing factors in myocardial ischaemia-reperfusion injury. Limiting reperfusion injury is considered an attractive target to improve outcomes after myocardial infarction, but thus far, there are no clinically effective treatments. We have investigated the ability of 3',4'-dihydroxyflavonol (DiOHF), and a synthetic, water soluble analogue of DiOHF (NP202), to reduce infarct size after myocardial ischaemia and reperfusion. Our studies have demonstrated that DiOHF is a potent inhibitor of Ca²⁺/calmodulin-dependent kinase II (CaMKII) in vitro, and that it can reduce stress-induced phosphorylation of CaMKII and the downstream signaling kinases i.e. mitogen activated protein kinase (p38MAPK) and N-terminal kinase (JNK). In anaesthetized sheep, DiOHF and NP202 reduced myocardial infarct size after up to three hours of ischaemia and three hours of reperfusion. This was accompanied by a decrease in apoptosis of cardiomyocytes, in both previously ischaemic and normally perfused myocardium, and reduced infiltration of neutrophils to the previously ischaemic region of the myocardium. Flavonol treatment reduces phosphorylation of p38MAPK and JNK in the myocardium, but does not prevent the activation of ERK or Akt, kinases, that are important in cardioprotective signaling pathways. The capacity of DiOHF and its water soluble analogue NP202, to reduce myocardial ischaemia and reperfusion injury in vivo suggests,

PLENARY 3

**FLAVONES FROM NICOTIANA PLUMBAGINIFOLIA SHOW ANALGESIC
AND ANXIOLYTIC ACTIVITIES IN MICE MODEL**

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Objectives: *Nicotiana plumbaginifolia* Viv. is an annual herb which belongs to the Solanaceae family and found in the weedy lands of Bangladesh. The herb is used for the treatment of toothache, cuts, and wounds in ethnomedicine. The present study was aimed to isolate the bioactive compounds from the methanol extract of *N. plumbaginifolia* (MENP).

Methods: The separation of compounds from MENP was performed by column chromatography followed by preparative thin layer chromatography (PTLC) over silica gel. The structures of the isolated compounds were elucidated by extensive analysis of their high-resolution ¹H-, ¹³C-NMR, DEPT, HSQC, HMBC, and HR-MS data as well as comparison with previously reported values, where applicable. The analgesic activity of the purified compounds was determined by thermal (hot plate and tail immersion tests) and chemical (acetic acid and formalin-induced writhing tests) methods, whereas the anxiolytic activity was assessed by the elevated plus-maze test in mice model

Results: Five polyoxygenated flavonoids were isolated and their structures were established as 3,3',5,6,7,8-hexamethoxy-4',5'-methylenedioxyflavone (**1**), 3,3',4',5',5,6,-7,8-octamethoxyflavone (Exoticin, **2**), 6,7,4',5'-dimethylenedioxy-3,5,3'-trimethoxy-flavone (**3**), 3,3',4',5',5',8-hexa-methoxy-6,7-methylenedioxyflavone (**4**) and 5-hydroxy-3,3',6,7,8-pentamethoxy-4',5'-methylenedioxyflavone (**5**). Among these, exoticin is relatively rare to be found in nature. This is the first report of their isolation from *N. plumbaginifolia*. Oral administration of compounds **1**, **3** and **4** (12.5-25 mg/kg b.w.) demonstrated significant ($p < 0.01$) and dose-dependent analgesic activity in both chemical and thermally-induced pain models in mice. On the other hand, flavones **1-4** (12.5 mg/kg b.w.) also exhibited significant anxiolytic activity in elevated plus-maze test.

Conclusion: The present study revealed that *N. plumbaginifolia* possesses bioactive flavonoids which could be considered as suitable candidates for the development of anxiolytic and analgesic agents

SYMPOSIUM 1

**INTRINSIC ANDROGEN RECEPTOR INDEPENDENCE IN PROSTATE
EPITHELIAL CELLS**

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The second-generation androgen deprivation therapies (ADT), namely enzalutamide and abiraterone, have demonstrated clinical efficacy and improved survival in patients with castration-resistant prostate cancer (CRPC). Unluckily, most CRPC patients will experience either primary or secondary ADT resistance, leading to androgen receptor (AR)-independent prostate cancer. Notably, AR-independent prostate cancer may exhibit neuroendocrine differentiation (NED) feature, but most of the tumors exhibit an uncharacterized phenotype. It remains unclear the molecular mechanisms during the transition from CRPC to AR-independent disease and whether a particular cell-of-origin for prostate cancer is involved in this process. Previously, we have demonstrated that the prostate luminal progenitors, castration-resistant Nkx3.1-expressing cells (CARNs) are AR-independent and are capable to initiate tumors with NED feature. Interestingly, gene signature of non-transformed AR-deleted CARNs shows enrichment with human CRPC and neuroendocrine prostate cancer signatures, highlighting the importance of intrinsic progenitor properties in CRPC and AR-independent prostate cancer. We hypothesize that intrinsic AR independence in different prostate epithelial progenitors contributes to the progression and maintenance of AR-independent prostate cancer. Understanding the molecular characteristics of intrinsic AR independence should yield timely therapeutic strategies for the patients. In this presentation, I will talk about the use of a newly established genetically engineered mouse model to identify novel AR-independent prostate epithelial progenitors. In addition, I will present examples how we could translate our understanding on the molecular characteristic of these populations into clinical practice.

SYMPOSIUM 2

TEACHING AND ASSESSING CLINICAL REASONING: ARE WE DOING IT RIGHT?

Harlina Halizah Siraj
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Clinical reasoning is a core component of medical doctors' diagnostic competency. Nuland (1994) described clinical reasoning as 'Every doctor's measures of his/her abilities, the most important ingredient in his/her professional self-image'. Clinical reasoning has been defined by Hawkins et. al (2010), as "*thinking through different aspects of patient care to reach to a reasonable decision related to prevention, diagnosis and treatment of a clinical problem in a specific patient*". The staggering data on medical errors still occurring within healthcare delivery today, demands educators to reflect on how effectively they have been teaching, and assessing clinical reasoning amongst their clinical students. Is it adequate to simply provide medical facts and clinical information, demonstrate on how to perform clinical examinations, and select relevant laboratory or imaging studies to the learners? Or are we missing something more fundamental and essential in building up clinical reasoning skills to our young future doctors and other health professionals? This presentation will explore those questions, and hopefully able to convince the teachers to strive harder to unlearn, relearn and learn new thing.

SYMPOSIUM 3

ENSURING JUSTICE IN FORENSIC INVESTIGATION

Faridah Mohd Nor
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Any criminal investigation hinges on the ability of the pathologist to properly identify wounds and their effects on a human body. Nevertheless, it can be difficult for a pathologist to recognize the potential value in the infliction of wound and its extraordinary pattern, that has never been seen before such as wound inflicted by a special weapon or a rare tool. Post-mortem examination of a case will give clues to the pathologist on the cause of death, and the weapon used for committing the crime. Once evidence has been identified, it certainly needs to be documented and photographed for further examination and analysis. Swabs and samples need to be taken from the body to obtain baseline information about what compounds, DNA and trace elements are ubiquitous for the case. Any weapon found at the scene such as a blood-stained knife, pieces of bullets or casing should be subjected to proper packaging and labelling to prevent cross-contamination. If the scene of a crime is at a workplace, or a home that has frequent visitors, it is important to take samples from the place, and interview suspects around the area to obtain more information on a case. This allows the pathologist to be clearly sorted and informed of the case, and focus on who might have been present at the time of the crime.

SYMPOSIUM 4

**THE VALUE OF PATIENTS REPORTED OUTCOMES AFTER ACUTE
CORONARY SYNDROMES**

Lawrence Anchah
Universiti Malaysia Sarawak (Malaysia)

Measuring patient outcomes such as health-related quality-of-life in clinical practice provides the opportunity to improve patients' monitoring and management. Well-validated instruments have shown substantial information in development and evaluation of health care service delivery. Patient-reported measures include preferences and reports about care received, utility weights of health status, health behaviours, and outcomes of care, placing patients at the centre of health care research and economic evaluation in health care. It is also providing a fundamental quality improvement platform in embarking pharmaco-economic research works and health economic. Despite such general acceptance of the idea, there is much to be learned about how to use the information of utility measurements in quality of life to improve our clinical practices. With the current concerned in aggressive changes in some drug prices leading to further regulation of pricing in the industry, increase in the consumption of prescription drugs, and rising popularity of generic drugs, hence, the evaluation in health economics become more crucial. This paper provides an overview the important of patients' involvement in clinical research and service evaluation. We describe and discuss explicitly, utility weights of health status or commonly known as patient-reported outcomes (PROs) in cardiovascular research. In general, PROs provide reports from patients about their own health, quality of life, or functional status associated with the health care or treatment they have received.

SYMPOSIUM 5

OBESITY – A HUGE PROBLEM

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Obesity is a condition of excessive fat accumulation in the body with adverse effects on health. It is a risk factor for numerous diseases. In Malaysia, the obesity rate is increasing over the past decade across ethnicity, age group and gender. There are a few ways of diagnosing obesity, but the most commonly used ones are body mass index (weight in kilograms divided by the square of height in meter) and waist circumference. Asians have a higher percentage of body fat than white people of the same age, sex and BMI. Additionally, the proportion of the Asian population with risk factors for type 2 diabetes and cardiovascular disease is significant, even below the recommended WHO BMI cut-off of 25kg/m² for obesity in the Caucasians. Thus, WHO has recommended a lower BMI cut-off of 23kg/m² for Asians as “increased risk”. Waist circumference of > 85cm in males and > 80cm in females, is associated with increased risk as well. Obesity is caused by an interplay between genetic factor and environmental factors such as behavior, sedentary lifestyle, as well as endocrine diseases and iatrogenic causes. Mortality risk increases exponentially with increased BMI by increasing risk for cardiovascular diseases, cancer and respiratory diseases. Pharmacotherapy for obesity is only used as a temporary measure, and is associated with side effects. Bariatric surgery leads to a very significant weight loss with improvement in metabolic parameters. However, it is reserved for patients with class III obesity or class II obesity with > 2 risk factors, as it may be associated with vitamin and micronutrient deficiencies post-operatively with risk of weight regain. Lifestyle changes remain the mainstay of management of obesity. Diet modification is more effective compared to physical activity alone. A reduction of 500 kcal per day of dietary intake will reduce weight by 500 gm per week. To complement that, patients should engage in moderate intensity activities of 150 minutes per week, thereafter increasing to 200-300 minutes per week.

SYMPOSIUM 6

POLYPHENOL RICH-EXTRACT OF ROSELLE AMELIORATES CARDIAC DYSFUNCTION AND STRUCTURAL ALTERATION IN DIABETIC RATS

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Aims/Objective: Roselle or *Hibiscus sabdariffa* Linn is known to inhibit oxidative stress, however, the effects of *H. sabdariffa* Linn polyphenol-rich extract (HPE) on ameliorating cardiac dysfunction and structural alteration are still undefined. Therefore, this study aimed to determine the protective effects of HPE in ameliorating cardiac dysfunction and structural alteration in diabetic rats.

Methods: An experimental diabetic rat model was induced by streptozotocin (STZ). HPE was orally administrated at a dose of 100 mg/kg/day. The supplementation was started after three days of diabetes induction and continuously for eight weeks duration. At the end of study period the hearts were excised for cardiac performance, biochemical and histological studies.

Results: We demonstrated that HPE supplementation improved hyperglycemia, dyslipidemia and significantly prevented diabetes-induced high blood pressure. HPE also attenuated cardiac oxidative damage in diabetes, indicated by low malondialdehyde and advanced oxidation protein product. As for the antioxidant status, HPE significantly increased reduced glutathione level, as well as catalase and superoxide dismutase activities. These findings correlate with cardiac function, whereby HPE improved left ventricular developed pressure, coronary flow, left ventricle contractility and relaxation rate significantly. Histological analysis showed a marked decrease in cardiomyocyte hypertrophy and fibrosis. Immunohistochemistry stains for cleaved caspase-3 showed a marked increase in cardiomyocyte apoptosis in diabetes and notably down-regulated by HPE supplementation. Furthermore, HPE treatment also markedly decreased protein expression of cytochrome C, a marker for apoptosis. Interestingly, ultrastructural changes and impairment of mitochondria induced by diabetes were minimized by HPE.

ORAL COMMUNICATION

OC01

SYNERGISTIC ANTIBACTERIAL EFFECT OF LEAF, ROOT, AND STEM BARK EXTRACTS OF *ACACIA NILOTICA* AND *PSIDIUM GUAJAVA* ON EXTENDED SPECTRUM BETA LACTAMASE (ESBL) PRODUCING *ESCHERICHIA COLI* AND *KLEBSIELLA PNEUMONIA*

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Abstract

Aims/Objective: Infection due to β -Lactamases producing *Escherichia coli* and *Klebsiella specie* are increasingly recognized in recent years. Most of the conventional drugs used for treatment of diseases, are less effective due to resistance from misuse of these drugs. The aim of this study was to investigate the synergistic antibacterial effect of leaves, stem barks and roots extracts of *Acacia nilotica* and *Psidium guajava* against extended spectrum beta lactamases producing *E. coli* and *Klebsiella pneumoniae*.

Methods: The organism isolates were obtained from urine and stool. Phytochemical analyses were done according to the standard screening tests by conventional protocols for presence of alkaloids, saponins, steroids, tannins, flavonoids and cardiac glycosides in *Acacia* and *Psidium* leaf methanolic extracts (ALME, PLME).

Results: All phytochemicals were present in the stem bark methanolic extracts (ASME, PSME) of both plants. In vitro, agar well diffusion technique was used to analyse crude extracts of the plants against the isolates. The extracts exhibited marked antibacterial activities at different concentrations. The stem bark methanolic extracts of both plants showed the highest antibacterial activity against both isolates. Both bacterial isolates were inhibited at concentrations of 2.5 mg/ml and 5 mg/ml, and were completely inhibited at concentrations of 5 mg/ml and 10 mg/ml. The toxicity studies of methanolic stem barks in combination of both plant extracts revealed no toxicity (LC₅₀ of 1000 μ l/mL) against *Artemia salina*.

Conclusion: It was concluded that the plants may not be toxic to human, and hence, may serve as a potential source of a novel antibacterial compound.

OC02

ANTIDIABETIC POTENTIAL OF A NOVEL FORMULATION OF FUNCTIONAL FOODS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS: A SINGLE CENTRE, SINGLE BLIND, PROSPECTIVE INTERVENTIONAL STUDY

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Abstract

Aims/Objective: Diabetes is a global problem now-a-days. Currently available antidiabetic medicaments are ineffective due to resistance in chronic treatment and exert several adverse-effects. This study aimed to evaluate the safety and clinical effectiveness of a novel formulation of functional foods (Diab-Food) for the treatment of type 2 diabetes mellitus. The objective of the study were to determine the effect of Diab-Food on fasting plasma glucose, post-prandial blood glucose, HbA1c, serum insulin and lipid profile of diabetes patients.

Methods: A single centre, single blind, prospective interventional study was conducted in Bangladesh. Diab-Food is a fenugreek-based functional foods formula received by 30 patients with type 2 diabetes mellitus in addition to their usual treatment. After 8 weeks study period fasting plasma glucose, post-prandial blood glucose, HbA1c, serum insulin and lipid profile of patients were compared with the baseline. Side-effects, any kind of discomfort of the patients were also recorded.

Results: In average, the fasting blood glucose levels and HbA1c were reduced from 11.63 mmol/L to 8.92 mmol/L (23.30%, $p < 0.001$) and 8.9% to 7.2% (19.1%, $p < 0.001$), respectively. The glucose tolerance test resulted significant reduction (29.70%, $p < 0.001$) in post-prandial blood glucose levels (19.66 to 13.82 mmol/L) 2-hours after meal. Total serum cholesterol ($p < 0.01$), low density lipoprotein (LDL-c) ($p < 0.01$), and triglyceride (TG) ($p < 0.001$) levels were also significantly improved. No major adverse-effects were observed in any patients except the discomfort of the patients due to bitter taste of the preparation.

Conclusion: Based on the clinical findings, Diab-Food can be recommended for the patients with type 2 diabetes mellitus.

OC03

PALMITIC RICH INTERESTERIFIED FATS ELEVATED PLASMA HDL, LARGE HDL SUB-FRACTIONS AND REGULATION OF HEPATIC GENES BY ENHANCING CHOLESTEROL CLEARANCE PATHWAY VIA REVERSE CHOLESTEROL TRANSPORT (RCT) IN A HAMSTER MODEL

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Abstract

Aims/Objective: Evidence has shown that palmitic rich interesterified (IE) fats exerted detrimental effects on atherogenicity in animals, but less effects on plasma lipids in animals and humans. Thus, it is important to investigate the role of IE fats on lipid sub-fractions and hepatic gene expression in lipoprotein regulation.

Methods: F1B male Golden Syrian hamsters were fed with atherogenic diets containing 0.1g/100 g dietary cholesterol and 15 g/100 g dietary fat enriched with palm olein (POo), chemically interesterified palm olein (CIEPOo), sal fat blend (SFB) and chemically interesterified sal fat blend (CIESFB) for 12 weeks. Plasma lipids, low density lipoprotein (LDL) and high density lipoprotein (HDL) sub- fractions and hepatic gene expression levels were analysed.

Results: POo and CIEPOo fed hamsters had higher plasma HDL levels and larger HDL particles than SFB and CIESFB fed animals ($P < 0.05$). Genes involved in cholesterol metabolism were upregulated, and were not affected by type of dietary fat saturation and interesterification. Gene expression of Low-density lipoprotein receptor (LDLR), Proprotein convertase subtilisin/kexin type 9 (PCSK9) and Stabilin 2 (STAB2) were down-regulated regardless of diet. Significant group differences were found in expression of STAB2 (CIEPOo versus IESFB, $P < 0.05$), LDLR (POo versus SFB, $P < 0.05$; CIEPOo versus IESFB, $P < 0.05$).

Conclusion: The findings suggested that both native and interesterified palmitic rich fats have notable effects on HDL metabolism. The palmitic rich fats have potential anti-atherogenic effect by enhancing cholesterol clearance pathway via reverse cholesterol transport (RCT).

OC04

THE EVALUATION OF LIVER OXIDATIVE STRESS PARAMETERS IN METABOLIC SYNDROME RATS TREATED WITH TOCOTRIENOL

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Abstract

Aims/Objective: Oxidative stress is the cause and consequence of metabolic syndrome (MetS). This study aimed to evaluate the effects of tocotrienol on oxidative stress parameters in the liver of MetS animals induced by high-carbohydrate high-fat (HCHF) diet.

Methods: Twelve-week-old male Wistar rats were randomised into seven groups. The baseline group was euthanised at the onset of experiment. The normal group received standard rat chow. The remaining groups received HCHF diet to induce MetS, and were orally treated with corn oil (vehicle), annatto and palm tocotrienol (60 and 100 mg/kg). The duration of tocotrienol treatment was 12 weeks, starting from week 8 until week 20. Finally, the rats were sacrificed, and the livers were harvested. The oxidative stress [malondialdehyde (MDA)] and anti-oxidant status [catalase (CAT), glutathione peroxidase (GPx), superoxide dismutase (SOD), reduced glutathione (GSH) and glutathione-S-transferase (GST)] in the liver were evaluated.

Results: Treatment of annatto and palm tocotrienol (60 and 100 mg/kg) reduced MDA content and increased SOD activity in the HCHF animals was compared to the non-treated HCHF animals ($P < 0.05$). Annatto and palm tocotrienol (60 mg/kg) had increased GPx activity, whereas only 60 mg/kg palm tocotrienol increased GSH content and GST activity in the HCHF animals relative to the negative controls ($P < 0.05$). However, there was no difference in the CAT activity, following tocotrienol supplementation ($P > 0.05$)

Conclusion: Tocotrienol potentially alleviated oxidative stress in the liver of animals with MetS via its anti-oxidative properties. These findings enhance medicinal values of tocotrienol as a possible therapeutic agent targeting MetS.

OC05

THE EFFECTS OF OIL PALM PHENOLICS (OPP) ON LIPID METABOLISM BIO-MARKERS OF HYPERLIPIDAEMIC GOLDEN SYRIAN HAMSTER

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Abstract

Aims/Objective: Oil Palm Phenolics (OPP) is a water soluble antioxidant rich in phenolic compounds extracted from palm oil waste. The present study was conducted to determine the effects of OPP on lipid metabolism bio-markers of hyperlipidaemic Golden Syrian hamster.

Methods: Forty male Golden Syrian hamsters were randomly assigned to five groups: 1) Normal Control (NC); 2) High-Fat High-Cholesterol (HFHC); 3) 1.26 mg/kg Atorvastatin (Statin); 4) Low dose 30 mg/kg OPP (LOPP) and 5) High dose 113 mg/kg OPP (HOPP). Hamsters in the normal control group were given normal chow, while the rest of the groups were fed with HFHC diet (0.3% cholesterol and 15% coconut oil) for 12 weeks. All the OPP treated groups were induced with HFHC diet for four weeks before proceeding with the treatment.

Results: Both treatment groups of OPP showed a significant reduction of total cholesterol (TC), triglyceride (TG), non high-density lipoprotein-cholesterol (nonHDL-C), apolipoprotein B (Apo-B), 3-hydroxy-3-methylglutaryl coenzyme A (HGM-CoA) reductase and percentage of lipid droplets compared to negative control group, HFHC ($p < 0.05$). LOPP showed a significant increase of high-density lipoprotein-cholesterol (HDL-C) and apolipoprotein A1 (Apo-A1) levels compared to negative control group, HFHC ($p < 0.05$). No significant difference was seen for HOPP group on HDL-C and Apo-A1 level compared to the negative control group.

Conclusion: The present findings showed that OPP possessed anti-hyperlipidaemic properties, and has a potential for human use.

OC06

RESVERATROL PREVENTS NICOTINE-INDUCED HYPERTENSION AND CARDIAC DYSFUNCTION IN RATS

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Abstract

Aims/Objective: Prolonged nicotine exposure, from both active and passive smoking is associated with an increased risk of cardiovascular diseases. However, limited data are available on the impact of pharmacological agents targeting nicotine-induced cardiovascular diseases in this context. This study sought for the first time, the impact of red wine polyphenol, resveratrol on nicotine-induced hypertension and cardiac dysfunction in rats.

Methods: Male Sprague-Dawley rats were given nicotine (0.6 mg/kg) alone or in combination with resveratrol (8 mg/kg) for 28 days, and their hearts were analyzed at end-point for changes in structure, function and gene expression. One additional group of rats served as untreated controls, by receiving vehicle alone.

Results: Nicotine significantly increased end-point systolic blood pressure compared to the control rats, however this was prevented by resveratrol co-administration (both $p < 0.05$). Nicotine also induced cardiac dysfunction, evident across increased cardiomyocyte size, left ventricular (LV) collagen, LV expression of natriuretic peptides, and impaired LV contractile function in rats after 28 days ($p < 0.05$). Markers of oxidative stress and inflammation (nitrotyrosine, tumour necrosis factor α , interleukin 6) were also markedly upregulated in nicotine-alone group ($p < 0.05$). Compared to these rats, resveratrol had significantly prevented all these markers indicative of protection against nicotine-induced cardiac dysfunction ($p < 0.05$).

Conclusion: In brief, this study demonstrated that resveratrol has potential in preventing nicotine-induced hypertension and cardiac dysfunction, and thus might reduced cardiovascular complications associated with smoking.

OC07

TESTOSTERONE REDUCES EXPRESSION OF MECA-79 AND NUMBER OF EMBRYO IMPLANTATION SITE IN EARLY PREGNANCY RAT MODEL

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Abstract

Aims/Objective: Implantation is a unique phenomenon, that involves physical and physiological interactions between the embryo and receptive endometrium. Disturbances in the expression of endometrial proteins during uterine receptivity period may lead to failure of embryo implantation. Testosterone has been reported to affect the fluid transport and other events during embryo implantation. Thus, this study aimed to investigate the effect of testosterone on the expression of MECA-79 and number of embryo implantation in intact early pregnant rats.

Methods: Intact pregnant rats were treated with two doses of testosterone, 250µg/kg/day (low dose) and 500µg/kg/day (high dose) for three days beginning on day 1 of pregnancy. The rats were sacrificed either at day 4 for analyses of changes in the expression and distribution of MECA-79 by Western blotting and immunohistochemistry, respectively, or at day 6 for determining the number of the embryo implantation site.

Results: Administration of high dose of testosterone during early pregnancy resulted in reduced expression and distribution of MECA-79. Besides, the number of embryo implantation site also decreased in rats receiving high dose of testosterone.

Conclusion: Reduced in expression and distribution of MECA-79 during early pregnancy period could interfere with embryo implantation process, and thus, decreased the number of embryo implantation site in situations associated with high level of testosterone.

OC08

SEXUAL DIMORPHISM OF THE SUBPUBIC ANGLE: A PRELIMINARY STUDY USING COMPUTED TOMOGRAPHY (CT) SCAN IN MALAYSIANS

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Abstract

Aims/Objective: This study examined sex differences in Malaysians from subpubic angle of the pelvis by three-dimensional computed tomography (3D-CT) images.

Method: A total of 60 multi-detected computed tomography (MDCT) scans were sampled. The MDCT scans were segmented using 3D Slicer, and four landmarks were acquired using Stratovan Checkpoint. The measurements were analysed using independent sample T-test, Pearson correlation coefficient, binary logistic regression and receiver operating characteristic curve analysis.

Results: The subpubic angle in females was significantly larger than in males (female: $86.8^\circ \pm 5.3^\circ$, male: $68.6^\circ \pm 7.6^\circ$, $p < 0.01$). In males, the subpubic angle was inversely correlated with age ($r = -0.449$; $p < 0.01$), but in females, there was no correlation between the subpubic angle and age. Discrimination between male and female subjects was achieved by a cut-off value of 77.7° , with 96.7% sensitivity and 93.3% specificity. The accuracy rate of sex estimation using the subpubic angle was 96.7%.

Conclusion: The subpubic angle had demonstrated a high degree of expected accuracy in the classification of sex (96.7%), thus indicating that the method can be successfully applied in MDCT scans, and is suitable for forensic application in the Malaysian population.

OC09

PAST, PRESENT AND FUTURE STATUS OF HIV/AIDS GLOBAL PANDEMIC

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Abstract

Aims/Objective: The first recognized case of AIDS occurred in USA in 1981. The origin of human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) had puzzled scientists since early 1980s. The objective of this study was to investigate the historical origin and progress of HIV/AIDS transmission in various parts of the world.

Methods: It is generally accepted that HIV has descended from simian immunodeficiency virus (SIV), and theories were explaining how SIV became HIV in humans. Advances in antiretroviral treatment have reduced the morbidity and mortality associated with HIV infection. Unless great progress in prevention measures are taken, the number of people living with HIV will outstrip the resources available for treatment.

Results: As per data from UNAIDS summary of global epidemic 2017, 36.9 million people were living with HIV, 1.8 million were newly HIV-infected adults, and 1.8 million were infected children less than 15 years of age. The impact of control of HIV depends on vital epidemiological parameters i.e. child prevalence and incidence and annual new cases of HIV in adults and children, deaths due to AIDS in adults and children. The latest data of HIV/AIDS in adults and children, male and female and deaths due to HIV/AIDS as per WHO/ UNAIDS resources will be presented & discussed.

Conclusion: The search for effective vaccines and microbicides should be the priority in combatting HIV. Continuous swift action must be taken to prevent further global HIV spread.

OC10

AGE ESTIMATION FROM DENTAL IMAGING ON PREMOLARS IN ADULTS

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Abstract

Aims/Objective: Age estimation is important in forensic sciences, clinical dentistry and archaeology for identification process. Teeth are particularly valuable in age estimation as they tend to stay intact under any circumstances. The procedures for age estimation are complicated as different techniques are used, and it becomes more complex in adult when mineralization process of teeth has completed. This study aimed to estimate the age of Malaysian adults by using Gustafson's method on premolars in dental panoramic tomography (DPT).

Methods: A total of 400 DPTs of Malaysians (227 females and 173 males), aged 18 till 74 years were reviewed. Gustafson's criteria for secondary dentin formation, cementum apposition, periodontal recession and attrition were evaluated in all the mandibular premolars.

Results: There was significant difference between right and left mandibular premolars using paired t test ($p < 0.05$). However, there was no difference between males and females in all parameters by independent t test ($p > 0.05$). The correlation of individual characteristics with chronological age was examined, and linear and multiple regression analyses were done for age estimation. Results showed R values amounting to 0.77 till 0.79, and standard error of estimate ranging from 0.67 till 0.69 years.

Conclusion: Examination of premolars using Gustafson method can be used for forensic age estimation among Malaysian adults. The radiographic method in this study is favorable as it is a non-invasive technique, and has potential for forensic applications.

OC11

Post-Mortem Changes of *Sus scrofa domestica* in Equatorial Climate in Sarawak, Malaysia

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Key words: Post-mortem changes, *Sus scrofa domestica*, equatorial climate.

Aims/Objective:

A taphonomic study was conducted in Sarawak, Malaysia to determine the duration of post-mortem changes.

Methodology:

In this research, two adult females *Sus scrofa domestica* weighing 77 kg each, were killed by a machete at the heart region. As pure cotton clothes are mostly worn by the Malaysians in hot and humid climate, thus a cloth made of pure cotton was put over the subjects in order to mimic a real human body. Both carcasses were placed in separate locations, labelled as *A* and *B* in the jungle, and taphonomic changes were recorded. All stages of decomposition i.e. the fresh stage, bloated stage, active decay stage, advanced decay stage and remains stage, were observed and documented. The ambient temperature, internal body temperature, temperature of larvae mass, body surface temperature, soil surface temperature and humidity of air were recorded daily. The time for each stage of decomposition was determined. During the decomposition process, insects and larvae in each stage of decomposition process were collected and preserved for reference. Photos and videos were taken for each subject throughout the research period.

Results:

The hot and humid climate in Sarawak had accelerated the decomposition process. The time taken for both carcasses to reach the remains stage was nine days. The cotton clothes were preserved till the end of the research.

Conclusion:

In brief, *Sus scrofa domestica* took about nine days to be fully skeletonised on the ground in an equatorial climate of Sarawak, Malaysia.

OC12

MICROARRAY ANALYSIS OF THE MOLECULAR MECHANISM INVOLVED IN EOPD AND LOPD PATIENTS IN MALAYSIA

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Abstract

Aims/Objective: Diagnosis and prognosis of Parkinson's disease (PD) are challenging due to inexistence of biomarkers. MicroRNA (miRNA) is a short nucleotide non-coding small RNA, which regulates gene expression in the post-transcriptional processes. The study aimed to identify the miRNAs involved in Late Onset PD (LOPD) compared to the Early Onset PD (EOPD) patients.

Methods: The miRNA samples from PD patients were extracted using miRNeasy serum/plasma kit from Qiagen, and the quality of each miRNA was determined using Agilent RNA 6000 Nano kit in the Bioanalyzer. Microarray was performed in EOPD (n= 8), LOPD (n=7) and healthy control (n=4) using Affymetrix GeneChip miRNA 4.0. Differential downstream analysis between EOPD and LOPD was performed using limma package, FunRich and OmicsNet.

Results: The hsa-miR-635, hsa-miR-1587 and hsa-miR-496 were significantly upregulated in EOPD compared to LOPD (fc = between 6.7 and 9.7, p = <0.005). These miRNAs were directly regulating the *ARPP19*, *NPTX1* and *DRAXIN* genes during maintenance of neuronal development and synaptic transmission, while hsa-miR-3915, hsa-let-7c-5p and hsa-mir-4264 were significantly downregulated in EOPD compared to LOPD (fc = between -4.5 and -8, p = <0.005). These miRNAs were directly regulating the *KLHL15*, *BACH1* and *ADIPOR2* genes, which were involved in oxidative stress and synaptic deficit in neurodegenerative disorders.

Conclusion: Several miRNAs have been identified to be differentially expressed in EOPD compared to LOPD and PD versus control. These miRNAs could serve as the potential biomarkers for early diagnosis of PD. However, these miRNAs need to be validated in a larger sample size.

OC13

**PERTURBATION OF HOST-MICROBES INTERACTION IN GUT TUMOR
MICRO-ENVIRONMENT: AN EVIDENCE FROM MICROBIOME SECRETOME
STUDY**

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Abstract

Aims/Objective: Gut flora thrives in delicate balance, and helps to maintain gut homeostasis. Alterations in microbial composition may hamper gut ecosystem, and expose the host to risk of developing colorectal cancer (CRC). Understanding host-microbes interaction via their secretions, may be the key strategy for future therapy. We aimed to profile secreted proteins released from the human gut and microbial of CRC patients and control by assessing the secretome in stool samples.

Methods: Stool samples from 26 CRC and 20 controls were collected, homogenized and filtered prior to protein extraction and analysis. Samples were subjected for in-solution digestion, followed by protein identification and quantification by LCMS/MS. Tools such as SPSS, MaxQuant, MetaboAnalyst, DAVID and String were used for statistical analysis, data visualization, functional annotations and prediction of protein interactions and pathways.

Results: A drastic increase was observed in human origin proteins in CRC compared to control ($p < 0.05$). The identified human exclusive proteins for CRC were mostly related to protein binding function, and the top expressed proteins were mapped to Stage I and II CRC. The top annotated KEGG pathway for human CRC-exclusive proteins was Hypoxia-inducible factor-1 (HIF-1), and the best prediction model for CRC was built upon the combination of human Huntingtin and RNA exonuclease 5 proteins. Meanwhile, tremendous reductions of the overall microbial proteins, the diversity and composition of gut microbial were observed compared to the control ($p < 0.05$).

Conclusion: The distinct alteration of gut flora and human proteins in CRC may suggest a perturbed micro-environment favouring the tumour.

OC14

ENDOSCOPY AS PART OF INITIAL WORK-UP FOR ISOLATED UNINTENTIONAL WEIGHT LOSS: OESOPHAGOGASTRODUODENOSCOPY BUT NOT COLONOSCOPY SHOULD BE CONSIDERED

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Abstract

Aim: Unintentional weight loss is an important indication for endoscopy. However, data regarding diagnostic yield of endoscopy for isolated weight loss is scarce. We aimed to address this issue.

Methods: Retrospective analysis was done on all patients, who underwent endoscopy procedures at our centre (2010 until 2018). Patients with unintentional weight loss were included in the study, and were divided into two groups i.e. weight loss-only (WLO) versus weight loss with other symptoms (WLS). Clinically significant finding (CSF) was defined as endoscopic findings, that might explain weight loss.

Results: Of 10,900 OGDs and 4,708 colonoscopies, 268 (2.5%) and 276 (5.8%) met our inclusion criteria, respectively. For OGD analysis, 46 (17.2%) (mean age: 66 ± 11.6 , 50% males) were performed for WLO, while 222 (82.8%) (mean age: 59.8 ± 15.3 , 49.5% males) for WLS. Sixty-nine (25.7%) OGDs were normal. CSF were found in 8 (17.4%) patients in WLO vs. 52 (23.4%) patients in WLS. CSF in WLO was stated as moderate-severe esophagitis/gastritis (3), peptic ulcers (4) and duodenal cancer (1). From colonoscopic analysis, 58 (21%) (mean age: 58.1 ± 15.5 , 49.2%) were performed for WLO, while 218 (79%) (mean age: 58 ± 15.5 , 53.7% males) for WLS. Colonoscopy was normal in 41.3%. None of WLO patients had CSF compared to WLS (51 patients, 23.4%).

Conclusion: The diagnostic yield of OGD for WLO was comparable to WLS, while colonoscopy in WLO might not be so useful, OGD should strongly be considered as part of the initial work-up for isolated unintentional weight loss.

OC15

MORPHOMETRIC ANALYSIS OF 3D CT IMAGES OF SCAPULA FOR SEX DETERMINATION IN THE MALAYSIAN POPULATION

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Abstract

Aims/Objective: Sex estimation is a primary factor to generate an accurate biological profile of skeletonised remains. Apart from skull and pelvis, scapula has been used as an alternative bone for determining sex. In Malaysia, limitation in identifying skeletonised remains has led to the application of three dimensional (3D) computed tomography (CT) image in forensic anthropology. Thus, it is the aim of the study to analyse sexual dimorphism of scapula using 3D CT image, and to determine its accuracy for sex classification for the Malaysians.

Methods: A total of 200 CT thorax in males and females, aged between 20 to 74 years were sampled. About five linear measurements were measured on 3D CT images of scapulae. The data were analysed using independent T-test and discriminant function analysis (DFA).

Results: Results showed that there was significant sex differences in all five parameters ($p < 0.05$). By DFA, univariate analysis yielded 83.5% to 93% positive classification rate, while stepwise analysis showed 93% accuracy rate.

Conclusion: The estimation of sexual dimorphism showed a significant degree of classification success rate, proving that scapula can be a useful tool in providing an accurate sex estimation in skeletonised remains of the Malaysian population.

YOUNG INVESTIGATOR AWARD

YIA01

REGRESSION OF INVASIVE DUCTAL CARCINOMA TREATED WITH SIROLIMUS AND SUNITINIB IN NMU- INDUCED ANIMAL CANCER MODEL

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Abstract

Aims/Objective: This study investigated the effect of Sirolimus (mTOR inhibitor) and Sunitinib (multitargeted tyrosine kinase inhibitor) on morphological changes of tumour in N-nitroso-N-methylurea (NMU)-induced invasive breast carcinoma.

Methods: Twenty-four female Sprague Dawley rats were administered NMU intraperitoneally. The rats were divided into four groups i.e. Group 1 (control, n=6), Group 2 (Sirolimus, n=6), Group 3 (Sunitinib, n=6) and Group 4 (Sirolimus+Sunitinib, n=6), which were being treated, when the tumours reached the size of 14.5 ± 0.5 mm, and subsequently were sacrificed after five days. The morphological changes were observed, and histological subtypes were evaluated by H&E staining.

Results: Macroscopically, the tumours were solid and circumscribed, receiving a good blood supply from collateral vessels. All tumours were 100% malignant histologically with three types of invasive ductal carcinoma (IDC) pattern i.e. cribriform, papillary and not otherwise specified (NOS). Sirolimus and combinatorial treatment of Sirolimus and Sunitinib inhibited mammary tumour progression to 7.0 ± 6.5 mm and 11.5 ± 5.2 mm, respectively with reduced tumour aggressiveness. Treatment with Sunitinib alone showed initial regression of tumour to 13.1 ± 5.0 mm, but the tumour increased in size to 16.3 ± 3.8 mm at a later stage.

Conclusion: This study showed that treatment of invasive ductal carcinoma by Sirolimus and Sunitinib had effectively caused regression of the breast tumour.

YIA02

MESENCHYMAL STEM CELLS-DERIVED NEURAL PROGENITOR STEM CELLS TREATED IMPROVES FUNCTIONAL RECOVERY IN RAT SPINAL CORD INJURY

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Abstract

Aims/Objective: Various strategies have managed to improve functional recovery after spinal cord injury (SCI) induction, but an optimal strategy was not developed to date. Behavioral outcome in rats is the most important factor for evaluating treatment efficacy and improvement of functional recovery. The aim of this study was to graft Mesenchymal Stem Cells (MSCs)-derived Neural progenitor Stem Cells (NPCs) after a spinal cord hemisection injury, and to perform transplantation in Sprague Dawley rats to assess their effects on its functional recovery.

Methods: The rats SCI were divided into three groups i.e. Group 1 (injured + vehicle), Group 2 (injured + NPCs [bFGF & EGF]) and Group 3 (injured + NPCs [bFGF, EGF & IGF-1]). In order to evaluate the treatment efficacy and functional improvement on T10 rat SCI, two behavioral studies on locomotor and sensory function were conducted. The locomotor function was tested by utilizing the Modified Open-field gait assessment using Basso, Beattie and Bresnahan (BBB) rating scale. Meanwhile, the sensory function was determined by Electronic Von Frey test.

Results: Open field test using BBB rating scale showed that the mean scores over time was higher in Group 3 compared to Group 1 and 2. The difference between Group 3 and control group was statistically significant ($p < 0.05$). Besides, there was a positive response in the Von Frey test in Group 3 compared to control group.

Conclusion: MSCs-derived NPCs transplantation on spinal cord hemisection injury of Sprague Dawley rats has shown some functional recovery of the spinal cord

YIA03

DYSREGULATION OF EMT MARKERS DRIVEN BY EPIGENETIC REGULATOR SETD1A IN TRIPLE NEGATIVE BREAST CANCER CELL LINES

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Abstract

Aims/Objective: Chemo-resistance is a major drawback in triple negative breast cancers (TNBCs). Pinpoint signature marker and understanding molecular mechanisms in TNBC is crucial. This study aimed to identify EMT markers modulated by SETD1A epigenetic enzyme, and to elucidate molecular mechanisms in TNBC cell lines.

Methods: The esiRNA screening of 58 epigenetic enzymes was carried out upon knock-down (KD) of each siRNAs in a 96-well plate to determine associated enzymes in viability of Hs578T cell line. The most observed cell death was selected to elucidate mechanism of epigenetic enzyme (SETD1A) through differentially expressed genes utilising Nanostring Cancer Progression panel, then was validated by RqPCR to understand mechanism of SETD1A in MDA-MB-468 (good outcome) and Hs578T (poor outcome).

Results: Epigenetic esiRNA screening displayed the highest cell deaths by SETD1A. Nanostring differentially expressed genes showed minimal changes in SETD1A-KD samples compared to non-transfected controls. However, major significant changes of expressed genes were observed between good and poor outcome cells indicating some signature markers, that had contributed to a progressive state of EMT in TNBC cells. Clonogenic assay exhibited reduced proliferative effects upon SETD1A-KD. RqPCR data showed significant increase of miR205 ($p = 0.003$) and LRG1 ($p = 0.02$) and reduction of Ki-67 ($p = 0.02$) expression level upon SETD1A-KD.

Conclusion: Our data suggested that SETD1A modulates proliferation through de-activation of miR-205 had regulated Ki-67, and concurrently suppressed LRG1 in TNBC. Clearly, SETD1A epigenetically abrogated EMT markers, thus further assessments are warranted to elucidate the significance of SETD1A in TNBC chemo-resistance.

YIA04

OPTIMISATION OF A PC 12 CELL-BASED *IN VITRO* STROKE MODEL FOR SCREENING POTENTIAL NEUROPROTECTIVE AGENTS

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Abstract

Aims/Objective: PC12 cells can be differentiated into a neuronal phenotype with nerve growth factor (NGF), and were widely used as an *in vitro* stroke model for screening neuroprotective agents. However, certain PC12 cell variants were reported to be non-responsive to NGF for differentiation, while optimisation studies of media and growth surface substrates are rare. This study aimed to test three commonly used PC12 variants for growth parameters and differentiation ability to set up an optimal *in vitro* stroke model.

Methods: PC12 cells (Riken cell bank), PC12 Adh and PC12 Neuroscreen-1(NS-1) cells were tested. The optimisation included cell culture medium, substrate, response to NGF-induced differentiation and duration of oxygen-glucose deprivation (OGD) by measuring cell viability and apoptosis. Validation of the *in vitro* system was done by testing with a known neuroprotectant, 8-OH-DPAT.

Results: The optimal culture media for PC12 cells (Riken) and NS-1 cells was DMEM. Collagen IV was the best substrate for PC12 cells (Riken) and NS-1 cells. PC12 Adh showed no preference for media or substrates. NS-1 cells gave the highest NGF-induced differentiation (72.7%), followed by PC12 (Riken,36%) and PC12 Adh (6.9%). NS-1 achieved optimal differentiation after three days of 150 ng/ml NGF treatment. Treatment with 8-OH-DPAT on NGF-differentiated NS-1 cells after three hours of OGD showed a significant reduction in apoptosis ($P<0.05$).

Conclusion: An *in vitro* stroke model using NS-1 cells grown in DMEM with collagen IV was optimised as substrate. Differentiated NS-1 cells subjected to 3-hour OGD had enabled the screening of neuroprotectants for treatment of stroke.

YIA05

TRPC3-NOX2 COMPLEX ACTIVATION UNDERLIES ADENOSINE TRIPHOSPHATE (ATP)-INDUCED CARDIOMYOCYTE ATROPHY

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Abstract

Aims/Objective: Cardiac hypertrophic remodeling is a strong predictor for development of heart failure. Nowadays, there is emerging interest in understanding the molecular and functional pathology in reversing cardiomyocyte hypertrophy. In previous study, adenosine triphosphate (ATP) was reported to induce negative regulation of hypertrophic signaling in cardiomyocyte through TRPC5-eNOS signaling axis. This study aimed to investigate the key regulator and mechanism of ATP-induced negative regulation of hypertrophic signaling in cardiomyocyte.

Methods: Neonatal rat cardiomyocyte (NRCM) isolated from rat neonatal heart, were cultured in Dulbecco Modified Eagle Medium (DMEM), supplemented with 10% Fetal bovine serum. The effect of ATP treatment on NRCM was determined by western blot and immunostaining assay, meanwhile receptors interactions were investigated by immunoprecipitation assay.

Results: Data showed that high concentration of ATP induced upregulation of atrophy marker, muscle atrophy F-box (MAFbx), which was preceded by increased reactive oxygen species (ROS) ($P < 0.05$). Gene knockdown of TRPC3 and Nox2 had significantly suppressed ATP-induced NRCM atrophy and ROS production ($P < 0.05$). It was revealed that TRPC3 and Nox2 had formed strong interactions in the presence of ATP and P2Y₂ receptors, which were involved in the mechanism ($P < 0.05$).

Conclusion: Results revealed the mechanism that underlied ATP-induced cardiomyocyte atrophy, that was mediated by P2Y₂ receptor. This finding will provide a new strategy for therapeutic intervention by using ATP as a tool to reverse pathological cardiac hypertrophy.

YIA06

TREATMENT WITH TRF MODULATES OXIDATIVE STRESS-INDUCED OSTEOCLAST DIFFERENTIATION AND ITS ACTIVITY *IN VITRO*

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Abstract

Introduction: Oxidative stress accelerates formation of bone resorbing cells osteoclasts. Vitamin E is a lipid-soluble antioxidant, that is believed to protect from bone loss by suppressing osteoclasts. In this study, the effects of vitamin E tocotrienol rich fraction (TRF) and α -tocopherol (ATF) on osteoclast activity and gene expression of osteoclast-associated markers and key transcriptional factors *in vitro* were investigated.

Methods: Peripheral blood mononuclear cells (PBMC) were isolated from blood of healthy donors. Differentiation into osteoclasts was induced by adding 25 ng/mL of macrophage colony-stimulating factor (MCSF) and 50 ng/mL of receptor activator of nuclear factor kappa-B ligand (RANKL). About 50 μ M hydrogen peroxide (H₂O₂) was added as an oxidative stress inducer. The effects of ATF and TRF at 50 μ g/mL dose on the activity and gene expression of osteoclasts at different stages of osteoclast differentiation were assessed by resorption pits assay and real-time polymerase chain reaction (qPCR), respectively.

Results: Treatment with TRF, but not ATF, had significantly reduced bone resorption area when compared to control group ($p < 0.05$). Treatment with TRF had significantly modulated the expression of antioxidant-associated genes Nrf2, sirtuin1, FOXO1 and FOXO3. The expression of pro-oxidant gene Nox1 and several osteoclast-related genes such as NFATc1, DC-STAMP, β 3-integrin, calcitonin receptor and cathepsin K had decreased at both early and late osteoclastogenesis in TRF-treated group.

Conclusion: The TRF had inhibited resorption activity and modulates gene expression of osteoclasts following oxidative stress *in vitro*. This brought to suggest that TRF is a good therapy for oxidative stress-induced bone loss condition such as osteoporosis.

YIA07

**FROM DISEASED TO QUIESCENCE: THE EFFECT OF RETINOIC ACID
SUPPLEMENTATION ON KERATOCONIC FIBROBLASTS *IN VITRO*
UNDER SERUM-FREE CONDITION**

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Abstract

Aims/Objective: Retinoic acid (RA) supplementation induced proliferative potential of human corneal keratocytes, while significantly reducing the matrix metalloproteinases (MMPs) when used in serum-free medium over an extended period in culture. This has sparked some interest to explore the potential benefit of RA on keratoconus with known MMP involvement. This study set out to investigate the effects of RA on keratoconic fibroblasts (KF) *in vitro* maintained under serum-free condition.

Methods: Keratocytes were isolated from keratoconus corneas, and cultured in serum-containing medium for cell expansion. Subsequent experiments were conducted in serum-free media supplemented with 1 and 5 μM of RA or DMSO control for 7 days. The effect of RA on KF viability was quantified using MTT assay. Cell imaging was done to evaluate morphological change. Keratocytes markers and MMP-2 expressions were evaluated using Western blot.

Results: RA supplementation caused a steady decrease in cell viability throughout the experiment ($p > 0.05$). Some cells acquired dendritic-shape morphology resembling quiescent keratocytes. Western blot analysis showed similar expression of decorin in KF with or without RA supplementation, however lumican was better expressed by group supplemented with 1 μM RA as compared to 5 μM RA ($p > 0.05$). The expression of MMP-2 was significantly reduced in cultures supplemented with RA relative to the control ($p < 0.01$).

Conclusion: RA-supplemented medium at low concentrations induces quiescence in keratoconic fibroblasts, while maintaining the expression of keratocyte markers and significantly reducing the MMP. These findings highlights the potential use of RA in understanding the pathophysiology of keratoconus.

YIA08

**PHOTOPROTECTIVE EFFECTS OF PTEROSTILBENE SUPPLEMENTATION ON
MELANOGENESIS ACTIVITY AND OXIDATIVE STRESS IN UVB
IRRADIATED BALB/C MICE**

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Aims/objective: Ultraviolet radiation B (UVB) is an environmental human carcinogen. Prolong exposure of UVB could induce erythema, hyperpigmentation, epidermal hyperplasia and skin cancer. The use of natural active compounds such as pterostilbene can be developed as a protective treatment, as it has high antioxidant, anti-inflammation, anti-aging, and anti-cancer properties. This study aimed to evaluate the protective effect of pterostilbene supplementation on melanogenesis activity and oxidative stress in UVB irradiated balb/c mice.

Methods: Thirty female balb/c mice were randomly divided into five groups: control group (n=6), without UVB irradiation and pterostilbene treatment; UVB irradiated group (n=6), irradiated with UVB dose of 250 mJ/cm² for 3 minutes; control positive group (n=6), irradiated with UVB and treated with 200 mg/kg of resveratrol; and two treatment groups (n=6), irradiated with UVB and treated with 10 mg/kg and 20 mg/kg of pterostilbene, respectively. The treatments were given for 14 days. The UVB exposure was given on the 9th, 11th, and 13th day of the treatment period.

Results: Pterostilbene had reduced skin scaling and erythema in UVB irradiated mice. Skinfold thickness of pterostilbene decreased significantly (p<0.05) compared to the UVB irradiated group. Pterostilbene inhibited melanin content and tyrosinase activity significantly (p<0.05) compared to UVB irradiated group. Pterostilbene also significantly (p<0.05) reduced lipid peroxidation, but elevated superoxide dismutase activity and glutathione level. Histopathological observation showed that pterostilbene reduced leukocyte infiltration and epidermal hyperplasia.

Conclusion: Supplementation of pterostilbene could influence cutaneous response to UVB irradiation. Therefore, pterostilbene has a potential to be a natural alternative for photoprotection.

YIA09

ANTI-ATHEROSCLEROTIC PROPERTIES OF BERBERIS VULGARIS AQUEOUS EXTRACT IN CHOLESTEROL-FED RABBITS

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Abstract

Aims/Objective: Coronary atherothrombotic diseases are responsible for 60% of mortality and morbidity worldwide. The risk factor for coronary atherothrombotic diseases is atherosclerosis, and the pathogenesis is mainly due to elevation of lipid profile and atherosclerotic plaque rupture. This study was aimed to investigate the anti-atherosclerotic effect of *Berberis vulgaris* aqueous extract (BVAE) in cholesterol-fed rabbits.

Methods: A total of five groups of cholesterol-fed male New Zealand white rabbits were induced with high cholesterol (2%) diet for ten weeks to imitate human-like atherosclerotic lesion, and were treated with normal diet (group I), BVAE [25 mg/ kg bodyweight] (group II), BVAE [50 mg/ kg bodyweight] (group III), untreated (group IV) and simvastatin (group VI) for two weeks. Blood samples were taken to determine total cholesterol, high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol and triglycerides at prior to treatment (week 0), week 5 and week 10. After 12 weeks of dietary treatment, aortic segments were removed to assess atherosclerotic plaque using Sudan IV, Masson's trichrome and Modified Verhoeff stains.

Results: The lipid profile was significantly different in the BVAE-treated group as compared to the control group ($p < 0.05$). The BVAE had increased the HDL value in the BVAE-treated group ($p < 0.05$). The treatment had also decreased the intima-media thickness and collagen content in the aorta of cholesterol-fed rabbits ($p < 0.05$).

Conclusion: The potent lipid reduction effect of *B.vulgaris* was observed histologically and along with its cholesterol-lowering activity, had contributed to its anti-atherosclerotic effect *in vivo*.

YIA10

**ANTIOXIDANT, ANTIMICROBIAL, ANTI-DIARRHEAL AND ANALGESIC
ACTIVITIES OF *DIOSPYROS MALABARICA* (DESR.) KOSTEL.**

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Abstract:

Aims/Objective: This study was designed to evaluate the bio-activities of extractives of *Diospyros malabarica* (Desr.) Kostel, that are available in Bangladesh.

Methods: Tender buds of *D. malabarica* were collected, sun-dried, crushed, macerated with methanol, and the concentrated methanol extract was partitioned to yield *pet* ether, CCl₄, CHCl₃ and aqueous fractions. Total phenolic content of extractives was measured by using Folin-Ciocalteu reagent. The antioxidant activity was determined by DPPH. The antimicrobial activity was investigated by disc diffusion method using standard ciprofloxacin and fluconazole. Anti-diarrheal activity was evaluated by castor oil-induced diarrhea in mice. The analgesic activity was tested by thermal (heat tail-flick method) and chemical (acetic acid-induced) writhing test.

Results: The methanol extract showed moderate antioxidant potentials (phenolics content 12.87 mg of GAE/gm). In DPPH assay, the aqueous soluble fraction had maximum activity (IC₅₀ = 6.17µg/mL). In antimicrobial assay, the CCl₄ soluble fraction exhibited the highest zone of inhibition ranging from 27 till 32 mm against gram-positive and gram-negative bacteria. The methanol extract demonstrated 47.37% reduction of diarrheal feces at the dose of 400-mg/kg. During assay for analgesic activity by radiant heat tail-flick method, methanol extract exhibited the highest elongation (373.04%) at 90 minutes. In acetic acid-induced writhing test, the methanol extract showed 66.67% inhibition of writhing in mice model, whereas 68.06% inhibition was produced by diclofenac-Na.

Conclusion: The findings of this study justified some of the traditional uses of *D. malabarica*, and revealed the bioactivity of the plants, whereby further studies are required to identify these bioactive compounds.

YIA11

A PRELIMINARY FORMULATION OF BIOMATERIAL BONE PASTE

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Abstract

Aims/Objective: Cockle shells from *Anadara granosa sp.* represent a vast amount of waste material in Malaysia. These shells comprise 95% to 99% aragonite form of calcium carbonate crystals, that can be incorporated, resolved and replaced by bone when used for bone tissue grafting. In this study, a workable bone paste was formulated with appropriate injectability and setting time using powdered cockle shells in nano scale (nCP) and alginate (Alg), as potential biomaterials.

Methods: Conversion of powdered cockle shells into nano phase, was first undertaken through biochemical catalyst methods, that resulted in the mixture of nano and micron sized particles within the range of 354.6 nm to 8.3 um.

Results: Scanning electron micrographs and transmission electron micrographs revealed a cylindrical rod-shaped structure of the converted powder, typical of the aragonite form of calcium carbonate. EDX analysis of the powder showed that the cockle shell consists of Ca:C:O elements in the ratio of 32.6:16.1:45.6%. Initial attempts in formulating the bone paste using alginate and citric acid as a setting agent in the composition of Alg:nCP of 60:40, 70:30 and 80:20 produced variable results with regards to a paste consistency, injectability and setting time. All three formulation had excellent injectability and excellent working consistency, however semi-quantitative scoring of the paste showed formulation of 70:30 (Alg:nCP) had the fastest setting time of 30 to 45 minutes ($p < 0.05$) with appropriate strength.

Conclusion: Further investigations were currently undertaken to determine the possible combination of this biomaterials in order to produce an ideal bone paste.

YIA12

GOAT MILK PREVENTS AGEING-INDUCED MEMORY DECLINE VIA ENHANCING BRAIN NEUROTROPHIC FACTORS

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Abstract

Aims/Objective: This study aimed to examine the efficiency of goat milk supplementation on memory performance in D-galactose-induced ageing rat model, and assess the levels neurotrophic factors (BDNF and NGF) important for neuronal growth and survival.

Methods: A total of 52 male Sprague Dawley rats were divided into four groups: control group, goat milk treated group, D-gal treated group, and goat milk plus D-gal treated group. About 120 mg/kg D-gal was injected subcutaneously, and 1 g/kg of goat milk was orally administered concomitantly for six weeks, while the control group received saline. All animals were subjected to a novel object recognition test and T-maze test for evaluation of working and reference memory pre- and six weeks post-goat milk and D-gal administration. The animals were sacrificed, and brains were isolated and homogenised. The supernatant was collected, and BDNF and NGF assays were performed.

Results: It was found that six weeks of D-gal administration had significantly decreased ($p < 0.01$) both working and reference memory. Goat milk supplementation had protected against memory decline, as exhibited by significantly higher ($p < 0.01$) memory performance of the D-gal plus goat milk treated group compared to the D-gal control group. BDNF and NGF levels were significantly decreased ($p < 0.05$) in D-gal control group. There was a significant increase in BDNF and NGF levels in D-gal rats supplemented with goat milk, implying the neuroprotective nature of goat milk.

Conclusion: Goat milk is effective in improving memory functions by enhancing brain neurotrophic factors, and may be useful in reversing age-related memory deficits.

YIA13

THE ANTIHYPERTENSIVE EFFICACY OF *PIPER SARMENTOSUM* AQUEOUS EXTRACT AS COMPARED TO PERINDOPRIL IN SPONTANEOUSLY HYPERTENSIVE RATS

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Abstract

Aims/Objective: One of the impediments in overcoming hypertension is treatment failure caused by patient compliance in conventional medicine. Herbal remedies receive less defiance, and thus have been studied considerably. This study aimed to evaluate the efficacy of *Piper sarmentosum* aqueous extract (PSAE) in reducing blood pressure via endothelial dysfunction amelioration as compared to angiotensin-converting-enzyme (ACE) inhibitor, Perindopril.

Methods: Blood pressure indices, level of mesenteric artery nitric oxide (NO) and endothelin-1 (ET-1) were studied in four different groups (n=6) of spontaneously hypertensive rats (SHR) i.e. i) received distilled water, ii) 3 mg/kg Perindopril, iii) 500 mg/kg PSAE, and iv) a combination of 1.5 mg/kg Perindopril and 500 mg/kg PSAE. The rats were treated for 28 consecutive days, and blood pressure was measured weekly. NO and ET-1 level were analysed at the end of treatment period, after the rats were humanely sacrificed.

Results: All three groups that received treatments have significantly lower systolic, diastolic, and mean arterial pressure ($P<0.05$), as well as higher NO levels ($P<0.05$), and lower ET-1 levels ($P<0.05$) as compared to the group receiving distilled water. However, rats that received Perindopril have the lowest systolic, diastolic, and mean arterial pressure, highest NO levels, and lowest ET-1 levels, followed by SHR treated by combined therapy and PSAE.

Conclusion: Use of PSAE alone once daily (OD) dose did not demonstrate better outcome than the use of conventional Perindopril therapy in hypertensive subject. Further trials are imperative to establish the efficacy and possible adjuvant capacity of this potentially therapeutic agent.

YIA14

CHANGES IN THE HEART METABOLIC PROFILE OF MYOCARDIAL INFARCTION RATS INDUCED WITH ISOPRENALINE BY PALM TOCOTRIENOL-RICH FRACTIONS

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Abstract

Aims/Objective: Myocardial infarction (MI) alters tissue metabolites following energy reduction, oxidative stress and decreased amino acid metabolism. Tocotrienol-rich fraction (TRF) protects against myocardial damage in MI, but its mechanism at the metabolite level is unknown.

Methods: Male Sprague-Dawley rats were divided into control, isoprenaline (ISO)-induced MI (MI), rats supplemented with 200 mg/kg/day TRF (200TRF) and MI rats supplemented with 200 mg/kg/day TRF (200TRF+MI) groups. Daily TRF via oral gavage was given for 12 weeks, followed by ISO injection (85 mg/kg/day) during the final two days to induce MI. Serum α -tocopherol and tocotrienol were analyzed by high-performance liquid chromatography, while metabolic profile was determined via ultra-high-performance liquid chromatography coupled with high-resolution Orbitrap mass spectrometry.

Results: Supplementation of TRF increased serum α -tocopherol, but not with tocotrienol in 200TRF ($p=0.121$) and 200TRF+MI ($p<0.05$). Multivariate analysis by orthogonal projections to latent structures discriminant analysis (OPLS-DA) showed that the group comparison models for MI *vs* control and 200TRF+MI *vs* MI had high predictability (cross-validation: $Q^2>0.7$, $R^2Y>0.8$, permutation test <0.05). A total of 84 and 37 metabolites [when covariance of $p\geq|0.05|$ (magnitude) and $p(\text{corr})\geq|0.5|$ (reliability)] were changed in MI *vs* control and 200TRF+MI *vs* MI, respectively. ISO-induced MI decreased S-adenosylmethionine and L-cystathionine, that might worsened MI by affecting glutathione metabolism, reduced phosphoribosyl-pyrophosphate associated with decreased purine salvage process, that might impair DNA synthesis, and raised glucose-6-phosphate suggesting accelerated anaerobic glycolysis possibly for rapid energy production. These changes were ameliorated by TRF supplementation.

Conclusion: TRF might protect against MI by reversing the impaired metabolic pathways triggered by MI.

YIA15

THE EFFECTS OF KELULUT HONEY ON BLOOD PRESSURE, FASTING LIPID PROFILE AND ADIPOCYTE HISTOMORPHOMETRY IN RATS WITH METABOLIC SYNDROME INDUCED WITH HIGH CARBOHYDRATE AND HIGH FAT DIET

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Abstract

Aims/Objective: Metabolic syndrome (MetS) is a cluster of central obesity, hyperglycemia, dyslipidemia and hypertension, that increases the risk for cardiovascular diseases and diabetes mellitus. Recent evidence showed that Kelulut Honey (KH) has stronger antioxidant and anti-obesity properties than other types of local honey. This study aimed to determine its effects on blood pressure (BP), fasting lipid profile and adipocyte histomorphometry in rats with high-carbohydrate and high-fat (HCHF) diet-induced MetS.

Methods: Male Wistar rats were randomly assigned to the control (C), HCHF diet-induced MetS (S), and MetS supplemented with KH (K) groups. S and K were given HCHF diet containing 200 g of pure ghee, 175 g of fructose and 395 g of sweetened condensed milk along with 25% fructose drink *ad libitum* for 16 weeks, while C received standard cow milk. Additionally, K was supplemented with 1 g/kg/day of KH via oral gavage during the final eight weeks.

Results: Compared to control, S rats had significant elevation of systolic (SBP) (131.50 vs 114.50 mmHg) and diastolic blood pressure (DBP) (84.67 vs 74.17 mmHg), serum triglyceride (TG) (1.12 vs 0.49 mmol/L), as well as adipocyte area (3931.73 vs 1585.37 μm^2) and perimeter (234.75 vs 161.52 μm) at the end of the study ($p < 0.05$). Supplementation with KH significantly prevented changes in SBP (105.50 mmHg) and DBP (70.50 mmHg), serum TG (0.67 mmol/L), as well as adipocyte area (1920.97 μm^2) and perimeter (176.45 μm) at week 16 ($p < 0.05$).

Conclusion: KH has the potential to be utilized as a preventive agent against components of MetS.

YIA16

**CYCLOOXYGENASE-2 INHIBITORY COMPOUNDS FROM THE LEAVES OF
GLYCOSMIS PENTAPHYLLA (RETZ.) A. DC.: CHEMICAL AND IN SILICO
STUDIES**

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Abstract

Objective: In Bangladesh, *Glycosmis pentaphylla* (Family- Rutaceae) is well known for its anti-inflammatory and analgesic effects, but till now no bioactive element has been identified so far. Therefore, in the current study, the phytochemical analysis was conducted using the *G. pentaphylla* leaf to find out its bioactive secondary metabolites having analgesic and anti-inflammatory properties.

Methods: The crude methanol extract (7g) of *G. pentaphylla* leaf was partitioned into petroleum ether, dichloromethane, ethyl acetate and aqueous soluble materials using the modified Kupchan partitioning protocol. The petroleum ether and dichloromethane soluble partitionates were subjected to size exclusion chromatography over lipophilic Sephadex (LH-20). The structures of the isolated compounds were determined by NMR analyses. These isolated metabolites of *G. pentaphylla* were subjected to *in silico* docking studies with cyclooxygenase-2 (COX-2), an enzyme responsible for prostaglandin synthesis.

Results: Nine compounds were isolated from the methanol extract of leaves of *G. Pentaphylla*, whose structures were solved as arborinine, vanillic acid, 3-hydroxy-4-methoxybenzoic acid, benzoic acid, p-hydroxybenzoic acid, stigmaterol, β -amyrin, phytol and 3 α ,16 α -dihydroxyolean-12-ene. During *in silico studies*, only arborinine and phytol were able to bind with the active site of COX-2, which might be considered as the major responsible moieties to cause analgesic and anti-inflammatory activities of *G. pentaphylla*.

Conclusion: Phytochemical analysis of *G. pentaphylla* furnished nine compounds. Among these, only arborinine and phytol showed COX-2 inhibitory potentials *in silico* docking studies, which might explain the use of the plant as analgesic and anti-inflammatory drug.

YIA17

THE RELATIONSHIP BETWEEN METABOLIC SYNDROME AND BONE HEALTH AMONG MALAYSIANS IN KLANG VALLEY

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Abstract

Aims/Objective: Metabolic syndrome (MetS) and osteoporosis share common pathogenesis i.e. inflammation and oxidative stress. Previous studies on the relationship between bone health and MetS has yielded heterogenous results. This study aimed to determine the relationship between MetS and bone health as defined by T-score generated by dual-energy X-ray absorptiometry (DXA) and calcaneal quantitative ultrasound (QUS) among middle-aged and elderly populations in Klang Valley, Malaysia.

Methods: This cross-sectional study recruited 381 subjects aged 40 years and above, who were not previously diagnosed with osteoporosis. They underwent body anthropometric measurements, blood pressure and bone health assessment and blood withdrawal. The blood was sent for fasting lipid profile assessment. Fasting blood glucose level was determined by portable glucometer. Bone health was determined by DXA at the hip and spine and calcaneal QUS device.

Results: Subjects with normal waist circumference had significantly higher T-scores compared to those with central obesity ($p < 0.05$). Hyperglycemic subjects had significantly higher calcaneal QUS T-score compared to subjects with normal blood glucose level ($p < 0.05$). Subjects with four MetS conditions had significantly higher spine T-score and QUS T-score compared to those with two conditions. There was no difference in T-score between subjects, with and without MetS ($p > 0.05$).

Conclusion: Individual conditions of MetS, especially central obesity and hyperglycemia, may be associated with bone health after adjusting for BMI, age and sex. However, a gross MetS classification (\geq three indicators) may not be effective in identifying individuals at risk of osteoporosis.

YIA18

PREDICTORS OF BONE HEALTH AMONG MIDDLE-AGED AND ELDERLY MALAYSIANS IN KLANG VALLEY

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Abstract

Aims/Objective: Risk factors of osteoporosis need to be identified for the prevention of bone loss. However, studies of osteoporosis predictors among Malaysian population are limited. This study aimed to identify predictors of osteoporosis among Malaysians aged ≥ 40 years in Klang Valley.

Methods: A total of 400 Malaysians (190 men, 210 women), aged ≥ 40 years were recruited in Klang Valley by quota sampling technique. Information on subjects' demography, medical history, knowledge and belief regarding osteoporosis, physical activity status, dietary and lifestyle practices were obtained. Their body composition was measured by bioelectrical impedance device, while bone health was determined by dual-energy X-ray absorptiometry. The association between risk factors and bone health status (normal/suboptimal bone health) was assessed by binary logistic regression analysis.

Results: This study indicated that 54.8% subjects had suboptimal bone health (osteopenia/osteoporosis). Binary logistic regression analysis showed that higher fat mass ($\beta=2.727$, $p<0.05$), being smokers ($\beta=2.269$, $p<0.05$) and higher calcium supplement intake ($\beta= 2.269$, $p<0.05$) were associated with suboptimal bone health. Subanalysis based on sex showed that among men, being Chinese ($\beta= 3.798$, $p<0.05$) and smokers ($\beta=2.847$, $p<0.05$) were associated with suboptimal bone health. No predictor studies were associated with suboptimal bone health among women in this study ($p>0.05$).

Conclusion: Among Malaysians aged ≥ 40 years, suboptimal bone health was associated with fat mass, smoking status and calcium supplement intake. Besides, Chinese men and smokers were prone to suffer from suboptimal bone health. Identification of potential risk factors may aid in the formulation of public health measures to prevent osteoporosis.

YIA19

PREVALENCE AND CHARACTERISTIC OF YOUNG ADULTS WITH ACUTE MYOCARDIAL INFARCTION IN A SINGLE REFERRAL CENTRE IN PAHANG

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Abstract

Aims/Objective: Acute myocardial infarction (AMI) is the number one cause of death worldwide. However, there is a lack of data regarding young adults with AMI. This study was aimed to measure the prevalence and characteristics of young adults (aged between 18 and 45 years old) with newly diagnosed AMI presented in Hospital Tengku Ampuan Afzan (HTAA), Kuantan, Pahang.

Methods: This cross-sectional study was conducted in HTAA from 31st July 2017 till 30th July 2018 involving 818 patients, who were diagnosed with AMI. About 84 patients were less than 45 years old, and 58 patients were more than 45 years, who fulfilled the inclusion and exclusion criteria were recruited for analysis.

Results: The prevalence of young adults with AMI was 10.9%. The common risk factors were smoking (N=45, 77.6%) followed by obesity (N=33, 56.9%), increased waist circumference (N=32, 55.2%), hyperlipidaemia (N=29, 50.0%), hypertension (N=20, 34.5%), family history of cardiovascular disease (CVD) (N=20, 34.5%), diabetes mellitus (N=18, 31.0%), and alcohol consumption (N=7, 12.1%). It was revealed that all patients had at least one CVD risk factor. Majority of the patients (N=17, 42.5%) had single coronary vessel involvement and left anterior descending artery was the commonest vessel involved (N=36) in the coronary angiographic findings.

Conclusion: There was a significant prevalence of young adults with AMI in Pahang. The commonest risk factor observed was smoking, followed by obesity and hyperlipidemia. Thus, the presence of these risk factors in young adults is significant for screening in primary health centre.

YIA20

RELATIONSHIP BETWEEN PANORAMIC INDICES AND BMD OF MANDIBLE, HIP AND SPINE AMONG MALAY

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Abstract

Aims/Objective: Bone loss in human leads to health-related issues and consequent morbidity for the patient. A considerable effort to identify methods for early detection of bone loss has been made. The aim of this study was to determine correlation between mandibular panoramic indices and bone mineral density (BMD) of mandible, hip and spine by Dual Energy X-ray Absorptiometry (DXA).

Methods: A total of six patients underwent orthopantomography (OPG) examination. BMD of the mandible, hip and spine was measured by Dual Energy X-ray Absorptiometry (DXA) examination. The mandibular cortical thickness (MCT) and panoramic mandibular index (PMI) were measured and calculated from the OPG of mandibular images of each patient. Mandibular bone density was calculated/ analyzed using forearm subregion analysis at four sites i.e. mentum, body of mandible, angle of mandible and ramus. BMD of the hip and spine was calculated/analyzed using standard analysis provided by the manufacturer. The relationship between panoramic indices and BMD of mandibular, hip and spine were analyzed by SPSS Pearson correlation.

Results: Panoramic mandibular indices were not correlated with BMD of the mandible, mentum, body, angle and ramus ($r=0.145$, $r=0.013$, $r=0.276$, $r=0.382$, respectively), total hip ($r=0.548$) and total spine ($r=0.558$).

Conclusion: It can be concluded that panoramic indices were not correlated with BMD of the mandible, hip and spine. Hence, more evidence is needed from a well-designed and well-conducted research.

YIA21

**POST PARTUM ENDOTHELIN-1 AND ANGIOGENIC FACTORS CAUSING
PERSISTENT ENDOTHELIAL DYSFUNCTION IN MOTHERS WITH
HYPERTENSIVE DISORDERS OF PREGNANCY**

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Abstract

Aims/Objective: The prevalence of hypertensive disorders of pregnancy (HDP) in Malaysia is approximately 23.3 per 1000 live births. It is also an independent risk factor of CVD with endothelial dysfunction postulated as the main pathophysiology. This study aims to determine serial ET-1, NO and other angiogenic factors in patients with HDP, and its role in persistent endothelial dysfunction.

Methods: Thirty-six pregnant women from the following categories i.e. (i) normal pregnant women (control), (ii) chronic hypertension during pregnancy (CH) and (iii) gestational hypertension (GH) participated in this study. Blood pressure indices measurements and sample collection was done at antepartum (32 weeks) and postpartum (8 weeks and 12 weeks). ET-1 and serum NO were measured using the Human ET-1 (Endothelin-1) ELISA Kit and Nitric Oxide (total) detection kit, respectively. sFlt-1, PlGF and VEGF were measured by commercially available kits. A competitive NO antagonist, asymmetric dimethylarginine (ADMA) was measured using high performance liquid chromatography (HPLC).

Results: Serum ET-1 was significantly higher in patients with CH (55.3 pg/ml) and GH (35.6 pg/ml) compared to control (11.8 pg/ml) during antenatal until three months postpartum (CH 38.3 pg/ml, GH 29.5 pg/ml, control 1.9 pg/ml); accompanied by significantly high levels of sFlt-1 in HDP subjects. Conversely, subjects with CH and GH had lower levels of serum NO, PlGF and VEGF ($p < 0.05$).

Conclusion: Sustained NO/ET-1 imbalance and non-physiological levels of angiogenic factors in persistent endothelial dysfunction may account for increased CVD risk, despite normalisation of blood pressure. Screening and early detection will improve long-term cardiovascular health.

YIA22

POLYPHARMACY AMONG ELDERLY IN NURSING HOMES

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Abstract

Aims/Objective: Deprescribing is a process of identifying and effective cessation of medications, that are inappropriate and unnecessary to reduce polypharmacy and improve overall health outcome of the patient. This study aimed to investigate the attitudes, beliefs and experiences towards polypharmacy among elderly residents in nursing homes.

Methods: A cross-sectional study was carried out among elderly residents in nursing homes in Malaysia from June 2018 till November 2018 using a set of assisted and validated questionnaire.

Results: A total of 227 elderly residents were recruited into this study. About 90.7% (n= 206) of the participants were satisfied with their current medication, however only 5.3% (n= 12) of the participants were aware about the idea and meaning of deprescribing. There was a significant positive correlation between number of medications and the burden factor (Spearman's rho (ρ) = 0.257, $p < 0.01$). Majority of the elderly (80.3%, n=182) were willing to involve in deprescribing process, if permitted by healthcare professional.

Conclusion: Majority of the elderly residents in nursing home were not aware about the idea and meaning of deprescribing, however majority of them were willing to involve in deprescribing process. The major factor that will affect patients' willingness to deprescribing was the possible future benefits of the medications.

YIA23

**THE PERFORMANCE OF CALCANEAL QUANTITATIVE ULTRASOUND IN
OSTEOPOROSIS PREDICTION AMONG MALAYSIANS AGED 40 YEARS AND
ABOVE IN KLANG VALLEY**

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Abstract

Objective: The prevalence of osteoporosis in Malaysia is escalating with the expanding ageing population. Due to the limited access to dual energy X-ray absorptiometry (DXA) service in Malaysia, quantitative ultrasound (QUS) is commonly used as an alternative to identify individuals at risk for osteoporosis. This study aimed to determine the cut-off values of QUS in determining individuals with osteoporosis.

Methods: A cross-sectional study was conducted among 652 subjects aged ≥ 40 years in Klang Valley, Malaysia. Subjects were recruited using a quota sampling technique. Their bone health status was measured using calcaneal QUS and DXA machine. The sensitivity, specificity, and area under curve (AUC) of the cutoff values of QUS were determined using receiver operating curve analysis.

Results: Overall, 12.6% of the subjects had osteoporosis. A modified QUS T-score of ≤ -1.2 identified subjects had osteoporosis with a sensitivity, specificity and AUC of 85%, 46% and 0.693, respectively. Sub-analysis based on sex showed that QUS performed well in osteoporosis prediction for both women (QUS T-score ≤ -1.1 , sensitivity: 90%, specificity: 61%, AUC: 0.642) and men (QUS T-score ≤ -1.2 , sensitivity: 88%, specificity: 44%, AUC: 0.699).

Conclusion: Modification of cutoff values is important to ensure the optimal performance of QUS to predict osteoporosis among individuals.

POSTERS

P01

Aphrodisiac Potential of Mangrove Plant in Costal Area of Sabah Extract (*Rhizophora Mucronata*)

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Abstract

Aims/Objective: The potential aphrodisiac activity of mangrove plant in coastal area of Sabah, *Rhizophora Mucronata* was evaluated for its natural aphrodisiac potential using animal model from observation of proboscis monkeys in Sabah active sexual activity and high sex ratio towards female (sex ratio 1:8.4), and their diet in consuming local plant (mangrove), which were believed to contribute to their high sexual activities.

Methods: Investigation of aphrodisiac potentials on the crude extract were determined by assessing sexual potency enhancement. Assessments were done on sexual desire (mounting behavior test), sexual motivational (partner preference test) and sexual performance test.

Results: Phytochemical screenings showed presence of saponins and steroids compound, which were believed to be responsible for their aphrodisiac properties. Acute oral toxicity of extracts was classified as category 5 according to GHS for classification of chemicals, as LD50, which was greater than 2000 mg/kg body weight. Serum testosterone level in sexually experience rats was significantly increased. Sexual desire (libido) and motivation were improved by reduction in mount latency, while sexual performance was enhanced by reduction of intromission latency.

Conclusion: The studies provided preliminary data that the mangrove extract offered as one of the elements for natural products with aphrodisiac properties, capable of increasing testosterone level in rat blood serum.

P02

ANTI-INFLAMMATORY EFFECT OF POLYGONUM MINUS FLAVONOID-RICH-FRACTION AGAINST CISPLATIN-INDUCED HEPATOTOXICITY IN SPRAGUE DAWLEY RATS

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Abstract

Aims/Objective: Cisplatin (CP) is a well-known chemotherapeutic drug, but was found to cause hepatotoxicity. *Polygonum minus* is a local herb with antiinflammatory activity. This study aimed to explore the antiinflammatory effect of Pm flavonoid-rich-fraction (Pm-FRF) on CP-induced hepatotoxicity.

Methods: Pm-FRF was extracted by liquid chromatography time-of-flight mass spectrometry. About 36 adult males Sprague Dawley rats were randomly divided into six groups: (A) Control (normal saline), (B) CP 10 mg/kg, (C) Gallic acid (GA) (D) Pm-FRF 100 mg/kg, (E) Pm-FRF 200 mg/kg and (F) Pm-FRF 400 mg/kg. Groups A and B were given distilled water, and Group C was given GA orally, whereas Pm-FRF groups (groups D, E and F) were given Pm-FRF orally for 14 days. On day 15, a single intraperitoneal administration of normal saline was given to group A, and CP was administered to the other groups. All rats were sacrificed on day 18. Liver was analysed for interleukin (IL) 1 α , IL 1 β , IL 6, IL 10 and tumour necrosis factor- α (TNF- α) by ProcartaPlex® immunoassay.

Results: Proinflammatory cytokines (IL-1 β , IL-6) and TNF- α protein levels were significantly increased in CP group ($p < 0.05$) indicating inflammation. However, Pm-FRF 100 and 200 mg/kg had reduced TNF- α , IL-1 α , IL-1 β and IL-6 ($p < 0.05$), which was due to the antiinflammation effect of the flavonoids. Antiinflammatory cytokine (IL-10) was reduced in Pm-FRF 100 mg/kg group ($p < 0.05$), which could be due to the resolution phase of the inflammation process.

Conclusion: Pm-FRF had shown an antiinflammatory effect against CP-induced hepatotoxicity, which is useful for management of the condition

P03

CYTOTOXIC ACTIVITY OF TINOSPORA CRISPA CRUDE EXTRACTS (STEM) AGAINST K562 HUMAN LEUKEMIA CELLS

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Abstract

Aims/Objective: *Tinospora crispa* (*T. crispa*) is traditionally used as an herbal medicine for treatment of gout and as an analgesia. Cytotoxicity of hexane, dichloromethane, ethanol and aqueous extracts of *T. crispa* stem was assessed against K562 cells.

Methods: *T. crispa* stem powder was macerated and sonicated with hexane, dichloromethane, ethanol and aqueous (1:10 w/v). The cytotoxicity of the crude extracts was tested against K562 cells using 3-[4, 5-dimethylthiazol-2-yl]-2, 5-diphenyl tetrazolium bromide assay (MTT) for 24, 48 and 72 h with the highest concentration of 200 µg/mL.

Results: Extraction via sonication method yielded higher product compared to maceration method, in which the yield percentage of crude extract was 0.97%, 1.92%, 5.27%, and 12.80% for hexane, dichloromethane, ethanol, and aqueous respectively. The MTT assay results showed that *T. crispa* stem crude extracts significantly reduced cell viability ($p < 0.05$) at concentration of 200 µg/mL for 72 h treatment using hexane, dichloromethane and ethanol extracts. Meanwhile, the aqueous extract showed a significantly reduced ($p < 0.05$) cell viability at concentration of 100 µg/mL for 72 h treatment. Besides, 72 h treatment caused significant effects on the viability of cells treated with hexane and ethanol extracts of *T. crispa*.

Conclusion: Hence, this study indicated that dichloromethane and ethanol extracts of *T. crispa* were able to inhibit cell proliferation. Further study should be conducted to elucidate the potential of *T. crispa* crude extract before it can be developed as a new anti-leukemic agent.

P04

MARANTODES PUMILUM LEAF EXTRACT RESTORED MECHANICAL STRENGTH OF FRACTURED TIBIA IN OSTEOPOROSIS RAT MODEL

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Abstract

Aims/Objective: *Marantodes pumilum var. alata* (MPva) has been shown to protect the bone of postmenopausal rats against osteoporosis. Despite the abundant evidence of its osteoprotective properties, its influence on osteoporosis-related fracture has not been reported. This study aims to investigate the effects of MPva leaf extract on mechanical strength of fractured bone in postmenopausal condition.

Methods: Thirty healthy female Sprague-Dawley rats were sorted into six groups (n=6) namely, sham-operated (SHAM), ovariectomized control (OVXC), estrogen treatment (ERT), 20mg leaf treatment (MPv₂₀) and 100 mg leaf treatment (MPv₁₀₀) groups. All rats, except the SO group, were ovariectomized. Eight weeks after ovariectomy, the right tibiae of rats were fractured and fixed with titanium plates. For 8 weeks, ERT received 64.5µg/kg/day estrogen (Premarin[®]), while MPv₂₀ and MPv₁₀₀ received 20 mg and 100 mg/kg/day doses of MPva leaf extract orally, respectively. At the end of treatment, fractured tibia were excised from euthanized rats, and investigated for bone mechanical strength.

Results: Similar to the ERT group, breaking force and maximum stress of bone were found to be significantly higher ($p < 0.05$) in both MPv₂₀ and MPv₁₀₀ groups, when compared with the OVXC. However, when compared to the OVXC, the maximum strain of bone was significantly higher in the MPv₁₀₀ group ($p < 0.05$).

Conclusion: Results showed that treatment with higher dose of MPva leaves had restored mechanical strength of fractured tibia bone in ovariectomized rats. Thus, MPva carries a potential complementary medicine in the management of fracture in postmenopausal condition.

P05

**IN VITRO STUDY OF THE EFFECTS OF TANNIC ACID ALONE OR IN
COMBINATION WITH PAMIDRONATE ON OSTEOBLAST
PROLIFERATION AND MINERALIZATION**

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Abstract

Aims/Objective: Tannic acid (TA) is a natural polyphenol with antioxidant properties, which is potentially capable of stimulating bone formation. Hence, the aim of this study was to evaluate the effect of TA on proliferation and mineralization of human fetal osteoblast.

Methods: Half maximal effective concentration (EC₅₀) for TA alone, pamidronate alone and different combination ratios of TA and pamidronate (25:75, 50:50, 75:25) were measured by MTT assay. Analysis of the synergistic effect was performed based on the combination Index (CI), CI < 1: synergism, CI = 1: additive effect and CI > 1: antagonism. The combination treatment with the lowest EC₅₀ and CI < 1 was chosen for the study. Cell proliferation assay was conducted to compare cell viability, and histochemical staining was used to detect calcium and phosphate deposits.

Results: The EC₅₀ of hFOB 1.19 cells treated with TA alone and 75:25 ratio of TA and pamidronate were more effective compared to pamidronate alone and other combination ratio treatments. Analysis of synergistic effect showed that only 75:25 combination ratio exhibited synergistic effect. All groups showed significant difference when compared between day 1 and day 7. On day 7, both TA alone and pamidronate alone groups showed significantly increased cell proliferation compared to control (untreated) and combination groups. Treatment with TA alone demonstrated higher production of calcium and phosphate deposits than the other groups.

Conclusion: TA alone has greater ability in enhancing osteoblastic proliferation and mineralization compared to using combination of TA and pamidronate.

P06

EFFECT OF GYNURA PROCUMBENS ON CARDIAC MARKERS IN ACUTE MYOCARDIAL INFARCTION MODEL

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Abstract

Aims/Objective: The release of cardiac enzyme markers in the blood reflect the severity of myocardial infarction. *Gynura procumbens* (GP), an herbal plant, which is rich in phenolic acid and flavonoid, may exert their beneficial effects in isoprenaline-induced myocardial infarction (MI). The aim of the study was to evaluate the effect of GP on cardiac markers in acute myocardial infarction model.

Methods: Twenty-four adult, male Sprague Dawley rats were divided randomly into four groups (n=6) i.e. control group (C), GP group (GP), MI group (MI), MI treated group (MI+GP). The rats were pretreated with 250 mg/kg ethanol extract of GP forced-feeding for 28 days before induction of MI by the administration of isoprenaline (85mg/kg) subcutaneously at days 27th and 28th. Body weight, systolic and diastolic blood pressure of the rats were monitored pre- and post- MI induction. The rats were sacrificed on day 29th, and the blood was collected for cardiac markers evaluation i.e. troponin T, creatine kinase MB isoenzyme (CKMB) and LDH.

Results: Physical parameter showed no difference in body weight, systolic and diastolic blood pressure, before and after MI induction, whereas GP extract had significantly ameliorated the level of troponin T and LDH in acute MI rat model ($p < 0.05$). CKMB level in the MI+GP group was decreasing in trend in comparison to the MI group, although it was statistically not significant.

Conclusion: The supplementation of GP 250mg/kg had shown to ameliorate the myocardial markers in isoprenaline-induced MI. This indicated that GP extract had exerted its protective effect during MI.

P07

DUAL-CROSSLINKED GELATIN BIOACTIVE SCAFFOLD AS A POTENTIAL ACELLULAR TREATMENT FOR DIABETIC FOOT ULCER

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Abstract

Aim/Objectives: Morbidity rate in diabetic foot ulcer had recently increased among the Asian population, particularly Malaysia. Wound care management is critical in supporting wound healing, and avoiding bacterial infection. Hence, this study was aimed to develop a potential acellular treatment comprising the natural-based biomaterial crosslinking with a natural crosslinker.

Methods: The gelatin powder was dissolved in distilled water at -40 °C for 30 minutes. The gelatin solution was pre-frozen at -80 °C for 6 hours, followed by freeze-drying. Gelatin scaffold (GS) was post-crosslinked with genipin (GNP), followed by carbodiimide (EDC) for 6 and 12 hours, respectively. The physico-chemical, mechanical strength properties and cellular compatibility were analysed. Additionally, the toxic effect of fabricated GS was tested with human dermal fibroblasts (HDF) using live and dead assays.

Results: Results demonstrated heterogenous porous structure (more than 80%) and its pore size ranging between 100-200 µm. The fabricated scaffold with dual crosslink effect showed higher crosslinking degree, which promoted slow degradation. It also showed no difference for swelling ratio and gas transfusion properties compared to non-crosslink. There had been no change in the elements composition (EDS), chemical structure (FTIR) and atomic arrangement (XRD) for the non- and post-crosslink of GS. However, the thermogravimetric (TGA) and mechanical strength (6-7 Mpa) showed higher values on crosslinked-GS than non-crosslink. Both crosslinked-GS and non-crosslink revealed no toxic effect on post-seeding of HDF.

Conclusion: The dual-crosslinked GS has a potential healing effect on the current chronic wound management of foot diabetic ulcer, in terms of enhancing tissue regeneration.

P08

EFFECT OF TOPICAL APPLICATION OF *POLYGONUM MINUS* ESSENTIAL OIL ON WOUND HEALING OF STREPTOZOTOCIN-INDUCED DIABETIC RATS

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Abstract

Aims: Impaired wound healing process is considered one of the most serious complication in diabetic patients. *Polygonum minus* demonstrated anti-ulcer, anti-inflammatory and antioxidant properties, which may be beneficial to wound healing. Thus, this study aims to determine the effect of topical application of *Polygonum minus* essential oil (PMEO) in diabetic wound healing.

Methods: Four 6 mm full thickness cutaneous wounds were created on the thoraco-dorsal aspect of 36 diabetic male Sprague-Dawley rats. The rats were divided into three-groups i.e. non-treated (NT), silver sulfadiazine (SS), and PMEO. The rats were treated topically daily, until the day of sacrifice i.e. day 7 and 14 after wounding. The wound closure rate was determined, and wound tissue were harvested for histological and total protein content analyses.

Results: Wound closure rate at day 7 was significantly increased in SS compared to NT and PMEO. At day 14, both SS and PMEO showed higher wound closure rate compared to NT. Histological analysis showed intact epithelium in both SS and PMEO at day 7, whereas NT showed incomplete epithelialization. At day 14, intact epithelium was present in all groups, with dermal-epidermal interdigitations apparent in both SS and PMEO groups. Collagen fibres were present abundantly in both SS and PMEO groups compared to NT. There was also significant increase in total protein content at day 7 and 14 of PMEO, compared to NT and SS.

Conclusion: PMEO promoted wound healing in diabetic wounds by promoting wound closure, re-epithelialization, collagen fibre deposition and increasing total protein content.

P09

TOCOTRIENOL PROTECTS THE BONE AGAINST LONG TERM GLUCOCORTICOID EXCESS VIA ANTIOXIDANT ACTIVITIES

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Abstract

Aims/Objective: Long-term glucocorticoid treatment decreased bone formation and compromised bone structure and mechanical properties. Free radicals are toxic to osteoblasts and stimulate osteoclastic activities. Tocotrienol is an antioxidant and has protective effects against free radical associated diseases. The purpose of this study was to determine the protective effects of annatto tocotrienol against glucocorticoid-induced osteoporosis

Methods: A total of 32 adult male Sprague-Dawley rats were used in this study. About 24 rats were adrenalectomized and replaced with 120µg/kg/day intramuscular dexamethasone injection. About 8 rats were supplemented with annatto tocotrienol 60 mg/kg/day, and the other 8 with palm tocotrienol 60 mg/kg/day, while the control group was given vehicle palm olein 0.1 ml/kg/day by oral gavage. The sham operated rats were given vehicle palm olein 0.05 ml/kg/day by intramuscular injection and 0.1 ml/kg/day orally. The treatments were given for two months before the rats were sacrificed. The femoral bones were analyzed for structural parameters by MicroCT, histomorphometry and oxidative stress status.

Results: This study showed that tocotrienol supplementation had significantly increased the superoxide dismutase (SOD) enzyme activities ($p < 0.05$), and reduced lipid peroxidation ($p < 0.01$) in glucocorticoid treated rats. Tocotrienol also maintained bone structure by preserving the TBV, BV/TV, Tb.N, Tb.Th and reducing the Tb.Sp ($p < 0.05$). Besides, tocotrienol also maintained osteoblast number (Ob.S) with MS/BS ($p < 0.05$), MAR and BFR ($p < 0.01$).

Conclusion: The results of this study suggested that tocotrienol has antioxidant properties, and has a potential to be used as a prophylaxis for patients on long term glucocorticoid therapy.

P10

**THE EFFECTS OF KELULUT HONEY ON BODY FAT PERCENTAGE AND
OMENTAL FAT MASS IN RATS WITH METABOLIC SYNDROME INDUCED
WITH HIGH CARBOHYDRATE AND HIGH FAT DIET**

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Abstract

Aims/Objective: Metabolic syndrome (MetS) is a cluster of central obesity, hyperglycemia, dyslipidemia and hypertension, that increases the risk for cardiovascular diseases and diabetes mellitus. Studies showed that Kelulut Honey (KH) has stronger antioxidant and anti-obesity properties than other types of local honey. This study aimed to determine its effects on body fat percentage (BF%) and omental fat mass (OFM) in rats with high-carbohydrate and high-fat (HCHF) diet-induced MetS.

Methods: Male Wistar rats were assigned to the control (C), HCHF diet-induced MetS (S), and MetS supplemented with KH (K) groups. S and K were given HCHF diet containing 200 gm of pure ghee, 175 gm of fructose and 395 gm of sweetened condensed milk along with 25% fructose drink *ad libitum* for 16 weeks, while C received standard cow milk. Additionally, K was supplemented with 1 g/kg/day of KH via oral gavage during the final eight weeks. BF% was determined by dual X-ray absorptiometry (DXA) scan, while omental fat was harvested at the end of week 16.

Results: At week 8, the DXA scan showed significant elevation of BF% in both S and K compared to C (22.80%, 19.87%, and 5.65%, respectively; $p < 0.05$). Additionally, S had significantly higher OFM than C (1.90 vs 1.01 g, $p < 0.05$) which was in agreement to DXA scan result. KH supplementation reduced BF% in K compared to S at week 16 (18.4% vs 23.48%, $p = 0.057$) and OFM (1.20 g; $p < 0.05$).

Conclusion: KH has the potential to be utilized as anti-obesity agent in the prevention of MetS.

P11

**EFFECTS OF TOCOTRIENOL-RICH FRACTION ON STRESS-INDUCED
GASTRIC MUCOSAL LESIONS AND ITS RELATION TO
PROSTAGLANDINS AND COX-1 MRNA**

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Abstract

Aims/Objective: This study investigates the possible gastroprotective effect of tocotrienol-rich fraction (TRF) from palm oil against water-immersion restraint stress-induced (WIRS) gastric ulcers in rats by measuring its effect on gastric mucosal prostaglandin E₂ (PGE₂) and gene expression of cyclooxygenase (COX) enzymes.

Methods: Twenty-eight Wistar rats were divided into four groups of seven rats each. Two control groups were fed with commercial rat diet, and two treatment groups were fed the same diet, but with the addition of omeprazole (20 mg/kg) or tocotrienol-rich fraction (60 mg/kg). After 28 days, rats from one control group and both treated groups were subjected to water-immersion restraint stress for 3.5 hours once. The rats were sacrificed, their stomach isolated and gastric juice collected, lesions examined, and gastric PGE₂ content and COX mRNA expression were determined.

Results: Both regimes were significantly attenuated the total lesion area in the stomach compared to control. Gastric acidity, which was increased in stress, was significantly reduced in rats supplemented with omeprazole and TRF. The PGE₂ content was also significantly higher in rats given TRF supplementation compared to control, followed by an increase in COX-1 mRNA expression.

Conclusion: Oral supplementation with TRF-protected rat gastric mucosa was shown to act against stress-induced lesions possibly by reducing gastric acidity and preserving gastric PGE₂ by increasing COX-1 mRNA.

P12

THE TREATMENT OF DIABETIC WOUNDS AND THE ROLE OF NATURAL PRODUCTS

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Abstract

Aims/Objective: Diabetic wounds are always challenging to treat. Long standing wounds have complications, not cost-effective, and are often life threatening. In addition to conventional allopathic treatment, several natural products have been tried by various researchers. The main aim was to look for natural products, which could heal diabetic wounds.

Methods: In our laboratory, for the past one decade, we successfully treated diabetic wounds with *Piper betel*, *Piper sarmentosum*, *Momordica charantia*, virgin coconut oil and *Polygonum minus*. In all cases, the experimental animal model of diabetic mellitus was induced by Streptozotocin, and different stages of wound healing was studied in detail.

Results: The wound healing was effective, as shown by histological and biochemical analysis. The wound closure and total protein content of the wound also showed that the wounds healed better in the later stages.

Conclusion: The phenolic, aldehyde and alkaloid compounds present in these natural products possess potent antioxidant property to have its beneficial effect on wound healing. The results gave enough evidence to use natural products as supplementary medicine for diabetic wound healing.

P13

ANTIPYRETIC ACTIVITY OF HIBISCUS ROSA-SINENSIS STEM EXTRACT

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ABSTRACT

Aims/Objective: *Hibiscus rosa-sinensis* (family Malvaceae) is an evergreen herbaceous plant in tropical countries. The plant is used in treating various human diseases. The present study was intended to evaluate the antipyretic activity of *H. rosa-sinensis* stem extract in Wistar albino rats.

Methods: The water and ethanol extracts of *H. rosa-sinensis* stem were obtained using cold maceration method. The extracts were subjected to preliminary phytochemical screening to identify the presence of plant secondary metabolites. The phytochemical analysis exhibited the presence of alkaloids, carbohydrates, glycosides, saponins, terpenoids, flavonoids, phenols and tannins in the stem extracts. The antipyretic activity was carried out by yeast-induced pyrexia model in rats. Water and ethanol extracts of *H. rosa-sinensis* stem at a dose of 200 mg/kg body weight was orally administered to the pyrexia-induced rats. Antipyretic activity was evaluated by measuring the rectal temperature of rats using a digital thermometer. The temperature was recorded before and after induction of yeast and after oral administration of extracts and standard drug.

Results: Both extracts showed significant ($p < 0.01$) reduction in elevated rectal temperature in the fourth hour of treatment. However, water extract of *H. rosa-sinensis* stem exhibited highly significant ($p < 0.001$) antipyretic activity than ethanol extract, which might be due to the presence of flavonoids as well as terpenoids.

Conclusion: These results suggested that *H. rosa-sinensis* stem extract have a potential as natural antipyretic agent for treating fever.

P14

ROSELLE ATTENUATES CARDIAC REMODELING AFTER MYOCARDIAL INFARCTION *IN VIVO*

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ROSELLE ATTENUATES CARDIAC REMODELING AFTER MYOCARDIAL INFARCTION *IN VIVO*

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Abstract

Aims/Objective: Cardiac remodeling that occurs after an acute myocardial infarction (MI) contributes to heart dysfunction. Roselle (*Hibiscus sabdariffa* Linn) has been used to treat hypertension, and recent studies have shown its potential in protecting from other cardiovascular diseases. However, the effect of roselle on the late phase of post MI cardiac remodeling is still unclear. Thus, this study was aimed to investigate the effects of roselle aqueous extract treatment on isoproterenol (ISO)-induced myocardial infarction model.

Method: Male *Sprague-Dawley* rats (n=18) were divided into control and MI groups (ISO, 85 mg/kg, s.c, 2 days). After MI was successfully induced, roselle (100 mg/kg, p.o daily) was administered for 28 days (MI+R group). MI was validated by increased plasma cardiac enzyme Troponin-T level. Throughout the experiment, body weight gain and blood pressure were recorded weekly.

Result: Treatment of MI rats with roselle significantly ameliorated cardiac systolic dysfunction, as evidenced by improved LVDP and LVdP/dt_{max}. The increased oxidative markers (NOX2 and 8-isoprostane) and decreased antioxidant enzymes (SOD and GSH) in MI group was all attenuated by roselle. Besides, roselle treatment also reduced cardiac remodelling by modulating hypertrophy based on H&E staining. The fibrotic tissue, that was seen in MI group was enhanced by picosirius red staining, and collagen III mRNA expression was attenuated following roselle treatment.

Conclusion: This study demonstrated that roselle attenuated cardiac remodeling and dysfunction in ISO-induced cardiac challenged rats. This represents a novel nutraceutical approach for the treatment of post-MI associated with cardiac hypertrophy and fibrosis accompanied by oxidative stress.

P15

THE EFFECTS OF ANNATTO TOCOTRIENOL DELIVERED USING SELF EMULSIFYING DRUG DELIVERY SYSTEM ON BONE MINERAL DENSITY IN AN ANIMAL MODEL OF POSTMENOPAUSAL OSTEOPOROSIS

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Abstract

Aims/Objective: Postmenopausal osteoporosis reduces skeletal strength and increases risk of fracture via oestrogen deficiency. Annatto-tocotrienol (AnTT), despite having a low bioavailability, has been demonstrated to protect against osteoporosis. Self-emulsifying drug delivery system (SEDDS) formulations were shown to improve oral absorption of lipophilic compounds. This study aimed to evaluate the effects of AnTT formulated with SEDDS on bone mineral density (BMD) in a rat model of postmenopausal osteoporosis.

Methods: Forty female Sprague-Dawley rats aged 8 months old were randomised into five groups. All the groups except the sham underwent bilateral ovariectomy to induce sex hormone deficiency. Two months after ovariectomy, treatment was initiated. The AnTT group received annatto tocotrienol at 60 mg/kg daily orally (n=8). The SEDDS-AnTT group received annatto tocotrienol prepared in SEDDS at 60 mg/kg daily orally (n=8). The positive control group received raloxifene (RAL) 1 mg/kg daily orally (n=8). The sham-operated (SO) (n=8) and ovariectomy (OVX) (n=8) groups received equivolume of base SEDDS. The rats were euthanized after the two-month treatment. Dual-energy x-ray absorptiometry (DXA) was performed to measure BMD, bone mineral content (BMC) and body composition (lean mass and fat mass).

Results: All groups except SEDDS-AnTT 60 mg/kg experienced a significant reduction in BMD, when compared to SO after adjusting for body weight ($P < 0.05$). No significant changes were observed in BMC and body composition in all the experimental groups ($P > 0.05$).

Conclusion: Bilateral ovariectomy lowered the BMD of the rats. Annatto tocotrienol formulated with SEDDS at 60 mg/kg prevented the decline of BMD better than unformulated annatto tocotrienol.

P16

DISEASE ACTIVITY INDEX SCORE TO ASSESS INFLAMMATION IN A COLITIS-ASSOCIATED CANCER MOUSE MODEL

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Introduction: Inflammatory bowel disease (IBD) is a chronic and relapsing disease characterized by inflammation of gastrointestinal tract. The use of an animal model of colitis helps us to understand the progression of the diseases.

Objectives: The aims of this study were to establish a mouse model of colitis, and to measure inflammation by using a disease activity index (DAI) score and histological evaluation.

Methods: Eight female BALB/c mice were randomly divided into four groups i.e. group A: injected with 10 mg/kg azoxymethane (AOM) intraperitoneally at day 1, and was given three cycles of 3% dextran sulfate sodium (DSS) in drinking water at day 7, group B: DSS-induced mice, group C: AOM-induced mice and group D: injected with distilled water, and was given distilled water orally. DAI score comprising weight loss, stool consistency and occult or gross bleeding was monitored throughout treatment. The colon was formalin-fixed and paraffin embedded for histology by staining with hematoxylin and eosin.

Results: At day 14, there were 2% weight loss in group A, 4% weight loss in group C, and 7% weight loss in control group. The mean of DAI score of groups A and B were higher (1.5) compared to control group (0.5). Histologically, lymphocyte infiltration was higher, and colonic crypts were shorter in group A and B compared to group C and D. Plasma cells infiltration was observed in group A.

Conclusion: Establishment of colitis mouse model was successful based on DAI score and histological evaluation.

P17

SYNTHESIS, CHARACTERISATION AND EVALUATION OF IN-VITRO ANTIOXIDANT ACTIVITY OF NOVEL BENZOTRIAZOLE DERIVATIVES

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Abstract

Background and Objective: The therapeutic significance of benzotriazole subordinates has been investigated and established to treat numerous human ailments. The present work was aimed to synthesise novel benzotriazole derivatives, and evaluated the *in-vitro* antioxidant activity.

Methods: Benzotriazole (*I*) was synthesised from *o*-phenylene diamine, and 2-chloro-N-aryl acetamide derivatives (*II B – II C*) were obtained through the reaction between chloro acetyl chloride and the respective secondary amine such as aniline and *o*-phenylene diamine. Benzotriazole derivatives (*III B₁₋₃ – III C₁₋₃*) were synthesised by the reaction between (*I*) and (*II B – II C*) by adding respective aldehydes such as formaldehyde, acetaldehyde and benzaldehyde in the presence of methanol. R_f value, melting point, molecular and drug-likeness properties and spectral studies were performed for the newly synthesised compounds. The antioxidant potential of the synthesised benzotriazole compounds was assessed by *in-vitro* DPPH free radical scavenging assay and reducing power assay methods.

Results and Discussion: The differences in the R_f value and melting point and spectral data of the newly synthesised compounds showed the formation of new chemical compounds. Molecular and drug-likeness properties revealed that all the synthesised compounds were suitable for the oral drug formulations. The highest antioxidant activity was observed by *III B₂* and *III C₂* in both antioxidant assays. This was due to the presence of less bulky substituent (-CH₃) at R₁ in compound *III B₂* and *III C₂*.

Conclusion: The present work revealed the antioxidant activity of newly synthesized benzotriazole derivatives by choosing appropriate experimental conditions.

P18

CORNEAL STROMA GENE EXPRESSION IN SUPERFICIAL ABRASIVE INJURY OF BILAYER CORNEAL EQUIVALENT

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Abstract

Aims/Objective: Superficial injury to the cornea mainly affects the corneal epithelium. However, this injury also induces the changes in the corneal stroma. The aim of the study was to investigate the gene expression changes in the corneal stroma following superficial abrasion of the bilayer corneal equivalent.

Methods: Corneal epithelial cells (CEC) and corneal fibroblasts were culture expanded from New Zealand White rabbit corneas. Stromal layer was reconstructed using corneal fibroblasts in collagen scaffold. The bilayer corneal equivalent was formed by using stratified corneal epithelium layered on top of the corneal stroma. Sodium lauryl sulphate (0.1%) was applied to the epithelial layer of the bilayer corneal construct to create superficial abrasion injury. The stromal layer changes following injury were evaluated via histological analysis and expression of corneal stromal markers (qRT-PCR) on day 1, day 5 and day 10 post abrasion.

Results: Bilayer corneal equivalent remained viable throughout the test. Histological analysis revealed re-epithelialization was almost complete at day 10 with no changes in the thickness of the stroma. ALDH gene remained low in all groups. Vimentin and alpha smooth muscle actin showed an increase in gene expressions during healing.

Conclusion: Bilayer corneal equivalent remained functionally stable, and can be used as ex-vivo corneal abrasion model. Corneal stromal markers expressions were comparable to that of control during the healing process.

P19

SYNTHESIS AND CYTOTOXIC ACTIVITY OF ORGANOTIN(IV) BIS(2-METHOXYETHYL) DITHIOCARBAMATE IN K562 CELLS

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Abstract

Aims/Objective: Targeting the tyrosine kinase activity of Bcr-Abl is an attractive therapeutic strategy in chronic myeloid leukemia (CML). However, intrinsic and acquired resistance against the drug have been recognized as an emerging problem, and a key issue in CML research. This issue highlights the importance of studies to discover new antileukemic agent, that specifically kill the targeted cells.

Methods: Four new organotin(IV) dtc compounds were successfully synthesized and characterized, namely dibutyltin(IV)- [1], dimethyltin(IV)- [2], diphenyltin(IV)- [3] and triphenyltin(IV) bis(2-methoxyethyl)dithiocarbamate [4] via in situ insertion method. The compounds were then assessed for their cytotoxicity against K562 human erythroleukemia cells using 3-(4,5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay upon 24 hr treatment. The mode of cell death induced by the compounds were determined by Annexin V-FITC/PI assay.

Results: All compounds demonstrated cytotoxicity towards K562 cells with IC₅₀ values of 3.63, 5.13, 21.5 and 1.32 µM. Compound 1,3 and 4 were considered as very toxic with compound 2, as slightly toxic. All compounds were able to induce apoptosis in the range of 35% till 72% cell death. Compounds 3 and 4 displayed almost- consistent trend with the IC₅₀ value obtained from MTT assay, as 40% till 51% of cells were detected viable in Annexin V-FITC/PI assay, as compared to 50% cells viability as expected from MTT assay result.

Conclusion: All new organotin(IV) bis(2-methoxyethyl)dithiocarbamate compounds showed slightly to very high cytotoxicity towards K562 cells, and were able to induce apoptosis among the cells. Further studies regarding the mechanism of action of these compounds should be explored.

P20

DETERMINATION OF BIOCHEMICAL MARKERS FOR PRIMARY CREATINE DISORDERS USING SYMMETRY® C18 COLUMN AND DIRECT INJECTION ANALYSIS BY TANDEM MASS SPECTROMETRY (MS/MS)

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Abstract

Aims/Objective: Primary creatine disorders (PCD) consist of three disorders involved in creatine biosynthesis and transport. Biochemical markers detection for PCD relies on the analysis of two main metabolites in biological fluids i.e. guanidinoacetic acid (GAA) and creatine (Cr). This study aimed to develop a simultaneous method for determining GAA and Cr, and to compare two different techniques of chromatography separation.

Methods: Stable isotope dilution assay with internal calibration standard was applied to three different biological fluids (dried blood spot, urine and plasma), followed by protein precipitation and derivatization of GAA and Cr as butyl-esters. A Micromass Quattro macro TMS coupled with Waters 2795 Alliance HPLC was used to perform the analysis. Separation of analytes was based on ion transitions mass to charge ratios (m/z) using Symmetry® C18 column (control technique) and direct injection analysis (new technique) in positive electrospray ionization (ESI+) mode.

Results: The analyses were very fast in both techniques, 1.2 minutes (control technique) and 0.4 minutes (new technique), respectively. The signal intensity was shown to be comparable, and no differences were observed for all analytes.

Conclusion: We developed a simultaneous method and satisfactory chromatographic separation technique for GAA and Cr. Minimal rapid run time and high-throughput quantitative measurement has offered the method applicable for early diagnosis of PCD.

P21

MOLECULAR IDENTIFICATION OF *CHRYSOMYA MEGACEPHALA* USING GUSTATORY RECEPTOR 1 GENE – PRELIMINARY STUDY

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Abstract

Aims/Objective: *Chrysomya megacephala* has been reported as the most abundant species, that appear in forensic cases in Malaysia. Most studies used COI gene to help in DNA-identification of this species. However, the latest finding found that COI gene might cause confusion due to unstable lineage sorting from species to another. This study aimed to reinvestigate the role of a new gene from *Ch. megacephala*'s major chemosensory organs called gustatory receptor 1 (Gr1) as a new target for identification of this species.

Methods: A total of 30 larvae samples of the third instar *Ch. megacephala* and eight other forensically important fly species were collected from rabbit carcasses and Forensic Entomology Unit, respectively. DNA were extracted followed by Polymerase Chain Reaction (PCR) amplification of Gr1 gene.

Results: A 209 bp of Gr1 gene was successfully amplified for species identification of *Ch. megacephala*'s larvae. Out of 38 samples, 24 were positive with sensitivity and specificity of 80% and 100%, respectively.

Conclusion: To the best of our knowledge, this is the first study using Gr1 gene to identify *Ch. megacephala* species. This finding may ease the procedure in estimating the post mortem interval in forensic investigation.

P22

OVARIAN SEROUS CYSTADENOCARCINOMA DRUG-TREATMENT TRANSCRIPTOME ANALYSIS OF TCGA DATA USING DESEQ2

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Abstract

Aims/Objective: Ovarian serous cystadenocarcinoma (OSC) is the leading cause of gynecologic tumor-related death in the world. The aim of this study was to assess gene expression differences in response toward platinum treatment among OSC patients.

Methods: Expression data on 265 OSC patients (72 platinum-sensitive and 145 platinum-resistant) were obtained from Cancer Genome Atlas (TCGA) database. A total of 217 patients with platinum response status and gene expression data in 19,661 genes were included in final analysis. Differentially expressed genes analysis were performed across OSC patients using Wald test in DESeq2.

Results: A total of 89 DEGs were identified in platinum-resistant compared to platinum-sensitive OSC patients. The top upregulated genes included *SPINK1*, *ONECUT3*, *HNF4A*, *PCDH8*, *CACNG7*, *LBX1*, *CLEC4M*, *CHRNA4*, *IRX1*, and *BRINP3*, while top down-regulated genes were *NUP210L*, *PSD2*, *SOX15*, *HIST1H3G*, *CXCL5*, *CELA1*, *C17orf64*, *HMGCS2*, *CCL20*, and *CHI3L2*. GO terms such as response to progesterone, cellular response to hormone stimulus, and blood circulation were linked to up-regulated genes, while cell chemotaxis, chemokine-mediated signaling pathway and inflammatory response were linked to down-regulated genes. Pathway analyses of up-regulated genes showed genes map to multiple pathways such as cocaine addiction, amphetamine addiction, and maturity onset diabetes of the young pathway, while chemokine signaling pathway and cytokine-cytokine receptor interaction were from down-regulated genes.

Conclusion: This study recognized a number of genes, that might be related with response to platinum among OSCs. The analysis was able to find a set of genes basis for the drug-sensitive and drug-resistance for OSC, based on the gene expression profiles.

P23

ANTIPROLIFERATIVE AND APOPTOSIS INDUCTION ACTIVITIES OF NOVEL ORGANOTIN(IV) DITHIOCARBAMATE COMPOUNDS ON HUMAN LEUKEMIC CELL LINES

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Abstract

Aims/Objective: Organotin complexes are proven to possess anti-fungal, anti-microbial and anti-cancer properties. In this study, three novel organotin(IV) dithiocarbamate compounds, namely dimethyltin(IV) N-methyl-phenetyl dithiocarbamate (compound 1), dibutyltin(IV) N-methyl-phenetyl dithiocarbamate (compound 2) and dibutyltin(IV) bis(2-ethoxyethyl) dithiocarbamate (compound 3) were synthesized and analysed for antiproliferative activities on two human leukemic cell lines, K562 and Jurkat E6-1, and their modes of cell death were assessed.

Methods: The compounds were synthesized via in-situ reaction at $< 4^{\circ}\text{C}$, and characterized through CHNS elemental analysis i.e. FTIR and NMR. Antiproliferative studies were conducted via MTT assay to obtain the IC_{50} values of each compound, whereas the modes of cell death induced by the compounds at their IC_{50} concentrations were analysed using Annexin V FITC/PI assay. Duration of treatment was 24 hours for both assays.

Results: The IC_{50} values were in the ranges of $0.94 - 16.61 \mu\text{g}/\text{cm}^3$ (K562) and $0.24 - 4.73 \mu\text{g}/\text{cm}^3$ (Jurkat E6-1) for all compounds. Hence, all compounds were classified as strongly active on both cell lines, except for compound 1 on K562 (weakly active). The percentage of apoptotic cells were about 50% for all three compounds on both cell lines, except for compound 2 on Jurkat E6-1 (11.37%). There were statistically significant differences ($p < 0.05$) in the mean viable cell percentage of treatment groups compared to the control groups.

Conclusion: All compounds showed high antiproliferative potencies, and were proven to induce apoptosis on the leukemic cells. Further studies are warranted to elucidate their exact modes of action.

P24

MODIFIED HIGH-CARBOHYDRATE HIGH-FAT DIET AT SHORTER DURATION INDUCES METABOLIC AND BEHAVIOURAL CHANGES IN YOUNG RATS

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Abstract

Aims/Objective: Research in metabolic syndrome (MetS) is important due to increase risk of type-2 diabetes mellitus and cardiovascular disease. Herein, the changes were reported in rats, that received a modified high carbohydrate high fat (HCHF) diet for 8-weeks compared to 16-weeks of HCHF diet.

Methods: Thirty-two *Wistar* male rats weighing 200-230 g were randomly divided into 4 groups: 8-weeks control group (C8), 8-weeks HCHF diet (MetS8) group, 16-weeks control group (C16) and 16-weeks HCHF diet (MetS16) group. MetS8 group and MetS16 group received HCHF diet for 8- and 16-weeks, respectively. Blood pressure, fasting blood glucose and lipid profile were measured, followed by open field and Morris water maze tests.

Results: Serum glucose in MetS8 and MetS16 groups were significantly raised ($p < 0.05$) compared to its control counterparts. HDL level was significantly reduced ($p < 0.05$) in all groups compared to C16. There was significant difference in the systolic and diastolic blood pressure between C8 and MetS groups ($p < 0.05$). Interestingly, both control groups showed less anxious behaviour than their MetS groups ($p < 0.05$). Probe trial of Morris water maze showed significant increase in time and distance percentage in the target quadrant in KH group than MetS16 group ($p < 0.05$).

Conclusion: Shorter duration of modified HCHF diet failed to induce at least three out of five risk factors required to be diagnosed as MetS in these rats. However, it had successfully induced some behavioural changes, which suggested that further modification in the component of HCHF diet was possible to induce necessary MetS at an early age.

P25

MOLECULAR STUDY ON DENGUE VIRUSES CIRCULATING DURING DENGUE OUTBREAKS IN SANDAKAN AND KUDAT, SABAH (2016-17)

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Abstract

Aims/Objective: The aim of this study was to determine the serotypes of dengue viruses (DENVs) circulating in two study sites during dengue outbreak, and to investigate its genetic relatedness to other dengue viruses of the world.

Methods: A total of 200 dengue suspected patients' sera positively tested with dengue NS1 and/or IgM and IgG rapid tests (PanBio) were collected from Hospital Duchess of Kent, Sandakan and Hospital Kudat between June 2016 and December 2017. One-Step Reverse transcriptase PCR and Nested PCR were performed using dengue C-prM amplimers, followed by sequencing the PCR products of representative samples from each serotype. Phylogenetic trees of dengue viruses were constructed together with sequences from GenBank by Neighbor-joining (NJ) method using MEGA version 6 software.

Results: Out of 200 sera tested, 128 were PCR positive. All four DENV serotypes were detected in both study sites. DENV1 was the predominant serotype, and DENV 2 was the least affected serotype. The cases co-infected with more than one serotype were 51.56%. Phylogenetic analysis showed DENV1, DENV2, DENV3 and DENV4 belonged to genotype IV, cosmopolitan genotype, genotype I and genotype II, respectively.

Conclusion: Co-circulation of all four serotypes of DENV were found in Sandakan and Kudat. DENVs in this study were genetically closely related to Indonesia strains rather than west Malaysia strains, and also genetically related to other Asian and Southeast Asian strains.

P26

VALIDATION OF AN ELECTROSPRAY IONIZATION TANDEM MASS SPECTROMETRY (ESI-MS/MS) DIAGNOSIS METHOD FOR PRIMARY CREATINE DISORDERS FOR USE IN CLINICAL LABORATORY

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Abstract

Aims/Objective: Validation of optimized method for determination of guanidinoacetic acid (GAA) and creatine (Cr), as the biochemical markers for diagnosis of primary creatine disorders (PCD) comprehended a check of all the necessary validation parameters to ensure compliance, reliability with method requirement and quality of the proposed analytical method. This study aimed to validate the diagnostic methods for determination of GAA and Cr in dried blood spot (DBS), urine and plasma before they can be used in a clinical laboratory.

Methods: Spiked sample, internal and external quality control, normal control, two patients with Guanidinoacetate methyltransferase (GAMT) deficiency and one patient with Arginine:glycine amidinotransferase (AGAT) deficiency were used to validate the methods. Samples were filtered and extracted using methanol-water solution and acetonitrile containing deuterated D3-Creatine. Samples were run using electrospray ionization Tandem Mass Spectrometry (ESI-MS/MS). Statistical tests were performed using SPSS (v. 25) for receiver operating characteristic (ROC) analysis and MedCalc (v.12.5) for Passing-Bablok regressions.

Results: Analytical separation, accuracy, precision, stability and linearity of the assay were adequate. The limits of detection and quantification for each GAA and Cr varied from 0.4 µmol/L to 5.0 µmol/L and from 0.8 µmol/L to 16.0 µmol/L, respectively. Recoveries ranged from 80% to 110%, and repeatability and reproducibility variation for each analyte were less than 20%. ROC analysis showed a good separation (sensitivity and specificity equal to 1) for all analytes and Passing-Bablok regression analysis showed linear relationship between the two techniques.

Conclusion: Briefly, the method was successfully validated for the diagnosis of PCD.

P27

GENE EXPRESSION PROFILE OF PLATINUM-RESISTANT OVARIAN SEROUS CYSTADENOCARCINOMA

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Abstract

Aims/Objective: Ovarian serous cystadenocarcinoma (OSC) is the leading cause of gynecologic tumor-related death in the world. The study was aimed to assess gene expression differences in different responses toward platinum treatment among OSC patients.

Methods: Expression data on 265 OSC patients (72 platinum-sensitive and 145 platinum-resistant) were obtained from The Cancer Genome Atlas (TCGA) database. A total of 217 patients with platinum response status and gene expression data in 19,661 genes were included. Differentially expressed genes analysis were performed across OSC patients using Wald test in DESeq2.

Results: About 89 DEGs were identified in platinum-resistant compared to the platinum-sensitive OSC patients. The top upregulated genes included *SPINK1*, *ONECUT3*, *HNF4A*, *PCDH8*, *CACNG7*, *LBX1*, *CLEC4M*, *CHRNA4*, *IRX1*, and *BRINP3*, while the top down-regulated genes were *NUP210L*, *PSD2*, *SOX15*, *HIST1H3G*, *CXCL5*, *CELA1*, *C17orf64*, *HMGCS2*, *CCL20*, and *CHI3L2*. GO terms such as response to progesterone, cellular response to hormone stimulus, and blood circulation were linked to up-regulated genes, while cell chemotaxis, chemokine-mediated signaling pathway and inflammatory response were linked to down-regulated genes. Pathway analyses of up-regulated genes showed genes map to multiple pathways such as cocaine addiction, amphetamine addiction, and maturity onset diabetes of the young pathway, while chemokine signaling pathway and cytokine-cytokine receptor interaction were from down-regulated genes.

Conclusion: This study revealed a number of genes, that might be related with response to platinum among OSCs. The analysis was able to find a set of genes basis for the drug-sensitive and drug-resistance for OSC based on the gene expression profiles.

P28

CARDIOMYOCYTE HYPERTROPHY INDUCTION BY ANGIOTENSIN II IN H9C2 CELLS

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Abstract

Aims: Cardiomyocyte hypertrophy has been used to investigate potential therapeutic effects of several plant extracts/drug to reduce hypertrophy. This study aimed to establish a method for cell hypertrophy induction by angiotensin II (Ang II) in vitro.

Methods: H9c2 cardiomyocytes were treated with various concentrations of Ang II (300 nM – 100 µM) for 24 h. Cell viability using MTS test, cell lysate NT-proB-type natriuretic peptide (BNP) and immunostained cell surface area were measured.

Results: Ang II had significantly reduced cell viability starting at 300 nM compared to the control. It also significantly elevated BNP level starting at 600 nM. The cell surface area was significantly enlarged in cardiomyocytes exposed to 600-800 nM. There was significant positive correlation between the BNP and cellular surface area.

Conclusion: Ang II at 600 nM was the best concentration for cardiomyocyte hypertrophy induction, based on BNP level and cellular surface area in H9c2 cells.

P29

EVALUATION OF EARLY CARDIAC REMODELING AT DIFFERENT TIME POINTS IN RAT MODEL OF MYOCARDIAL INFARCTION

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Abstract

Aims/Objective: Early left ventricular (LV) remodeling is a significant contributor to development of heart failure in post myocardial infarction (MI) setting. However, data on time course assessment of LV remodeling is still lacking. Hence, this study aimed to investigate the temporal changes in LV remodeling in rat model of MI, allowing better understanding on post-MI early LV remodeling.

Method: Male Wistar rats were randomly allotted into two groups i.e. control and MI. MI was induced with isoprenaline (85 mg/kg/day, s.c) for two consecutive days, and rats were sacrificed after either two or seven days. Statistical analysis was done using one-way ANOVA.

Result: MI was evident from significant elevation of cardiac injury marker i.e. troponin T. Furthermore, rats subjected to MI exhibited significant increase in the ratio of heart weight/body weight, deposition of LV collagen, cardiomyocytes area, and gene expression of natriuretic peptides at both timepoints, indicative of LV fibrosis and hypertrophy. Ventricular remodeling was also accompanied by oxidative stress as shown across suppressed status of antioxidant such as superoxide dismutase with upregulation of NOX2 subunit of NADPH oxidase gene expression at both timepoints. In parallel, elevation of apoptosis marker, Bax/Bcl-2 gene expression was also seen at both timepoints in MI rats.

Conclusion: Collectively, these results showed that post-MI LV remodeling associated with LV fibrosis, hypertrophy, oxidative stress and apoptosis was seen as early as two days post-MI. This study provided useful data on early LV remodeling in rat model of myocardial infarction.

P30

PSYCHOSOCIAL CORRELATES OF DEPRESSION AMONG PATIENTS ON METHADONE MAINTENANCE THERAPY IN A MALAYSIAN TERTIARY SUBSTANCE ABUSE TREATMENT CENTRE

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Abstract

Aims/Objective: Previous studies have shown that patients receiving methadone maintenance therapy experienced higher level of stress, and are at greater risk of developing mental health problems such as depression, which could potentially affect both quality of life and treatment outcomes. This cross-sectional study aimed to study the relationship between psychosocial factors (social support, coping, and depression) among patients receiving methadone maintenance therapy at Hospital Taiping Malaysia.

Methods: A total of 196 patients attending methadone maintenance therapy programme were recruited. The Patient Health Questionnaire-9 (PHQ-9), the Multidimensional Scale of Perceived Social Support (MSPSS), the Brief COPE questionnaire and the Mini-International Neuropsychiatric Interview (MINI) were used as instruments.

Results: Among the participants, 13.8 % were diagnosed with depression. Having higher levels of perceived social support (OR= 0.462, 95% CI 0.238–0.899, $p < 0.05$), the use of active & emotion focused coping (OR= 0.231, 95% CI 0.095-0.565, $p < .005$) and support seeking and self-distraction coping (OR= 0.196, 95% CI 0.074-0.521, $p < 0.01$) were associated with lower likelihood of depression. On the contrary, the use of dysfunctional coping strategies such as denial, behavioural disengagement, and self-blame were associated with increased likelihood of depression (OR= 9.384, 95% CI 3.081-28.581, $p < 0.01$).

Conclusion: The use of specific coping strategies and higher levels of perceived social support may serve as a buffer against depression in patients receiving methadone maintenance therapy.

P31

A STUDY OF CARDIAC INVOLVEMENT IN 200 CASES OF DENGUE FEVER IN SHANTI I.D CLINIC VADODARA (GUJARAT STATE) INDIA.

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Abstract

OBJECTIVE: This study was done to explore the prevalence of cardiac involvement in dengue fever in patients presented to our hospital and to study the correlation of cardiac manifestations and dengue shock syndrome.

METHODS: The one-year descriptive study was undertaken at Shanti Infectious diseases clinic and Metro Hospital and Research Institute in Vadodara (Gujarat state) India. Two hundred patients aged 14 years and above with positive dengue serology were examined by conducting E.C.G, echocardiography evaluation and troponin analysis.

RESULTS: Sixty-six (33%) patients had warning signs, 116 (58%) patients had one or other warning signs and 71 (35.5%) patients had severe dengue hemorrhagic fever/dengue shock syndrome. The most common cardiac abnormalities were sinus bradycardia in 66 (33%) patients. In echocardiography, the mean ejection fraction was 47.05 (3.8%). In 71 patients with dengue shock syndrome, the mean ejection fraction was 39.63%. Echocardiography was repeated, and global hypokinesia was improved. Thus, acute reversible cardiac insult was observed in dengue shock syndrome. About 71 (35.5%) patients with dengue shock syndrome had mucosal bleed, fluid accumulation with significant correlation with cardiac manifestations. Myocarditis was observed in 57 (28.5%) patients with positive correlation with dengue fever.

CONCLUSIONS: The commonest cardiac manifestation was sinus bradycardia. Patients with dengue fever are at high risk of developing myocarditis and rhythm disturbance, thus requiring close monitoring.

P32

SUICIDAL BEHAVIOUR, DEPRESSION AND FUNCTIONAL DISABILITY AMONG ELDERLY INPATIENTS IN A MALAYSIAN TERTIARY CENTRE

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Abstract

Aims/ Objective: Data from recent years has shown an increasing worldwide trend of suicidal behaviour among hospitalized elderly inpatients. This study aimed to determine suicidal behaviour among hospitalized elderly and its associations with depression and functional disability.

Methods: This was a cross-sectional study on 136 randomly selected elderly inpatients aged 60 and above, who were admitted to Hospital Kuala Lumpur. Assessments of suicidal behaviour, depression and functional disability were done using The Columbia Suicide Severity Rating Scale (C-SSRS), Geriatric Depression Scale (GDS-15), Mini International Neuropsychiatric Interview (M.I.N.I), Modified Barthel Index (MBI, Shah version) and visual analogue scale (VAS),

Results: The prevalence of current, recurrent major depressive disorder (MDD), passive suicidal thoughts and active suicidal thoughts were 24.3%, 8.8%, 27.9% and 5.9%, respectively. Depressed elderly patients had 6 to 17 times risks of developing passive or active suicidal thoughts. The 'wish to be dead' was associated with admission into oncology ward, surgical ward and diagnosis of current MDD. Meanwhile, active suicidal thoughts were associated with ages above 80 ($p=0.027$), being single ($p=0.042$), oncology ward admission ($p=0.012$), orthopaedic ward admission ($p=0.032$), high GDS ($p=0.049$), current MDD ($p=0.019$) and recurrent MDD ($p=0.010$).

Conclusion: The risk of depressed hospitalized elderly patients to have passive and active suicidal thoughts was high. Hence, screening for presence of suicidal thoughts is essential in this population.

P33

MAINTAINING HEALTHY AGEING THROUGH NATURAL HORMONES OR BIOIDENTICAL HORMONE THERAPY

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Abstract

Aims/Objective: WHO defines Healthy Ageing as “the process of developing and maintaining functional ability, that enables wellbeing in older age”.

Methods: As we age, our hormone levels decline, we lose our energy, vitality, and health. Although nothing will reverse the natural aging process, the attempt is to have a smooth transition in old age. Replacing deficient hormones like thyroid, testosterone, oestrogen, progesterone, and DHEA to sufficient levels, proved to be beneficial to both health and quality of life in later years.

Results: Bioidentical hormone replacement therapy (BHRT) is a specialised type of medicine, that helps balancing our hormones to optimise our health through the ageing process. Hormones may affect mood, appetite, energy levels, metabolism, weight, physique, sex drive, immune system and even behaviour. Our hormonal system becomes less efficient with age, leading to male and female climacteric, with common symptoms of weight gain, hair loss, fatigue and low libido. Hormone replacement therapy as preventive medicine, modulates the ageing process. BHRT balances the body’s natural hormones. Unlike synthetic hormones, bioidentical hormones match our body’s hormones molecule by molecule. The side effects are dose-related. Depending on symptoms and hormone profiling, the BHRT physician will prescribe and customise the hormones needed.

Conclusion: Ageing is not necessarily a burden, and it does not necessarily decrease a person’s ability to contribute to society i.e. BHRT has an essential role to play in managing healthy ageing.

P34

ACTIVITIES OF DAILY LIVING AMONG ELDERLY WITH LOWER BODY FRACTURE

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Abstract

Aims/Objective: The consequence of fracture in elderly person includes limitation to perform daily activities. The objective of this study was to evaluate activities of daily living (ADL) in older adult patients aged more than 50 years old, after sustaining lower body fractures.

Methods: Patient's ADL was assessed at pre-fracture (before admission to hospital), during admission and post-discharge (after 3 months of discharge) phases using the Katz ADL questionnaire.

Results: A total of 129 subjects were recruited for ADL assessment at pre-fracture and ward phases, and 89 subjects at post-discharge phase. The ADL score changes were significant across the three phases with a reduction in ADL score during admission phase and partial increment during post-discharge phase.

Conclusion: There were improvements in the health outcomes of patients, aged more than 50 years old, with lower body fractures after 3 months of discharge from the hospital.

P35

IT IS NOT JUST THE BRAIN: ABNORMAL AUDITORY-BRAINSTEM PROCESSING IN PATIENTS WITH SCHIZOPHRENIA

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Abstract

Aim/Objective: The function of brainstem in delivering acoustic signals from peripheral auditory system to the brain has been limitedly studied in schizophrenic patients. Furthermore, the outcomes of multi-assessments on auditory-brainstem function in a single study among this group were limitedly reported. Thus, the current study aimed to investigate the brainstem function of schizophrenic patients by means of applying auditory-related behavioral and electrophysiological tests.

Methods: A total of 19 schizophrenic patients and 21 healthy controls were randomly recruited in the study. All subjects have normal and intact peripheral auditory system, as confirmed by standard pure tone audiometry, acoustic immittance tests and transient evoked otoacoustic emissions. Hearing in noise test, contralateral suppression of transient evoked otoacoustic emissions and monaural auditory brainstem response (ABR) in noise were conducted in all subjects.

Results: Hearing in noise test revealed significantly higher Reception Thresholds for Speech ($p < 0.05$) with insignificant large Spatial Release of Masking values ($p > 0.05$) between patients and healthy controls. Overall contralateral suppressions were significantly larger in patients ($p < 0.05$). About 88.57% patients had failed monaural auditory brainstem response in noise depending on ABR parameters.

Conclusion: The current study suggested that patients with schizophrenia might have abnormal auditory-brainstem processing. The dys-connection, which was due to abnormal auditory processing at the brainstem i.e. between peripheral auditory system and the brain, could

eventually cause abnormal brain function in schizophrenic patients. Hence, detail analyses on ABR parameters in noise will be required in future.

P36

**IT IS NOT JUST THE BRAIN II:
CLICK AUDITORY BRAINSTEM RESPONSE WITH NOISE
AS A POTENTIAL TEST IN SCHIZOPHRENIA PATIENTS**

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Abstract

Aim/Objective: Auditory brainstem response (ABR) using conventional click stimulus is said to be insensitive to detect abnormal auditory-brainstem processing in schizophrenia patients. A complex and challenging ABR stimulus is required to overcome the limitations. The current study applied click stimulus embedded in simultaneous noise to investigate the auditory-brainstem function of patients with schizophrenia.

Methods: A total of 18 schizophrenia patients and 14 healthy controls were randomly recruited in the study. All subjects have normal and intact peripheral auditory system, as confirmed by the standard pure tone audiometry, acoustic immittance tests and transient evoked otoacoustic emissions. Click stimulus embedded with simultaneous noise was generated at 0 dB SNR and -5 dB SNR. The stimuli were monaurally delivered to both ears. ABR latencies and amplitudes were analyzed at three major ABR waves and compared between the two diagnostic groups.

Results: A three-way ANOVA revealed significant interaction effect between groups and sexes ($p < 0.05$), that leads to simple main effect analysis. The one-way ANOVA with post hoc analysis was applied to compare the outcomes of ABR parameters in four groups i.e. male normal, female normal, male with schizophrenia and female with schizophrenia. Significant differences were observed in ABR amplitudes, especially between female diagnostic groups for both ABR stimuli ($p < 0.05$).

Conclusion: Significant differences in amplitudes were observed in female diagnostic groups. The current study speculated that hypo-estrogenicity in female-schizophrenia

patients disrupted the GABAergic transmission. The disruption was reflected as abnormalities in auditory-brainstem processing.

P37

MALE FACTOR INFERTILITY- IMPACT OF YOGA-BASED LIFESTYLE INTERVENTION

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Abstract

Aims/Objectives: Sperm DNA damage is the single largest cause of defective sperm function. Sperms with compromised genomic integrity may result in implantation failure due to concomitant dysregulation in gene expression. There is a surge of adoption of yoga-based lifestyle interventions as an adjunct therapeutic aid in the management of complex diseases. The study was aimed to study the positive effects of yoga-based interventions on infertile males by studying the expression of genes of repair pathway and embryonic variability.

Methods: Infertile men, whose female partners experienced recurrent implantation failure in IVF cycles were recruited in this prospective exploratory study. Semen samples from the patients were obtained at the beginning and completion of yoga-based lifestyle intervention for 21 days. The relative expression of the genes of DNA damage repair pathways in sperm was assessed by q-PCR analysis, and compared with the levels of reactive oxygen species, DNA fragmentation index (DFI), total antioxidant capacity (TAC) and 8-OHdG levels.

Results: The expression of genes of the repair pathway (*OGG1*, *PARP1*) and genes for embryonic viability (*FOXG1*, *SOX3*, *STAT4*) showed an upregulation. Sperm count and progressive motility showed a significant increase ($p=0.03$, $p<0.001$). There was a significant decline in ROS ($p<0.001$) and 8-OHdG ($P<0.001$). This was accompanied by a significant positive increase in TAC levels by ELISA ($P<0.001$).

Conclusion: Yoga has positive impact on the sperm epigenome, and may reduce the rate of testicular aging and genetic and epigenetic disease burden in the next generation.

P38

UNUSUAL ARRAY OF NEURAL COMMUNICATIONS IN THE INFRATEMPORAL FOSSA USEFUL FOR SKULL BASE SURGERY

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Abstract

Aims/Objective: Variations in the branching pattern of the mandibular nerve frequently accounts for failure to obtain adequate local anaesthesia in routine oral and dental procedures, and also for unexpected injury to the nerves during surgery. The knowledge of the neurovascular relationships of the infratemporal region is relevant in odonto-stomatology practice.

Methods: In this article, we present a rare case of atypical communication between the inferior alveolar nerve and lingual nerve and the mylohyoid and lingual nerves. Further, the clinical implications of these communications on the development of the supplementary innervation and their possible role in anaesthesia are discussed in detail.

Results: The communication between mylohyoid and lingual nerve was found in this case near the submandibular ganglion after the lingual nerve passes in close relation to third molar tooth, which makes it more susceptible to injury during third molar extractions. The communicating branch between the mylohyoid nerve and lingual nerve may also innervate the tongue, and surgeons should be aware of this variation to avoid post-operative complications after oral surgeries.

Conclusion: Thus the precise anatomy of structures of infratemporal region and its variations may prove beneficial to clinicians, especially to oral and maxillofacial surgeons.

P39

**SEROPREVALENCE AND MOLECULAR DETECTION OF TOXOPLASMOSIS
AMONG HEMATO-ONCOLOGY PATIENTS IN HOSPITAL UNIVERSITI SAINS
MALAYSIA**

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Abstract

Aims/Objective: To investigate serological and molecular prevalence of *Toxoplasma gondii* among hemato-oncology patients in Hospital USM.

Methods: In this cross-sectional study, 56 hemato-oncology patients were screened for IgG, IgM anti- *T. gondii* and IgG avidity by enzyme-linked immunosorbent assay (ELISA) using ELISA Kit (BioRad, USA). For anti-*T. gondii* IgG, titer ≥ 9 IU/ml was considered as past infection, and for IgM, ratio ≥ 1.00 was considered as reactive. Avidity index (AI) < 0.40 was considered as recent infection within 20 weeks, while AI ≥ 0.50 was considered as past infection. All samples were analysed for presence of Toxoplasma B1 gene by Polymerase Chain Reaction (PCR). Sociodemographic data of patients were assessed using the data collection form.

Results: Anti-*T. gondii* antibodies were detected in 28 (50.0%) hemato-oncology patients, 27 (48.21%) patients were IgG+/IgM-, and one patient was IgG+/IgM+ with high avidity index. None of the samples showed presence of Toxoplasma B1 gene by PCR. Univariate analysis showed that all sociodemographic characteristics were not associated with Toxoplasma seropositivity rate.

Conclusion: The seropositivity rate of IgG anti-*T. gondii* was high among hemato-oncology patients in the Hospital USM. Toxoplasma B1 gene may not be detected in blood, as *T. gondii* was normally found in cerebrospinal fluid (CSF) or tissues. Patients with impaired immune system may experience severe complications on reactivation of infection. Thus, screening for anti-*T. gondii* may be necessary in future practice.

P40

UTILIZATION OF EVIDENCE-BASED THERAPY FOR THE TREATMENT OF TYPE 2 DIABETES MELLITUS IN MALAYSIAN PRIVATE PRACTICE

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Abstract

Aims and Objectives: The utilization of antidiabetics had been studied in Malaysia. However, the studies focus on public hospital settings and none were done in the private hospital setting. The purpose of this study was to capture the prescribing pattern, and gauged the demographic and clinical predictors of prescribing antidiabetics in private hospital.

Methods: This cross-sectional study included a random sample of 115 patients referred to the diabetic nurse educator.

Results: The mean age of the diabetic patients was 53.79 (\pm 12.69) years. There were 77 Malays (67%), and the distribution of sex was almost equal. About 73.9% of the samples were overweight. Almost all the patients had comorbidities except for 15.6%. Poor glycaemic control was observed in majority of the patients (mean HbA1c = 9.329 ± 2.20) with dual and triple therapy were mostly prescribed. Despite the polytherapy, glycaemic control was still poor amongst patients. The most prescribed class of antidiabetic was Metformin, followed by Gliclazide and Sitagliptin. Insulin usage was limited to 15.7% only. Patients with kidney impairment and taking beta blockers for comorbidities were significant negative predictors of Metformin prescribing. The existence of coronary artery disease increased the odds of being prescribed Sitagliptin by 4.74% (95% CI 1.18-19.12). Overall, the adherence to guidelines were seen in only 48% of patients.

Conclusion: DPP4 inhibitors (Sitagliptin) were widely used in private hospital. Further studies should be done to investigate the factors affecting insulin usage. Organized educational programs need to be run to increase awareness of the healthcare professionals.

P41

THE EFFECTS OF FICUS FELTOIDEA ON BONE MINERAL PARAMETERS IN OVARIECTOMIZED RATS

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Aim: In postmenopausal osteoporosis, oestrogen deficiency leads to a reduction in bone mass and micro-architectural deterioration, increasing susceptibility to skeletal fractures. Antioxidants derived from plants have been shown to be effective in preventing diseases associated with oxidative stress, including osteoporosis. *Ficus Deltoidea*, locally known as mas cotek, contains high amounts of polyphenols which are powerful antioxidants. The leaves extract from the plant has been reported to have numerous medicinal properties, including antidiabetic, anticancer, antibacterial and anti-inflammatory effects. However, to date, no reports have been made on its effects on bone metabolism. In this study, we investigated the effects of *F.deltoidea* leaves extract on bone mineral density (BMD) and bone mineral content (BMC) in an animal model of postmenopausal osteoporosis.

Methods: Female Wistar rats were divided randomly into 4 groups, each consisting of 8 rats. Three groups of rats were ovariectomized (OVX) and were given oral administration of either deionized water (OVX control), estrogen (positive control) or *F.deltoidea* extract at 800mg/kg body weight daily for 8 weeks. The remaining group of rats was sham operated- their ovaries were mobilized but were left intact. At the end of the study, the bones were analysed using the dual-energy x-ray absorptionmetry (DXA) machine.

Results: Rats treated with *Ficus deltoidea* showed significantly higher BMD and BMC compared to the control group. There was no significant different in BMD and BMC values when compared to the positive control rats.

Conclusion: *Ficus deltoidea* has the potential to be used in the treatment of osteoporosis as it was effective in increasing bone mineral density and preventing bone mineral loss in postmenopausal osteoporosis rat model.

P42

EFFECTS OF VITAMIN E ISOMERS ON BONE STRUCTURE

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Abstract

Aims/Objective: Osteoporosis is a public health problem, as it affects more than 200 million lives globally. Recent researches showed that naturally available vitamin E isomers from palm oil possess anti-osteoporotic properties. Therefore, this study explored the effects of vitamin E isomers (α -, β -, γ -, δ - Tocotrienol, and α Tocopherol) on bone structure using micro-computed tomography (μ CT) analyses.

Methods: Bone structure was examined by micro-computed tomography (μ CT). Analyses were performed on bone trabecular thickness (mm), bone volume/trabecular volume (%), trabecular number (mm^{-1}), trabecular separation (mm) and total porosity (%).

Results: Gamma Tocotrienol has shown the highest score in the analyses of trabecular thickness, bone volume/trabecular volume and trabecular number, and the lowest score in analyses of trabecular separation and total porosity compared to the rest of treatments. In the trabecular thickness analysis, gamma tocotrienol was significantly different compared to osteoporotic bone and alpha tocopherol ($p < 0.05$). In the analysis of bone volume/trabecular volume, gamma tocotrienol was significantly different compared to osteoporotic bone and alpha tocopherol ($p < 0.05$). As in the trabecular number analysis, gamma tocotrienol was significantly different compared to osteoporotic bone ($p < 0.05$). In both analyses of trabecular separation and total porosity, no significant difference was observed between the group treatments.

Conclusion: All vitamin E isomers had marginally improved the bone structure. Gamma tocotrienol isomer appeared to be the most effective in improving the bone structure compared to the other vitamin E isomers.

P43

3-D PRINTING: ENTERING THE NEW DIMENSIONS IN FORENSIC ODONTOLOGY

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Abstract

Aims/Objective: In spite of advances in scientific knowledge and technologies, crimes and natural disasters continue to affect mankind. In such instances, identification of human remains from disaster sites and investigations at the crime scenes is of utmost importance based on humanitarian and legal grounds. Forensic odontologists work as a team with the other forensic experts in establishing the person's identity either by comparing the pre- and postmortem dental information or by using the reconstruction methods on the dental remains from the sites.

Methods: In this presentation, instead of just focussing on the conventional methods of age, and gender identification, a new dimension of forensic odontology will be highlighted. 3-D printing is very commonly used these days in dentistry for dental implants, prosthodontic and orthodontic study models and even for the maxillofacial prosthesis. However, its use as a dental evidence in forensic is limited, which may be due to its complexity, lack of knowledge and high costs. A 3-D dental model can act as a strong legal evidence when presented in court, as there is minimal manipulation with the data.

Results: This technology is also being used in bitemark analysis, facial reconstruction from CT scan images, and creating the dental models for age and gender determination.

Conclusion: The purpose of this presentation was to throw some light on some of the benefits of using the 3-D printing in forensic odontology.

P44

THE INFLUENCE OF PHYSICAL ACTIVITY LEVEL AND SEDENTARY BEHAVIOR ON BODY COMPOSITION COMPONENTS IN ADOLESCENTS

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Abstract

Aims/Objective: The prevalence of physical inactivity, sedentary behavior and obesity in Malaysian adolescent is alarmingly high, and inactive lifestyle has been linked to overweight and obesity in children and adolescent. More information regarding the relationship between physical activity (PA) level, sedentary behavior and component of body composition is necessary to develop an effective intervention programs during the growing years.

Methods: This was a cross-sectional analysis of 949 school-going, aged 15 till 17 years old, multi-ethnic adolescents from various secondary schools in Peninsular Malaysia. Physical activity level (moderate-to-vigorous PA (MVPA) and walking PA) together with sitting time (as a proxy of sedentary behaviour) were assessed using a validated International Physical Activity Questionnaire (IPAQ). A validated bioelectrical impedance analysis device was used to measure body composition including fat percentage and lean mass. Multivariate regression models were created by entering the variables, that were significant correlates of fat percentage and lean mass, as found in the bivariate linear regressions.

Results: After controlling for covariates (sociodemographic), multivariate regression analyses indicated, that MVPA was positively associated with lean mass ($\beta= 0.169$, $p<0.01$) while sitting time was negatively associated with lean mass ($\beta= -0.299$, $p<0.001$). Conversely, sitting time was positively associated with fat percentage ($\beta= 0.271$, $p>0.001$). No significant association was found for walking PA.

Conclusion: Findings from this study suggested that sedentary behavior measured via sitting time had significantly contributed to high fat percentage and low lean mass in adolescents, while those engaged in MVPA had contributed significantly to high lean mass in adolescents.

P45

**A STUDY ON PROPHYLACTIC EFFECT OF POLYHERBAL DRUG MIXTURE IN
NORMAL AS WELL AS ALLOXAN- INDUCED DIABETIC RATS**

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Abstract:

Aims/Objective: Diabetes mellitus, a metabolic disease with manifestation of hyperglycemia and dyslipidemia, is still one of the most leading causes of death and disability. The study focused on polyherbal antidiabetic formulations of different plants used in the treatment of diabetes mixed in different concentrations.

Method: In the present study, three medicinal plants with proven antidiabetic and related beneficial effects, were selected for the preparation anti-diabetic polyherbal mixture. The efficacy of prepared mixtures was tested on alloxan-induced diabetic rats. The animals were randomized into three groups: (1) Group a: Control Group, (2) Group b: Diabetic group, (3) Group c: Drug given after diabetic was induced, (4) Group d: Drug given before diabetic was induced. Diabetes was induced by intra peritoneal injection of alloxan. A total number of 25 rats were studied, and among them, ten rats were alloxan given group, and the polyherbal mixture was given to them.

Results: After observing for five weeks, their hyperglycemia was significant. Another five rats were tested for the prophylactic activity, and were given the polyherbal mixture before the alloxan was given. After observing for five weeks, no significant amount of hyperglycemia was seen in them.

Conclusion: The results of the mixtures on treated group were found to restore the glyceimic level to the near normal level, thereby indicating antihyperglycemic activity of the formulated mixtures.

P46

EFFECTS OF KELULUT HONEY ON OXIDATIVE STRESS AND BONE STRUCTURE OF GLUCOCORTICOID INDUCED OSTEOPOROSIS IN MALE RATS

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Abstract

Aims/Objective: Long term glucocorticoid use is closely related to pathogenesis of osteoporosis due to induction of oxidative stress. Daily honey consumption is able to combat free radicals and progress of chronic illness related to oxidative stress. Stingless bee produces Kelulut honey (KH) and because of it is stingless, it carries more advantages compared to other honey in exploring its potential health benefits. This study aimed to determine antioxidative effects of KH against glucocorticoid induced osteoporosis.

Methods: Thirty-five male rats were used. Twenty-eight adrenalectomized (Adrx) rats were divided into four groups i.e. Adrx+Dex+NS, Adrx+Dex+Ca, Adrx+Dex+KH1 and Adrx+Dex+KH2, and were given normal saline 0.9% (negative control), calcium water (positive control), Kelulut honey (KH1 = 200 mg/kg/day and KH2 = 400 mg/kg/day) treatment, respectively. All of them were administered with dexamethasone (Dex) 120 µg/kg/ day by intramuscular injection, while seven sham operated rats were given vehicle palm olein 0.1 ml/kg/day orally and 0.05 ml/kg/day by intramuscular injection. Femoral bone were harvested for oxidative stress test and structural micro-CT evaluation.

Results: Two doses of Kelulut Honey 200 mg/kg/day and 400 mg/kg/day given in two month have significantly increased SOD activity and decreased MDA activity. Both doses have increased trabecular bone volume (BV/TV), trabecular number (Tb.N) and trabecular thickness (Tb.Th) significantly ($P < 0.05$), while the trabecular bone separation distance (Tb.Sp) was decreased significantly ($P < 0.05$).

Conclusion: These results suggested that Kelulut honey has the potential to be developed as a prophylactic agent to prevent glucocorticoid induced osteoporosis.