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ORAL PRESENTATION - SESSION 1

18 AUGUST 2017

OA01 HEMATOLOGY PRACTICAL: UNFORGETTABLE PAINFUL EXPERIENCES IN MEDICAL SCHOOL

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Objective: The present study was undertaken to assess pain from pricking and factors associated with phobic situations among undergraduate medical students in Manipal College of Medical Sciences, Nepal. **Methodology:** Pricking was done by using blood lancet. Pain was assessed by using Young Baker Scale and pain rating scale. A multigraded questionnaire was created to assess the contributing factors associated with phobic situations. Early exposures, causative factors of fear of injections, pricking area of finger, hematology lab related factors were considered along with sociodemographic data. **Results:** Earlier experience associated with trauma, regular injections, hospitalisation history was uncommon among the present group of subjects. 65.2% females and 42.1% males were scared about pricking. Watching other students during pricking significantly contributed as fear factor. Typical smell in the hematology room frightened 15.2% females & 11.8% males. Shortness of breath and nausea effected was present in 27.3%, 6.1% females and 14.5%, 5.3% males. Lateral pricking caused less pain (p=0.049). Young Baker Scale showed that 28.8% females and 50% males reported finger prick hurts little bit. 31.8% females and 35.5% responded pain with "hurts little more". According to visually rating scale, 27.3% females and 27.6% males felt mild 2 pain, whereas 30.3% females and 26.3% males experienced mild 3 pain. **Conclusion:** More attention is required to female students. Belanophobics may be scared to choose surgery as future career specialization. Separation of lancing area, lateral pricking of finger is recommended strongly along with cognitive behavioral therapy in severe cases.

OA02 BRAIN-DERIVED NEUROTROPHIC FACTOR ATTENUATES AMYLOID BETA1-40 INDUCED MEMORY IMPAIRMENT IN SPRAGUE DAWLEY RATS

Mohd Aizuddin Mohd Lazaldin[1], Igor Iezhitsa[1,2], Renu Agarwal[1], Puneet Agarwal[3], Anna Krasilnikova[1], Nur Hidayati Binti Mohd Sharif[1], Nafeeza Mohd Ismail[1]

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Objective: The purpose of this study was to evaluate the effects of BDNF on memory impairment in rats after intrahippocampal injection of Aβ40 using passive and active avoidance tests. **Methodology:** In this study, Sprague-Dawley rats were divided into 3 groups of 6 rats each and were given intrahippocampal

injections. Group 1 (control group) was injected with vehicle (PBS); group 2 was injected with Aβ40 while group 3 was injected with Aβ40 and BDNF. Fourteen days after injection, all groups were subjected to three behavioural assessments: passive avoidance step-through, passive avoidance step-down and active avoidance step-through. **Results:** In our study, latencies to "step-down" and to "step-through" in passive avoidance assessments for Aβ40-treated group was significantly lower ($p>0.05$) as compared to control and BDNF-treated groups suggesting that BDNF protected both acquisition and retention of passive avoidance response in short-term and long-term memory test. In active avoidance test, the number of escapes and avoidances were significantly decreased ($p>0.05$) on day 3, 4 and 5 in Aβ40-treated group as compared to control and BDNF-treated group. **Conclusion**: Aβ40-treated rats showed deficits in both memory acquisition and retention while treatment with BDNF attenuated memory deficit induced by administration of Aβ40.

OA03

INTRAOCULAR PRESSURE LOWERING EFFECT OF IMIDAZO[1,2-a]BENZIMIDAZOLE AND PYRIMIDO[1,2-a]BENZIMIDAZOLE COMPOUNDS IN OCULAR HYPERTENSIVE RATS

Adrian Julian Marcus[1], Igor Iezhitsa[1,2], Renu Agarwal[1], Pavel Vassiliev[2], Alexander Spasov[2], Olga Zhukovskaya[3], Vera Anisimova[3], Bushra Johari[1], Nafeeza Mohd Ismail[1]

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Objective: The present study investigated four compounds RU-551, RU-555, RU-839 (pyrimido[1,2-a]benzimidazole), and RU-615 (imidazo[1,2-a]benzimidazole) for IOP lowering effect in rats with steroid-induced ocular hypertension. **Methodology:** To induce ocular hypertension, rats were treated topically with dexamethasone (0.1%) for 36 days. In the first series of experiments, IOP lowering effect of unilateral single drop application of all four compounds was tested at 0.1% concentration in normotensive rats. The contralateral eye served as control. IOP was estimated at 6 time points (0, 0.5, 1, 1.5, 2, 3, 4, 5 and 6 hours). Parameters to assess IOP lowering activities included maximum IOP decrease from baseline and control, duration of significant IOP lowering and area under curve (AUC) of time-response curve. In the second series of experiments, lead compound was similarly tested for dose-response relationship at 3 different concentrations (0.1%, 0.2% and 0.4%) in ocular hypertensive rats. This was followed by evaluation of ocular hypotensive effect of bilateral multiple drop administration of minimally effective concentration of lead compound for 3-weeks in ocular hypertensive rats. **Results:** Single drop of RU-615 showed significantly greater IOP lowering effect in ocular hypertensive rats when compared to RU-551, RU-555, and RU-839 with AUC 8.43 and max IOP reduction of 22.32% after 2 hours from the baseline of post 36 days dexamethasone treatment and thus was chosen for further study in 3 different concentrations. There were no significant differences among all tested concentrations, hence the lowest concentration was selected for chronic treatment. Chronic topical application of RU615 caused significant IOP reduction from baseline though out the 3 weeks treatment period with max IOP

reduction of 30.31 % at day 15 and remains constant on days 18 and 21. **Conclusion:** RU-615, a novel N9-imidazobenzimidazole derivatives, exhibits significant IOP lowering effect in both normotensive and ocular hypertensive rats.

OA04

EFFECT OF STANDARDISED AQUEOUS ETHANOLIC EXTRACT OF *FICUS DELTOIDEATRENGGANUENSIS* ON SYSTOLIC BLOOD PRESSURE, RAAS, SERUM AND URINARY ELECTROLYTES IN SPONTANEOUSLY HYPERTENSIVE RATS

Zurain Radjeni[1], Mardiana Abdul Aziz[1], Nor Hadiani Ismail[4], Norasikin Ab Azis[1], Mohd Saleh Ahmad Kamal[1], Harbindar Jeet Singh[1,2,3]

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Objective: This study evaluates the effect of a standardised aqueous ethanolic extract of *Ficus deltoideatrengganuensis* (FDT) on blood pressure, RAAS, serum and urinary electrolytes in spontaneously hypertensive rats (SHR). **Methodology**: Thirty, male SHR, aged 12 to 14 weeks, weighing 200-300g and with systolic blood pressure (SBP) of more than 150 mmHg were divided into 5 groups (n=6). Each group was treated orally for 4 weeks either with 800, 1000 or 1200 mg/kg/day of standardised aqueous ethanolic extract of FDT. Controls were given either 10 mg/kg/day of losartan or 0.5 ml of distilled water. Blood pressure was measured weekly using tail cuff plethysmography (CODA). Body weight and urine output were measured weekly. Serum and urinary sodium, potassium, calcium and total protein concentrations were analysed using a spectrophotometer. Renin, ACE, angiotensin II and aldosterone concentration was determined using ELISA. **Results**: SBP was significantly lower at week 4 in rats receiving 1200 mg FDT ($p<0.05$) and losartan ($p<0.001$) when compared to that in the controls. No significant differences were evident in body weight and urine output between the groups. There were also no significant differences in serum and urinary sodium, potassium, calcium, and total protein concentrations between the groups. No significant differences were evident in RAAS between all the groups. **Conclusion**: Oral administration of FDT, particularly at a dose of 1200 mg/kg significantly lowered blood pressure in SHR. However, this effect does not involve changes in electrolyte concentrations and RAAS. Its mechanism of action remains unknown.

OA05

RESIBUFOGENIN PREVENTS LEPTIN-INDUCED INCREASES IN BLOOD PRESSURE, MARKERS OF ENDOTHELIAL ACTIVATION AND PROTEINURIA DURING PREGNANCY IN SPRAGUE- DAWLEY RATS

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Objective: This study investigated the effect of resibufogenin, an marinobufagenin (MBG) antagonist, on leptin-induced increases in blood pressure and the expression of markers of endothelial activation during pregnancy in the rat. **Methodology**: Forty-eight female Sprague-Dawley rats, aged 12 weeks, were randomized into 4 groups. Group 1 was given normal saline (Control). Group 2 was given 120µg/kg/day of leptin (LEP), Group 3 was given 120µg/kg/day of leptin +30µg/kg/day of resibufogenin (L+RBG) and Group 4 was given 30 was given 30resibufogenin (RBG) daily from day 1 of pregnancy. Rats were screened for high blood pressure and proteinuria before the commencement of the study. Systolic blood pressure (SBP) and body weight were measured at Days 0 and 20 of pregnancy. Animals were euthanized on day 21 of pregnancy for estimation of fetal number, fetal weight, placental weight and for serum analysis of VCAM-1, ICAM-1, E-selectin and Endothelin-1. Urinalysis was conducted for renal function and electrolyte assessment. **Results**: Compared to the control group, SBP and serum VCAM-1, ICAM-1 and endothelin-1 concentrations were significantly higher whereas fetal weight was significantly lower in LEP ($p<0.05$). No significant differences were evident in these between control and L+RBG groups. Urinary protein excretion in LEP on Day 21 was significantly higher ($p<0.05$) compared to the rest of groups on Day 21. No significant differences were evident in urine excretion of calcium, creatinine, sodium and potassium among the groups. **Conclusion:** Resibufogenin prevents leptin-induced increases in SBP, proteinuria, markers of endothelial activation and decreases in fetal weight implicating the possible involvement of MBG in these.

OA06

VITAMIN D DEFICIENCY ATTENUATES MICROVASCULAR ENDOTHELIAL FUNCTION IN MESENTERIC ARTERIES OF DIABETIC RATS

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Objective: To study the effects of vitamin D deficiency on microvascular endothelial function in streptozotocin-induced diabetic rats. Thereafter, to investigate the effects of oral calcitriol treatment on endothelial function in diabetic rats with vitamin D deficiency. **Methodology:** 30 Sprague Dawley rats were induced for diabetes with 50mg/kg streptozotocin intraperitoneally. They were randomly divided into three equal groups (n=10). Diabetic control

group (DC) received normal diet, diabetic vitamin D-deficient group (DVD) received vitamin D-deficient diet, while diabetic supplementation group (DVS) received vitamin D-deficient diet and started to receive 4 weeks 0.15µg/kg calcitriol daily by oral gavage from 7th week after diabetes induction. At the end of 10 weeks, all rats were sacrificed. The mesenteric arterial rings, with and without endothelium, were studied for isometric force measurements using wire myograph. **Results:** The study showed significant reduction in endothelium-mediated relaxation to acetylcholine (ACh) and significant augmented contraction to calcium ionophore (CaI) in DVD group compared to DC group (ACh - DC: 53.48±6.316% vs DVD: 30.06±3.042%, *P*=0.005) (CaI – DC: 58.78±8.093% vs DVD: 97.55±6.578%, *P*=0.002). By treatment with calcitriol, DVS group showed significant enhanced relaxation to ACh (DVS: 48.34±2.641%, *P*<0.05) compared to DVD group while there was no significant reduction in contraction to CaI between these two groups. There was significant reduction in relaxation to sodium nitroprusside in DVD group compared to DC group (DC: 67.83±6.993% vs DVD: 34.42±2.986%, *P*=0.001), while the DVS group showed significant improvement (DVS: 52.24±5.071%, *P*=0.007) compared to DVD group. There were no significant difference in relaxation to salbutamol and contraction to phenylephrine among three study groups. **Conclusions:** This study showed that vitamin D deficiency in diabetic rats attenuates endothelium and smooth muscle function by reducing relaxation and enhancing contraction. Treatment with calcitriol may be the potential therapy to improve both functions in diabetics.

OA07

TIME- AND DOSE-DEPENDENT EFFECTS OF *TRANS*-RESVERATROL ON SECRETION OF MATRIX METALLOPROTEINASES (MMPs) BY HUMAN TRABECULAR MESHWORK CELLS (HTMCs)

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Objective: We investigated the dose- and time-dependent effects of *trans*-resveratrolon matrix metalloproteinases (MMP)-2 and -9 secretions by human trabecular meshwork cells (HTMCs). **Methodology**: HTMCs were cultured in DMEM and divided into 11 groups that received treatment with DMSO 0.1%, dexamethasone 100 nM, and *trans*-resveratrol 3.125, 6.25, 12.5, and 25 µM in the presence and absence of dexamethasone for 2, 5 and 7 days. MMP-2 and -9 expressions were estimated in media using Western Blot. **Results**: Dexamethasone reduced MMP-2 and -9 expressions after 5 and 7 days treatment, compared to DMEM-treated group ($p<0.05$). Incubation with 6.25 and 12.5 µM *trans*-resveratrol for 5 days in the absence of dexamethasone increased MMP-2 level compared to dexamethasone-treated group ($p<0.05$) but in the presence of dexamethasone this effect was observed only at 12.5 µM concentration ($p<0.05$). Seven days of treatment with *trans*-resveratrol at all concentrations increased MMP-2 level ($p<0.05$), however, in the presence of dexamethasone, 3.125-12.5 µM *trans*-resveratrol increased MMP-2 ($p<0.05$). After 2 days, only 12.5 µM

concentration increased MMP-9 both in the presence and absence of dexamethasone ($p<0.05$) but after 5 days, both 12.5 and 25 μM concentrations caused increased MMP-9 compared to dexamethasone-treated group ($p<0.05$) All concentrations of trans-resveratrol significantly increased MMP-9 level in the presence of dexamethasone at day 7 of treatment ($p<0.05$). **Conclusion**: Treatment with dexamethasone significantly reduces MMP-2 and -9 levels and trans-resveratrol counteracted this effect after 5 and 7 days treatment, particularly at 12.5 μM concentration.

OA08

EXOGENOUS LEPTIN ADMINISTRATION ENHANCES THE EFFECT OF MNNG-INDUCED MORPHOLOGICAL CHANGES IN THE STOMACH OF MALE SPRAGUE-DAWLEY RATS

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Objectives: This study examined the effect of leptin in a rat model of N-methyl-N′-nitro-N-nitrosoguanidine (MNNG)-induced gastric adenocarcinoma. **Methodology**: Six-week old male Sprague-Dawley rats were divided into 4 groups (n=8). Group 1 served as control. Group 2 was given 24 mg/kg/day of MNNG in drinking water. Group 3 was given 24 mg/kg/day MNNG in drinking water and intraperitoneal injection of 60 μg/kg/day of leptin. Group 4 was given intraperitoneal injection of 60 μg/kg/day of leptin. Body weight was measured weekly. Rats were euthanized after 40 weeks of treatment. Stomachs were collected for histopathological study. Data were analysed using two-way ANOVA and Fisher's exact test. **Results**: White tumour nodules were evident in 37.5% of MNNG+LEPT-treated and 25% of MNNG-only treated rats. None were seen in the control or in leptin-only treated rats. Microscopically, stomachs of 75% of MNNG+LEPT-treated rats either had hyperplasia (25%), dysplasia (37.5%), or mixed hyperplasia, dysplasia, and hypertrophy (12.5%). This was statistically significant from the controls ($p<0.01$). Gastric hyperplasia was observed in the stomachs of 50% of MNNG-treated rats, whereas stomachs of leptin-only treated rats had either gastric hyperplasia (12.5%) or gastric dysplasia (12.5%). No significant differences were evident in the body weight between the groups. **Conclusion**: It appears that leptin significantly enhances MNNG-induced gastric hyperplasia, dysplasia, and hypertrophy in male Sprague-Dawley rats, which supports the potential role of leptin as a contributing factor to the increased risk of developing gastric cancer among obese individuals.

OA09

COMPARATIVE EFFECT OF MAGNESIUM ACETYLTAURATE AND TAURINE AGAINST NMDA-INDUCED RETINAL OXIDATIVE STRESS

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Objective: This study evaluates the effect of magnesium acetyltaurate (MgAT) on NMDA-induced retinal oxidative stress in rats. **Methodology:** Single intravitreal injection of MgAT was administered as pre-treatment, co-treatment and post-treatment with NMDA to Sprague Dawley rats (Groups 3-5). Three other groups of rats similarly received taurine (Groups 6-8). Group 1 was injected with vehicle and group 2 received NMDA. Retinal oxidative stress was measured by estimating reduced glutathione (GSH) content, catalase (CAT) activity, superoxide dismutase (SOD) activity, 3-nitrotyrosine (3-NT) content and malondialdehyde (MDA) content in the retinal samples 7 days post-treatment. Tunnel staining of retinal sections was done to observe for retinal cell apoptosis. **Results:** We observed that GSH contents, as well as CAT and SOD activities were significantly decreased in group that received NMDA alone (group 2) compared to group 1 that received vehicle ($P<0.01$). On the contrary, MDA content significantly increased in group 2 compared to group 1 ($P<0.001$) but 3-NT levels remained unchanged. Group 3 with MgAT pre-treatment showed significantly reduced retinal oxidative stress as indicated by significantly high GSH, CAT and SOD compared to group 2 ($P<0.001$). Among MgAT-treated groups, pre-treatment group showed significantly greater reduction in retinal oxidative stress and reduced retinal cell apoptosis compared to co- and post-treatment groups. Taurine-treated groups also showed similar changes, however, MgAT pre-treatment group showed greater improvement in retinal oxidative stress and lesser retinal cell apoptosis compared to taurine pre-treatment group. **Conclusion:** MgAT pre-treatment provides significant neuroprotection against NMDA-induced excitotoxicity by reducing retinal oxidative stress.

OA10

EFFECT OF MINOCYCLINE AND IFENPRODIL ON OXIDATIVE STATUS AND PRO-INFLAMMATORY MARKERS IN SPINAL CORD OF STREPTOZOTOCIN-INDUCED PAINFUL DIABETIC NEUROPATHY RAT MODEL

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Objective: This study was conducted to investigate whether the administration of microglial inhibitor (minocycline) and NR2B subunit NMDA receptor inhibitor (ifenprodil) can change the level of oxidative stress and pro-inflammatory markers in the spinal cord of painful diabetic neuropathy rat's model. **Methodology:** Fifty-six male Sprague-Dawley rats were randomly allocated into seven groups: non-diabetic control (S+CB), diabetic control (S+STZ), non-PDN, diabetic rats received minocycline at 80µg (M80) or 160µg (M160) and diabetic rats received ifenprodil at 0.5µg (I0.5) or 1.0µg (I1.0). All rats were fasted for 14 hours prior to streptozotocin injection (60mg/kg) to induce diabetes. The diabetic status was confirmed at three days post-streptozotocin injection. Intrathecal administration of the treatment was given on

Day 15 to 22 (seven days) post-streptozotocin injection. On Day 23, the rat's hind paw was injected with 5% formalin and sacrificed at three days after formalin injection. Spinal cord tissue was removed and homogenized (10% homogenate). Enzyme-linked immunosorbent assay for antioxidant (catalase and superoxide dismutase), oxidative stress markers (MDA) and pro-inflammatory markers (TNF-α and IL-1β) were carried out. **Results:** S+STZ group had demonstrated significant reduction in catalase and SOD activities accompanied by the increased in TNF-α and IL-1β levels compared to the S+CB group ($p<0.05$). An administration of higher dose of minocycline (M160) and ifenprodil (I1.0) had shown an improvement in catalase and SOD activities compared to the other groups ($p<0.001$). Minocycline- and ifenprodil-treated groups independent to dose given also had demonstrated a marked suppression in MDA levels compared to the other groups ($p<0.001$). Both minocycline- and ifenprodil-treated groups had reduced TNF-α level especially minocycline at higher dose ($p<0.001$) but cannot prevented the increase on IL-1β level especially ifenprodil-treated group ($p<0.05$) compared to the other groups. **Conclusion:** Minocycline and ifenprodil administration can reduce the level of oxidative stress and pro-inflammatory markers in the spinal cord of painful diabetic neuropathy rat's model but probably through different pathway and mechanism.

ORAL PRESENTATION - SESSION 2

18 AUGUST 2017

OB01

PAEONOLATTENUATES LIPOPOLYSACCHARIDE-INDUCED APOPTOSIS IN HUMAN UMBILICAL VEIN ENDOTHELIAL CELLS BY INHIBITING BMP4/ROS/MAPK SIGNALING

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Objective: To explore themolecular mechanisms of the protective effects of paeonol, the active compound of *Paeonia suffruticosa Andrews* plant and the involvement of bone morphogenic protein 4 (BMP4), a new pro-inflammatory marker in lipopolysaccharide (LPS)-induced apoptosis model. **Methodology:** Human umbilical vein endothelial cells (HUVECs) were cultured with LPS, in the presence or absence of paeonol or various pharmacological inhibitors including noggin (BMP4 antagonist), apocynin (NADPH oxidase inhibitor), SP600125 (JNK inhibitor), SB202190 (p38 MAPK inhibitor), aminoguanidine hydrochloride (AG, inhibitor of inducible nitric oxide synthase) and TAK242 (Toll-like receptor 4 (TLR4 inhibitor). The effects of paeonol on inflammatory, apoptosis and reactive oxygen species (ROS) production in HUVECs were assessed by Western blot, flow cytometry and dihydroethidium fluorescence. **Results:** Paeonol protects against LPS-induced apoptosis in HUVECs to comparable extent as noggin and apocynin. Paeonol suppressed LPS-induced activation of p38 MAPK, p-JNK and ROS. Treatment with LPS increased iNOS

and cleaved caspase-3 protein level, which were reversed by paeonol. Additionally, LPS upregulated BMP4 protein, which was inhibited by paeonol and noggin. However, SB202190, SP600125, AG and apocynin did not inhibit BMP4 protein elevated by LPS, suggesting that BMP4 is upstream signaling of ROS/MAPK in LPS-induced apoptosis. BMP4 siRNAs reduced LPS-induced BMP4 and cleaved caspase 3 level without affecting TLR4 level. TLR4 siRNA had no effect on LPS-induced BMP4 protein level compared to scrambled siRNA. Knockdown of BMP4 and TLR4 abrogated paeonol-mediated protection of the cells from LPS-induced apoptosis. **Conclusion:** Paeonol reduced LPS-induced apoptosis in HUVECs by inhibiting BMP4/ROS/MAPK signaling. This study also provided novel mechanisms of LPS-induced apoptosis via BMP4 activation which is independent of TLR4.

OB02

EXTRACTION OF PHALERIA MACROCARPA (SCHEFF.) BOERL USING ACCELERATED SOLVENT EXTRACTION (ASE) TECHNIQUE AND THE ACTIVITY STUDY OF AQUEOUS EXTRACT TOWARDS ANTI-HYPERCHOLESTEROLEMIC ACTIVITY

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Objective: To optimize the extraction method of *Phaleria macrocarpa* fruits by using accelerated solvent extraction (ASE) technique and to evaluate the fraction of *P. macrocarpa* fruits extract towards anti hypercholesterolemic activity by inhibiting3-hydroxy-3-methylglutaryl-coenzyme A Reductase (HMGCR) activity. **Methodology:** The temperature and statictime of ASE methodwas optimized based on total flavonoid content in the extract. Total flavonoid content was determined by using spectroscopic method. The optimized aqueous extract subjected to liquid-liquid partition by using hexane, dichloromethane, ethyl acetate, and butanol. All the fractions were tested toward inhibition of HMGCR activity. **Results:** The finding showed that the optimum temperature of 120°C and the statictime of 10 minutes resulted in the highest flavonoid content in the extract. Ethylacetate fraction and butanol fraction from the aqueous extract conferred highest inhibition of towards HMGCR activity with inhibition percentage of 66 ± 5.4% and 45 ± 3.8% compared to pravastatin (74 ± 4.7%) as positive control. **Conclusion:** The present study provides preliminary data that suggest *P. macrocarpa* fruit extract is capable of lowering cholesterol levels by inhibiting the HMGCR activity. However, the mechanism of *P. macrocarpa* in inhibiting the HMGCR is unknown. Standardization and isolation of bioactive compound could give further insight into the roles of *P. macrocarpa* as an alternative in the prevention and management of hypercholesterolemia.

OB03

ROLE OF MATERNAL ASTAXANTHIN SUPPLEMENTATION ON BRAIN DERIVED NEUROTROPHIC FACTOR AND SPATIAL LEARNING BEHAVIOR IN WISTAR RAT OFFSPRING

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Objective: In the present study, prenatal Astaxanthin supplementation on brain-derived neurotrophic factor (BDNF) level, spatial learning and memory performance in the offspring of normal, calorie restricted and Astaxanthin supplemented rats was investigated.**Methodology:** The rats were administerd with 6 mg and 12 mg of astaxanthin /kg bw for 21 days following which acquisition and retention of spatial memory was tested in a partially-baited eight arm radial maze. The BDNF level in different regions of the brain (cerebral cortex, hippocampus and cerebellum) was estimated by ELISA method. **Results:**Calorie restricted animals treated with astaxanthin made significantly more correct choices ($P < 0.05$), and fewer reference memory errors ($P < 0.05$) on the tenth day of training compared to offspring of calorie restricted animals. Calorie restricted animals treated with astaxanthin also made significantly higher correct choices ($P < 0.001$) than untreated calorie restricted animals in a retention test 10 days after the training period. The mean BDNF level in cerebral cortex, hippocampus and cerebellum incalorie restricted animals treated with astaxanthin did not show significant variation from that of control animals. **Conclusion:**Findings of the study indicated that memory and learning was impaired in the offspring of calorie restricted rats which was effectively modulated by astaxanthin. In the same way, the BDNF level in cerebral cortex, hippocampus and cerebellum was also decreased in the offspring of calorie restricted animals, which was also found to be effectively normalized by astaxanthin.

OB04

ANTI-CANCER ACTIVITY OF *M. OLEIFERA* SEED CRUDE EXTRACTS AGAINST VARIOUS CANCER CELL LINES

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Objective: A study was carried out to investigate anti-cancer activity of *M. oleifera* seeds extracts against various cancer cell lines. **Methodology:** *M. oleifera* seeds were extracted with water and 5 other different solvents including methanol, ethanol, hexane, chloroform and acetone. Water gave the highest crude yield, 21.78 %, followed by methanol 11.79 %, hexane 5.33 %, ethanol 1.28 %, chloroform 0.71 % and acetone 0.51 %. Phytochemical screening was done to determine the existence of phytochemicals content in the crude

extracts.**Results:** The extracts showed existence of saponin, coumarine, alkaloid, quinone and fat. The anti-cancer activity of the crude extracts were tested on Human hepatocellular carcinoma cell line Hep G2 (ATCC® HB-8065™), Human breast adenocarcinoma cell line MCF-7 (ATCC® HTB-22™) and two Human prostate carcinoma cell lines, PC-3 (ATCC® CRL-1435™) and DU 145 (ATCC® HTB-81™). After 72 hours treatment of cytotoxicity assay, water extract showed the lowest IC_{50} value on Human breast adenocarcinoma cell line MCF-7 (39.45 µg/mL) and two Human prostate carcinoma cell lines, DU 145 (32.12 µg/mL) and PC-3 (4.12 µg/mL). Chloroform extract indicated the lowest IC_{50} value on Human hepatocellular carcinoma cell line Hep G2 (16.61 µg/mL). **Conclusion:** It is concluded that water and chloroform extracts from *M. oleifera* seed have the potential for anti-cancer treatment.

OB05 EFFECT OF TUALANG HONEY ON MEMORY FUNCTION OF MALE RATS EXPOSED TO HYPOXIA

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Objectives: This study investigated the efficacy of Tualang honey to ameliorate hypoxia-induced memory deficit in adult male Sprague-Dawley rats.**Methodology:** The rats were divided into four groups (n=12 per group); i) non-hypoxic treated with sucrose, ii) non-hypoxic treated with Tualang honey, iii) hypoxic treated with sucrose, iv) hypoxic treated with Tualang honey. Oral Tualang honey (0.2 g/kg body weight) and sucrose (1 mL of 7.9%) supplementations were given to the rats daily for 14 days. Then, the rats were subjected to ~11% continuous hypoxia for 7 days followed by novel object recognition task and T-maze behavioural tests. **Results:** The hypoxic rats treated with sucrose showed significant impairment in short-term memory (STM) and spatial memory ($p<0.01$), but no significant effect on long-term memory (LTM) when compared to non-hypoxic groups. Significant improvement in STM and spatial memory ($p<0.01$) were observed in hypoxic rats treated with honey when compared to those treated with sucrose ($p<0.01$). **Conclusion:** The results suggest that pre-treatment with Tualang honey has a therapeutic potential against hypoxia-induced memory deficit possibly through its antioxidant properties.

OB06 CROSS-SUBSTITUTION OF MITRAGYNINE AND MORPHINE IN DRUG DISCRIMINATION IN RATS

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Objective: The present study aims to explore the discriminative stimulus (DS) effects of mitragynine (MG) in rats. The pharmacological mechanism of MG action and its derivative, 7-hydroxymitragynine (7-HMG) with a specific focus on opioid receptor involvement was examined in rats trained to discriminate

morphine from vehicle. **Methodology**: Male *Sprague Dawley* rats were trained to discriminate MG from vehicle in a two-lever drug discrimination procedure under a tandem variable-interval (VI 60') fixed-ratio (FR 10) schedule of food reinforcement, followed by generalization tests that were conducted under extinction. **Results:** Rats successfully acquired the MG discrimination (15 mg/kg, i.p.) that was similar to the acquisition of morphine discrimination (5 mg/kg, i.p.) in another group of rats. MG substituted fully to the morphine discriminative stimulus in a dose dependent manner, suggesting pharmacological similarities between the two drugs. The administration of 7-HMG derivative in a 3 mg/kg (i.p.) dose engendered full generalisation to the morphine discriminative stimulus. From the ED_{50} values generated, the order of potency in substitution for morphine discriminative stimulus was 7-HMG > morphine > mitragynine. **Conclusion**: The present study demonstrates that the discriminative stimulus effects of MG contains opioid-like subjective effects.

OB07 THE EFFECT OF *PIPER SARMENTOSUM* AQUEOUS EXTRACT ON BUCCAL ULCER HEALING

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Objective: The aim of this research is to study the effect of the aqueous extract of *Piper sarmentosum* (AEPS) leaves on the healing of ulcers induced in rat model. **Methodology:** Male Sprague Dawley rats were divided into three groups in which Group A as negative control, Group B as positive control and Group C as experimental group. Ulcer was induced upon Group B and Group C rats on the left buccal mucosa using cotton swab soaked in 99.5% glacial acetic acid and pressed on the mucosa for 40 seconds. No ulcer or treatment was given to negative control group. Rats in Group B and Group C received topical application of normal saline and AEPS powder respectively, twice daily. The rats were euthanized on Day 2, Day 6 and Day 12 post-ulcer induction. Buccal tissue samples were processed and stained with Hematoxylin and Eosin. Histological slides were examined for inflammation and scored. **Results:** The inflammation severity reduced from day 2 to day 12 and Group C rats showed better inflammation score on day 2 and particularly on day 12 with better remodelled connective tissue. **Conclusion:** Based on the histological findings, it can be concluded that topical application of AEPS showed better healing in terms of inflammation probably by influencing the inflammatory cells.

OB08 TUALANG HONEY HAS THE POTENTIAL TO IMPROVE VIRAL LOAD (vl) AND CD4 COUNT IN ASYMPTOMATIC HUMAN IMMUNODEFICIENCY VIRUS (HIV) PATIENTS

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Objective: The aim of the study is to evaluate the effects of honey in asymptomatic HIV positive subjects in terms of the CD4 count and viral load. **Methodology:** This is a randomized, controlled, open labeled study designed to compare the effectiveness of Tualang honey administered for six months at three different doses: 20 g once (low dose), twice (intermediate dose) or thrice (high dose) daily on log VL and CD4 count in asymptomatic HIV positive subjects (n=95) having CD4 count 250-600 cell/ml as compared to control (no treatment given). Blood for CD4 cell count were taken at baseline, 3 months and 6 months and for log VL were taken at baseline and 6 months. **Results:** 95 subjects were recruited, 85% were male and 73% of the subjects were intravenous drug users. There was no significant difference in the log VL (p=0.462) and CD4 count (p=0.983) at baseline among the 4 groups. There were significant reductions in CD4 counts in low dose (week 1-2 and 1-3) and control group (week 2-3 and week 1-3). The reductions in the CD4 counts for intermediate dose and high dose were not statistically significant. There was no significant difference in log VL at baseline among the treatment and control groups. However, there was a trend of reduction in log VL among the treatment group and increment of log VL in the control group however the difference was not statistically significant. **Conclusion:** Intermediate and high dose of honey has the potential to improve CD4 counts. Honey also has the potential to reduce the viral load. However, the reduction was not statistically significant. Therefore, the study should be confirmed with longer duration of honey administration (one year) and probably with higher dose of honey.

OB09

EFFECTS OF A BIOACTIVE SUBFRACTION OF *STROBILANTHES CRISPUS* ON THE T-CELL ACTIVATION IN 4T1-INDUCED BREAST CANCER MOUSE MODEL

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Objective: This study was set out to investigate the effects of bioactive subfraction of *S. crispus* (SCS) on T-cell activation in 4T1-induced breast cancer mouse model. **Methodology:** To achieve our objectives, two lymphocyte sub-populations [helper ($CD4^+$) and cytotoxic ($CD8^+$) T-cells] and their asociated biomarkers (CD45RO, CIITA, IL-2, MHCI and MHCII) were determined by flow cytometry and immunohistochemistry (IHC). In addition, tumor associated macrophage marker (CD68) was analysed by IHC. **Results:** SCS-treated group showed significant ($p<0.05$) increase in the infiltrating immune T-cells ($CD4^+$ and $CD8^+$) and associated biomarkers (CD45RO, CIITA, IL-2, MHCI, MHCII) on the breast cancer cells compared to the untreated tumor control group. However, animals in the control group had increased CD68 glycoprotein expression compared to the SCS-treated group ($p<0.05$). **Conclusion**: In general, these findings indicate that the antitumor activity of SCS involves significant T-cells activation.

OB10

EFFECTS OF *FICUSDELTOIDEAANGUSTIFOLIA* ON BLOOD PRESSURE AND RAAS IN SPONTANEOUSLY HYPERTENSIVE RATS

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Objective: To examine the effect of a standardized ethanolic-water extract of *Ficusdeltoidea Angustifolia* (*FD-A*) on blood pressure in male spontaneously hypertensive rats (SHR), renin angiotensin aldosterone system (RAAS) and target organ damage. **Methodology:** Eighteen male SHR, aged 12-14 weeks with blood pressures above 150/90 mmHg, were given orally either 0.5 ml distilled water (control) or 800 mg/kg body weight of *FD-A* or 10 mg/kg body weight of losartan daily for 4 weeks. Bodyweight, blood pressure, food and water intake were measured every week. Blood pressure was measured using tail-cuff plethysmography. At the end of study, animals were euthanized and renin, ACE, angiotensin II and aldosterone concentrations in serum were analysed. Histopathological analysis was done on kidney, main blood vessels and liver using Nikon NIS Elements Software 4.5. All data were analysed using ANOVA. **Results:** Body weight increased over the 4 weeks in all the groups but was not significantly different between the groups. Mean systolic and diastolic blood pressures in rats given *FD-A* and losartan at week 4 were significantly lower than that in the control group ($p<0.001$). No significant differences were evident in any of the other measured parameters. **Conclusion:** Ethanolic-water extract of *FicusdeltoideaAngustifolia* decreases blood pressure in SHR when given at a dose of 800 mg/kg daily but the decrease might not involve the RAAS.

ORAL PRESENTATION - SESSION 3

18 AUGUST 2017

OC01

DIRECT COMPRESSED TABLET WITH MELT DISPERSED DRUG PARTICLE WITHOUT BINDER

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Objective: To prepare ibuprofen tablet without binder by direct compression method. **Methodology:**Differential scanning calorimetry (DSC), attenuated total reflectance (ATR) and high performance liquid chromatography (HPLC)analysis were done to investigate ibuprofen stability during melting and solidification

process as well as compatibility with microcrystalline cellulose (MCC). Ibuprofen was melted at 85 ºC and MCC was dispersed (Ibuprofen: MCC, 1.7: 1 w/w) in molten drug with constant stirring. The dispersion was solidified in an ice bath immediately and then pulverized followed by sieving through 600-micron sieve. The derived powder was tested for flow property and compressibility and compressed into tablet without adding any binder. The prepared tablets were evaluated for hardness, friability, disintegration and *in vitro* dissolution. **Results:** No differences in melting peak, enthalpy, functional groups, and chromatographic retention time were observed between ibuprofen and solidified molten ibuprofen. These results indicate heat stability of ibuprofen within the melting range. Compatibility between drug and MCC was also established. The melt dispersed drug powder showed higher bulk density (0.478 g/mL) and Carr index (12.545) compared to physical mixture (ibuprofen-MCC). The compressed tablets showed acceptable hardness and friability (less than 1%) as well as acceptable disintegration time (< 30 min). The *in vitro* dissolution studies showed over 80 % drug release within 30 min. Partial conversion to amorphous nature as well as deformation of crystals by melting and re-solidifying are the reasons of sufficient hardness of the prepared tablet without using binder. **Conclusion:** Melt dispersed drug particle can be compressed into tablets without binder which will definitely reduce number of inactive ingredients in a tablet and time/cost of preparation. Improved flow property of the drug particles will help to enhance drug loading without granulation. Low melting point and heat stability of the drug at the melting range are desired for adopting such technique.

OC02 EFFECTIVENESS OF FUNCTIONAL ELECTRICAL STIMULATION IN IDIOPATHIC PARKINSONISM

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Objective: The present study was undertaken to study the effectiveness of functional electrical stimulation (FES) in idiopathic Parkinson's patients. **Methodology:** The study was performed after the institutional ethical clearance and informed consent from all the patients attending James Parkinson's movement disorder research center with a diagnosis of idiopathic Parkinson's disease (PD). In the present study, time taken to complete 20 meters walk with turn round, distance covered in the first 3 minutes of walking, gait dynamics like Stride length, Step length and Cadence and number of falls were performed using standard procedures. Data was expressed as Mean ± S.D and statistical analysis was done using SPSS. **Results:** It was observed that, the unified Parkinson's disease rating scale (UPDRS) (p=0.471) and the mean score of Parkinson's disease questionnaire (PDQ)-39 (p=0.36) was reduced nonsignificantly whereas, the time taken to complete 20 meters walk with turn (p=0.017), number of steps during 20 meters walk (p=0.088), average number of falls (p=0.00) were reduced significantly from week 0 to week 8. But, the stride length, step length and distance walked in 3 minutes were increased significantly (p=0.000) in from week 0 to week 8. **Conclusion:** The results clearly indicated

that the functional electrical stimulation is a good modality of treatment of Parkinsonism. Because, FES restores function in people with disabilities.The result indicated that the functional electrical stimulation has some power to produce ashort-term effect on certain gate parameters and the time, there by reduces the strain while walking in those affected with idiopathic Parkinsonism.

OC03 A STUDY ON KNOWLEDGE AND USE OF PARACETAMOL AMONG THE STUDENTS OF UNI-KL ROYAL COLLEGE OF MEDICINE PERAK.

Giriyappanavar. C R, Helen Catheina, Amira Akashah.

Uni-KL Royal College of Medicine Perak.

Objective: The study aims to gauge the knowledge and use of paracetamol as an over-the-counter (OTC) drug among the senior students of different faculties of Uni-KL RCMP. **Methodology:** The study was a cross-sectional descriptive study with convenient sampling involving clinical students and senior students of allied health sciences. A sample of 279 volunteers was recruited. Institutional approval was obtained and written consent and confidentiality of participants was ensured. A questionnaire consisting of three parts related to socio-demography, knowledge and practice was administered. Association between socio-demographic variables with knowledge and practice were tested using Chi-square test. **Results:** Among the 279 respondents, 75(26.9%) were males and 204(73.1%) were female students. The majority of them, 180(65%) were from the medical faculty. With regard to the knowledge, 58% had poor while 42% had good knowledge. Association of gender with knowledge score was not statistically significant. Comparing the knowledge among the different faculties, pharmacy students had better scores than the rest which were statistically significant. **Conclusion:** A major knowledge gap and significant prevalence of self medication, may transpire in serious adverse effects. It is crucial that paracetamol toxicity study be incorporated in the curriculum, the objective being to produce well-informed doctors to have positive impact on health of the society.

OC04 FORMULATION OF A NANOEMULSION FOR TOPICAL DELIVERY OF RALOXIFENE

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Objective: Raloxifene, a selective estrogen receptor modulator is used in the treatment of osteoporosis and invasive breast carcinoma in postmenopausal women. The effectiveness of oral therapy of raloxifene is not satisfactory because of its low water solubility, higher first pass metabolism and poor bioavailability (2%). The main objective of this research was to develop a topical aqueous based nanoemulsion formulation of raloxifene to improve the bioavailability of this lipophilic molecule. **Methodology:** The appropriate type and quantity of oil, surfactant and cosurfactant was selected and determined after

different screening studies. Oil phase was selected based on the solubility of raloxifene in different oils and oil-surfactant-cosurfactant mixture. For a selection of surfactant, 15% V/V surfactant solution in water was prepared and the oil phase was gradually added into it with vortexing until the sample started to become milky. Cosurfactant was selected based on the capability of different surfactant-cosurfactant mixtures in enhancing the amount of water incorporated into the formulation. The nanoemusion of raloxifene was prepared by dissolving raloxifene in the oil phase and gradually adding to the emulsifier solution with vortexing. **Results**: A mixture of sunflower oil: tween 20: transcutol in a ratio of 1.0:0.5:0.5 showed the maximum solubility for raloxifene. Tween 20 as a surfactant showed the maximum emulsification capability. Addition of transcutol as cosurfactant allowed more water to be incorporated into the formulation. The 3:1 ratio of tween 20: transcutol (S/CoS) and 1:7 ratio of sunflower oil: S/CoS showed the highest stability of the nanoemulsion formulation. **Conclusion**: A new nanoemulsion formulation has been developed for topical delivery of raloxifene. Hypothetically, presence of surfactant and nano sized oil droplets will improve the skin permeability and therefore, enhance the bioavailability of raloxifene.

OC05

THE EFFECTS OF PALM TOCOTRIENOL-RICH FRACTION SUPPLEMENTATION ON DEVELOPMENT AND MITOCHONDRIA OF VITRIFIED MURINE EMBRYOS

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Objective: The aim of this study is to ascertain the developmental competence of vitrified murine embryos harvested from females which were supplemented with palm tocotrienol-rich fraction (TRF). **Methodology:** The C57Bl/6 females from control and treatment groups were given oral gavage of 60 mg/kg body weight per day of corn oil (control), TRF or alpha-tocopherol, respectively for 7 days. They were superovulated, mated and euthanized to obtain 2-cell stage embryos which were categorized as either normal or abnormal. For vitrification, normal 2-cell embryos were equilibrated with EFS20 and vitrified with EFS40 before immersion into liquid nitrogen. After sequential warming, the 2-cell embryos were cultured *in vitro* to the blastocyst stage and subjected to processing for Transmission Electron Microscopy (TEM). **Results:** The production of 2-cell abnormal embryos was lower in TRF (19.1%) compared to control (33.3%) ($p<0.001$). However, in the TRF group, vitrification caused a significant decrease in development to the 8-cell stage (44.9% vs 94.4%) ($p<0.001$). Ultrastructural assessment indicated mitochondrial degradation as the likely cause for this observation. **Conclusion:** These observations suggest that palm TRF maternal supplementation improves the quality of harvested 2-cell embryos, but it does not confer a protective role during vitrification.

OC06

HLA-DQB1*06 IS AN INDEPENDENT PREDICTOR OF SIGNIFICANT FIBROSIS IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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Objective: This study aims to determine the association of human leukocyte antigen (HLA) allele polymorphisms with histological features and susceptibility to non-alcoholic fatty liver disease (NAFLD) and histological features. **Methodology**: The HLA typing on the HLA-DQA1 and DQB1 allele groups was carried out in 191 biopsy-proven NAFLD patients and 188 healthy controls using sequence specific oligonucleotides method. **Results**: There was no allele frequency difference between the NAFLD patients and controls. However, stratification of the NAFLD patients according to disease severity showed significantly lower frequency of HLA-DQB1*06 among non-alcoholic steatohepatitis (NASH) patients with significant fibrosis (18.2%) compared to NASH without significant fibrosis (42.6%) and simple steatosis (45%) (P = 0.002). On multivariate analysis, HLA-DQB1*06 was associated with lower risk of lobular inflammation (OR 0.84, 95% CI 0.39-0.97, P = 0.016) and lower risk of hepatic fibrosis (OR 0.30, 95% CI 0.14-0.67, P< 0.001). These associations remained significant after correction for multiple testing (P_c = < 0.01) and adjustment for other histological features (P< 0.001) suggesting that HLA-DQB1*06 render lower risk of inflammation and hepatic fibrosis. **Conclusion**: This study suggests that HLA-DQB1*06 has a protective role against the development of higher grade inflammation and significant fibrosis in NAFLD.

OC07

THE EFFECTS OF HISTAMINE RECEPTOR SUBTYPES H1, H2, H3 AND H4 ANTAGONIST ON MOUSE *IN-VITRO* FERTILIZATION

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Objective: This study was conducted to determine the effects of histamine receptor subtypes H1, H2, H3 and H4 antagonist on fertilization through mouse *invitro* fertilization. **Methodology:** Cumulus oocyte complexes (COCs) from superovulated ICR female mice were inseminated *in vitro* with sperm from ICR male mice for 24 hours at 37°C in humidified 5% CO_2. COCs were treated with 50 µM histamine receptor subtypes antagonist including pyrilamine (H1 antagonist), cimetidine (H2 antagonist), thioperamide (H3 antagonist) and JNJ7777120 (H4 antagonist) at 37°C in humidified 5% CO_2, 10 minutes prior to insemination. The fertilization rate was assessed by the presence of 2-cell stage embryos. **Results:** There was a significant difference in the mean of fertilization rates between control and H1, H2, H3 and H4 histamine receptor subtypes antagonist treatment groups, respectively. The number of fertilized oocytes in the treatment groups showed significantly lower than the control group, ($p<0.05$).

Conclusion: These findings indicate a significant inhibition of fertilization rate by histamine receptor subtypes H1, H2, H3 and H4 antagonist.

OC08 EXPRESSION OF MICRORNAs AND TARGETTED GENES IN EARLY AND LATE STAGE OF SEROUS EPITHELIAL OVARIAN CANCER

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Objective: The aim of the study is to elucidate selected miRNAs (miR-200a, miR-200b, miR-200c, miR-182, miR-31, miR-143, miR-214, miR-1, miR-100-3p and miR100-5p) with several miRNA-targeted genes (*TWF1,SIRT1, SUZ12, DLC1, MTSS1, AFF1, FSCN1, TSPAN7, SAV1 and SMARCA5*) at early and advanced stages of serous ovarian cancer. **Methodology:** Fresh frozen tissues of normal and all stages of ovarian cancer tissues were histologically verified using H&E staining by the pathologist. Total cellular RNA containing miRNAs were isolated from these tissues. Quantitative PCR was used to measure the expression of miRNAs and the targeted genes. **Results:** Our study showed that miR-200a, miR-200b and miR-200c were found to be up-regulated while miR-182, miR-31, miR-143, miR-214, miR-1, miR-100-3p were down-regulated in the early stage of ovarian cancer. Similar patterns were observed in the advanced stage of ovarian cancer except for the miR-200b, which was found to be down-regulated only in the late stage of ovarian cancer. We also discovered that the majority of genes were down-regulated in both early and late stages except for *TWF1, SIRT1, FSCN1* and *SMARCA5*. The present study discovered that most of the miRNA signatures were stage specific especially miR-200 family members. **Conclusion:** Further investigations on the biological significance and the direct binding of the selected miRNAs to targeted genes are required. This will provide a promising therapeutic target strategy for serous epithelial ovarian cancer.

OC09 ANALYSIS OF BODY COMPOSITION USING BIO-IMPEDANCE (BIA) SYSTEM AND ITS CORRELATION WITH BLOOD PRESSURE AMONG HEALTHY ADULTS

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Objective: The objective of this study is to analyse the body composition and to find out its correlation with blood pressure and BMI among healthy adults. **Methodology:** A cross-sectional study was conducted among 224 healthy adults (101 females and 123 males) aged between 18-25 years. The different body compositions were recorded using the Omron Full Body Sensor Body Composition Monitor and Scale and the blood pressure was measured using the sphygmomanometer and stethoscope. All data were analysed using SPSS. Pearson correlation coefficients were computed to determine the correlation of body compositions with systolic blood pressure.**Results:** Interpretation of body

composition analysis report among healthy adults showed low prevalence of obesity. But showed positive linear correlation between visceral fat percentage and BMI which was statistically significant. Systolic blood pressure also had significant positive correlation with visceral fat and BMI. **Conclusion:** BMI predicts systolic blood pressure better than total body fat or visceral fat.

ORAL PRESENTATION - SESSION 1

19 AUGUST 2017

OA11 DECREASED SUPEROXIDE DISMUTASE ACTIVITY CONTRIBUTES TO ENDOTHELIAL DYSFUNCTION IN A RAT MODEL OF REM SLEEP DEPRIVATION

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Objective: This study investigated the role of oxidative stress markers in endothelial dysfunction following rapid eye movement (REM) sleep deprivation. **Methodology:** Twenty four (24) male Sprague–Dawley rats were divided equally into 3 groups: free-moving control rats (FMC), 72-h REM sleep-deprived rats (REMsd) and tank control rats (TC). Rats were deprived of REM sleep using the inverted flowerpot technique. Plasma levels of oxidative stress markers (superoxide dismutase; SOD, glutathione reductase; GR, total antioxidants capacity; TAC and malondialdehyde; MDA) were measured using ELISA kits. Thoracic descending aortas were examined under the scanning electron microscope (SEM). The descending thoracic aortic ring was exposed to cumulative acethylcholine (ACh) in the functional myographic study. **Results:** Plasma levels of SOD were significantly lower in REMsd rats, but there were no changes in other markers (TAC, GR and MDA) compared to other groups. The endothelium of the thoracic descending aortas in REMsd group demonstrated a rough surface, widening of the intercellular clefts and derangement of endothelial cells. Interestingly, numerous fibrin networks with trapped red blood cells were also observed in REMsd group, but not in other groups. In FMC and TC rats, the endothelium appeared smooth with regular arrangement of the endothelial cells. There was a significant impairment in endothelium-dependent relaxation observed in REMsd aortic ring, with the presence of vasomotion. **Conclusion:**Following REM sleep deprivation, SOD levels were significantly reduced and this may lead to generation of superoxide anion. Increased superoxide anion may induce endothelial cell damage and subsequently affects its function. Endothelial dysfunction precedes the development of cardiovascular diseases, thus adequate sleep is necessary to reduce the cardiovascular risk factors.

OA12 EFFECT OF COFFEE ON THE PHARMACOKINETICS OF ACETAMINOPHEN

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Objective: To compare the pharmacokinetic parameters of acetaminophen alone and in combination with coffee containing different doses of caffeine (65 mg &195 mg). **Methodology:** A complete one way cross-over design was employed in this study. Fifteen healthy male volunteers between age 18-50 years with

normal liver function tests receive acetaminophen alone; in combination with coffee containing caffeine (65mg and 195 mg), so that each subject acted as its own control. In the fasting state, one tablet of acetaminophen (500 mg) with 150 ml of water, coffee 1 g (containing caffeine 65 mg) and coffee 3 g (containing caffeine 195 mg) were taken by each subject at 2 weeks interval during this study. Caffeine concentration in the coffee was determined by high performance liquid chromatography method (HPLC) before the pharmacokinetic assays. The serum acetaminophen concentration was assayed by spectrophotometric method. Pharmacokinetic parameters were determined. **Results:** The results of this study showed that there was an increase in the rate and extent of acetaminophen absorption, increase maximal plasma drug concentration (C_{max}) and prolonged elimination half-life ($T_{1/2el}$) after taking acetaminophen together with coffee containing 65 mg of caffeine ($P < 0.001$). In contrast, drinking coffee containing 195 mg of caffeine with acetaminophen caused decrease in the rate of absorption ($P < 0.001$), increase C_{max} and prolonged $T_{1/2el}$ ($P < 0.05$). The time to reach minimal effective concentration (MEC) of acetaminophen was quicker with coffee (caffeine 65 mg) ($P < 0.05$) and slower with coffee (caffeine 195 mg) ($P < 0.05$). **Conclusion:** It is suggested that acetaminophen may have longer therapeutic effect when drinking with coffee.

OA13

EFFECT OF RENIN-ANGIOTENSIN SYSTEM INHIBITORS ON ATTENUATION OF EXTRACELLULAR MATRIX PRODUCTION BY DEXAMETHASONE TREATED HUMAN TRABECULAR MESHWORK CELLS

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Objective: To evaluate time-dependent effects of renin angiotensin system (RAS) inhibitors on production of fibronectin (FN) and α-smooth muscle actin (α-SMA) on dexamethasone-treated human trabecular meshwork (HTM) cells. **Methodology:** HTM cells were divided into ten groups: Group 1 was cultured in Dulbecco's modified Eagle's medium (DMEM) only; group 2 in DMEM with dexamethasone 10^{-7} M dissolved in 0.1% DMSO. Groups 3 to 10 were co-treated with dexamethasone 10^{-7} M and losartan potassium or enalaprilat dehydrate in concentrations of 10^{-4}, 10^{-5}, 10^{-6}, and 10^{-7} M for both drugs. All groups were incubated for 7 and 14 days. MTS assay was done to exclude cytotoxic effect, and immunocytochemistry was performed to visualize the extent of extracellular matrix (ECM) deposition. **Results:** None of the groups revealed reduction in cell viability. Dexamethasone significantly ($p<0.05$) increased deposition of FN (2.43 and 2.92 folds) and α-SMA (2.88 and 3.24 folds) compared to that by DMEM treated cells at both time points, respectively. Co-treatment with both the tested RAS inhibitors abolished the effects of dexamethasone on ECM deposition by decreasing production of FN and α-SMA by all four tested concentrations at both time points. The maximum reduction of FN and α-SMA production was 1.82 and 2.62 folds ($p<0.05$) in enalaprilat treated group and 1.93 and 1.95 folds ($p<0.05$) in the group treated with losartan, respectively. **Conclusion:** RAS inhibitors

significantly decreased dexamethasone-induced deposition of both FN and α-SMA in all tested concentrations. The effect was more prominent on day 14 of co-treatment.

OA14

UNDERSTANDING DEVELOPMENT OF VASCULOPATHY IN DIABETIC MICROCIRCULATION – ROLE OF ENDOTHELIAL PROSTANOIDS, PROSTACYCLIN, EDHF AND NITRIC OXIDE.

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Objective: To compare whether duration of diabetes affects the role of individual endothelial-derived relaxing factors (EDRF) and endothelial dependent contraction (EDCF) in microcirculation of streptozotocin – induced diabetic rats at 2 weeks and 10 weeks. **Methodology**: Thirty male Sprague-Dawley rats were induced diabetes using streptozotocin (60 mg/kg) intraperitoneally. They were equally divided into two groups: diabetic 2 weeks and diabetic 10 weeks. Rat tail arteries were collected two or ten weeks after the diabetes induction to study the relaxation and contractions of small resistance arteries in vitro using wire myography. The contributions of individual EDRF [nitric oxide, prostacyclin and endothelial derived hyperpolarizing factors (EDHF)] and the response of endothelial dependent contractions (EDCF) were evaluated. **Results**: ACh induced relaxations were significantly reduced in diabetic 10 weeks compared to diabetic 2 weeks rats [R_{max}; 58.84 ± 4.86 vs 73.49 ± 2.85 %, p=0.015]. Incubation with the combination of non-selective cyclooxygenase (COX) inhibitor (indomethacin) and potassium channel blockers (30 mMKCl ,TRAM 34 and UCL 1684) revealed that NO-mediated relaxation was diminished significantly in diabetic 10 weeks rats compared to diabetes 2 weeks [R_{max}; 31.31 ± 4.71% vs 53.67 ± 4.65, p=0.002]. Similarly, reduced prostacyclin-mediated relaxation was also observed in diabetic 10 weeks [R_{max}; 20.38 ± 4.64 % vs 35.10 ± 3.63 %, p=0.018] when the vessels were incubated with NO synthase inhibitor (LNAME) and potassium channel blockers (30 mM KCl ,TRAM 34 and UCL 1684). There was a trend of lower EDHF – mediated relaxation (artery incubated with indomethacin and LNAME) in diabetic 10 weeks compared to diabetic 2 weeks [R_{max}; 19.81 ± 4.72 % vs 30.12 ± 3.56 %, p= 0.092]. Significantly higher EDCF was seen in diabetic 10 weeks [$E_{max;}$ 113.73 ± 13.25% vs 71.8 ± 11.88 %, p=0.026] compared to diabetic 2 weeks. **Conclusion**: ACh-induced relaxations were significantly lower in 10 weeks diabetic rats compared to 2 weeks diabetic rats. All the relaxations mediated by individual EDRF factors were lower with augmented response in EDCF were seen indicating prolonged diabetes impaired the endothelial functions.

OA15 NEUROPROTECTIVE EFFECT OF TAURINE ON ENDOTHELIN-1-INDUCED RETINAL GANGLION CELL APOPTOSIS

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Objective: We evaluated effects of taurine against endothelin-1 (ET-1)-induced retinal ganglion cell (RGC) apoptosis. **Methodology:** Among five groups of rats (n=6), groups 1 and 2 were intravitreally administered with vehicle and ET-1 (2.5 nM), respectively. Group 3 and 5 were intravitreally injected with taurine (320 nM) 24 hours before and after ET-1 injection (taurine pre-treatment and taurine post-treatment groups), respectively. Group 4 was intravitreally administered with ET-1 and taurine simultaneously (taurine co-treatment group). Seven days post-injection, rats were sacrificed and retinae were processed for histopathological examination and TUNEL staining. Morphometric measurements were performed and number of TUNEL-positive cells was calculated per 100 μm^2 of ganglion cell layer (GCL). **Results:** Group 2 showed significantly thinner GCL compared to group 1 whereas in taurine-treated groups GCL thickness was restored particularly in group 3, close to group 1 ($p>0.05$). Apoptotic cell count in group 2 was 2.06 folds higher than group 1 ($p<0.01$). The same was only 1.09, 1.29 and 1.37 folds higher in groups 3, 4 and 5, respectively, compared to group 1 ($p>0.05$). Groups 3-5 showed 2.24 ($p<0.01$), 1.59 ($p<0.05$) and 1.50 ($p<0.05$) folds lower apoptotic cell count, respectively, compared to group 2. **Conclusion:** Intravitreal taurine protects against ET-1-induced RGC apoptosis in rats and taurine pre-treatment provides greater neuroprotection compared to co- or post-treatment.

OA16 COMPARATIVE ANTIAPOPTOTIC EFFECT OF TAURINE AND MG ACETYLTAURATE IN NMDA-INDUCED ANIMAL MODEL OF GLAUCOMA

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Objective: To examine the comparative anti-apoptotic effect of taurine (TAU) and magnesium acetyltaurate (MgAT) on retinal cells after NMDA exposure. **Methodology:** Thirty *Sprague dawley* rats were divided into 5 groups (n=6). Group 1was administered intravitreally with vehicle and group 2 were similarly injected with NMDA (160 nmol). Groups 3, 4 and 5 were divided into 2 groups each and injected with either MgAT or TAU (320 nmol): 24 hours before (pretreatment), in combination (co-treatment) or 24 hours after (post-treatment)

NMDA exposure (160 nmol). Seven days after injection, rats were sacrificed; eyes were enucleated, fixed and processed for TUNEL assay and Caspase-3 immunohistochemistry staining. In the retinas, the number of TUNEL- and caspase-3-positive cells was counted and the number of apoptotic cells per 100 μm^2 in ganglion cell layer (GCL) was calculated. The estimation of pro/anti-apoptotic factors (Bax/Bcl-2) and caspase-3 activity in retina was done through ELISA technique. **Results:** In our study, severe degenerative changes were observed in retina after intravitreal NMDA exposure. Pre-treatment with MgAT and TAU abolished apoptotic response to NMDA by decreasing the number of of TUNEL- and caspase-3-positive cells ($p<0.001$ and $p<0.05$ respectively). However, pretreatment with MgAT showed signicantly lower apoptotic cell count ($p<0.05$) than pretreatment with TAU. The apoptotic markers Caspase-3 and Bax/Bcl2 ratio were significantly decreased in both MgAT- and TAU-treated groups. However, pretreatment with MgAT resulted in more signicant decrease in retinal Bax/Bcl-2 ratio and caspase-3 activity. **Conclusion:** Our study revealed that pretreatment with MgAT prevents NMDA-induced retinal cell apoptosis more effectively than pretreatment with TAU.

OA17 VALIDATION OF THE FIBER FLUORESCENCE MICROSCOPY (FFM) PROBE FOR PRECISE LOCATION OF STEREOTACTICALLY DETERMINED AREAS OF THE RAT BRAIN

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Objective: The aim of the present study was to investigate and validate the fiber fluorescence microscopy (FFM) probe for precisely locating the targeted brain region. **Methodology:** Adult male Sprague-Dawley rats were trained on behavioral task. They were then anaesthetised and positioned on the stereotaxic apparatus according to predetermined coordinates. Fluorescent labeling was carried out using S-300 fiber optic probe on the target location i.e. CA1 hippocampus. **Results:** Photomicrography from histological staining indicated the precise location of the probe when inserted into the rat brain. Our results indicate that the FFM probe can determine the region of interest quickly, accurately and precisely. **Conclusion:** The FFM probe should be the instrument of choice in order to detect small quantities of biological substances regardless of natural products or synthetic derivatives in very minute areas of the brain.

OA18 *IN VITRO* INHIBITION OF UGT2B7 BY HERBAL COMPONENTS: A PRELIMINARY STUDY.

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Objective: To evaluate the inhibitory potential of active compounds commonly present in herbal supplements on UGT2B7. **Methodology:** We selected thirteen active compounds commonly present in herbal supplements (andrographolide, arecholine, arecaidine, catechin, gallic acid, kaempferol, mangiferin,

mitragynine, quercetin, vanillin, vitexin, isovitexin and zerumbone) to evaluate their inhibitory potential on UGT2B7, an important UGT isoform which is responsible for conjugating major classes of drugs such as analgesics (morphine), carboxylic nonsteroidal anti-inflammatory drugs (ketoprofen) and anticarcinogens (all-trans retinoic acid). An *in vitro* system using zidovudine as a probe substrate for UGT2B7 was employed to determine UGT2B7 activity in rat liver microsomes by quantifying the metabolite; zidovudine glucuronide formed using high-performance liquid chromatography (HPLC). Inhibition potency was expressed as the concentration of the inhibitor at 50% activity (IC_{50}). **Results:** Based on our findings, zerumbone and mitragynine demonstrated inhibition towards UGT2B7 with IC_{50} value of 13.60 ± 1.11 uM and 57.37 ± 1.22 respectively. Meanwhile, the other compounds show IC_{50} higher than 100 uM. Due to inhibitory potential of zerumbone and mitragynine towards UGT2B7, further studies should be carried out to identify their metabolites and type of inhibition involved. **Conclusion:** Understanding the effects of these two compounds on UGT2B7 activity is important to ensure their safe administration if/when they are co-administered with drugs that are highly metabolized by UGT2B7 enzyme.

OA19 PROTEOME, BIOCHEMICAL AND PLASMA GLUCOSE ANALYSIS OF PALMATINE AS ANTI-DIABETIC AGENT

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Objectives: Our research aims to investigate the effect of Palmatine, a major bioactive component of purified stem extract of Cosciniumfenestratum (C.fenestratum), on plasma glucose, biochemical parameters, antioxidant enzymes and proteome in streptozotocin (STZ)-induced diabetic rats. **Methodology:** Palmatine is synthesized by our research team member. The glucose lowering effect was done using STZ–induced rats and biochemical parameters, antioxidant enzymes were done using commercial laboratory services. Proteome analysis was done using two dimensional gel electrophoresis (2-DE) and Mass spectrometry (Proteomics technique). Protein–protein interaction network (PPI) was determined by multidimensional protein identification technology (MudPIT) and the interaction between the proteins were analyzed using STRING v10 database. **Results:** Our finding showed that Palmatine was able to reduce the plasma glucose level, maintain the kidney and liver biomarkers and increase the antioxidant enzymes. Proteome analysis showed elevation of lipid metabolizing proteins, channel proteins, protection proteins, antioxidant proteins, and digestive proteins treated group. **Conclusion:** Palmatine was able to reduce the plasma glucose level, reduce lipids, increase antioxidant enzymes and stimulated the very important lipid metabolizing proteins, channel proteins, protection proteins, antioxidant proteins and digestive proteins.

ORAL PRESENTATION - SESSION 2

19 AUGUST 2017

OB11

BLOOD PRESSURE LOWERING EFFECT OF *FICUS DELTOIDEA KUNSTLERI* IN SPONTANEOUSLY-HYPERTENSIVE RATS: POSSIBLE INVOLVEMENT OF RAAS

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Objective: This study therefore examined the changes in renin-angiotensin-aldosterone system (RAAS), serum and urinary electrolytes concentrations in *Ficus deltoidea var Kunstleri* (FDK)-treated spontaneously hypertensive rats (SHR). **Methodology**: Six groups of male SHR were orally administered with vehicle (group 1), FDK 500, 800, 1000 and 1300 mg/kg (groups 2- 5, respectively) or losartan 10 mg/kg (Group 6) for 4 weeks. Blood pressure (BP) and body weight were measured weekly. Twenty-four-hour urine was collected at weeks 0 and 4 for electrolytes analysis. At week 4, the FDK extract group with maximal anti-hypertensive effect was chosen for measurement of RAAS components in serum as well as electrolytes concentration in serum and urine. **Results**: FDK extract at 1000 mg/kg dose showed maximal antihypertensive effect in SHR. Anti-hypertensive effect of FDK was associated with significant reduction in angiotensin II and aldosterone concentrations but no changes were found in concentrations of other RAAS components or in serum and urinary electrolytes. No significant differences in body weight were evident between the groups. **Conclusion:** The anti-hypertensive effect of FDK is likely to involve the renin-angiotensin aldosterone system.

OB12

TRF ENHANCES INTENSITIES OF ACTIN AND TUBULIN IN NICOTINE EXPOSED PRE-IMPLANTATION EMBRYOS IN MURINE MODEL

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Objective: The objective of this study was to investigate the effects of nicotine on actin and tubulin and subsequent supplementation of TRF on 2- and 8-cell murine embryos. **Methodology:** Twenty four female mice from Balb/C strain were divided into 4 groups. Group 1: intraperitoneal injection (i.p.) of 0.9%

NaCl. Group 2: 3.0 mg/kg bw/day nicotine, i.p., Group 3: 3.0 mg/kg bw/day nicotine i.p. + 60 mg/kg bw/day TRF and Group 4: 60 mg/kg bw/day TRF for 7 consecutive days. The animals were superovulated, cohabited with fertile males and euthanized at 24 h post coitum. Embryos at the 2- and 8-cell stages were harvested, fixed and stained to visualize actin and tubulin distributions by using CLSM. **Results:** Results showed that at 2-cell stage, actin intensities were significantly reduced in the nicotine group compared to that of the control group ($p < 0.001$). In Group 3, the intensity of actin significantly increased compared to that of the nicotine group ($p < 0.001$). At 8-cell stage, actin intensity of the nicotine group was significantly lower than that of the control group ($p < 0.001$).The intensities of actin in Group 3 were increased compared to that of nicotine group ($p < 0.001$). The same trend was seen in tubulin at 2- and 8-cell stages. **Conclusion:** This study suggests that TRF prevents the deleterious effects of nicotine on cytoskeletal structures of 2- and 8-cell stages of pre-implantation mice embryos *in vitro*.

OB13

ANALGESIC AND PROTECTIVE EFFECTS OF TUALANG HONEY IN PRENATALLY-STRESSED RATS' OFFSPRINGS BY MODULATION AT THE SPINAL CORD LEVEL

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Objective: This study aimed to determine the effects of Tualang honey administration on pain behaviour, malondialdehyde (MDA) activity and histological changes of the spinal cord in the prenatally-stressed rats'offsprings. **Methodology:** Pregnant rats were divided into control (C), stress (S) and stress plus honey (SH). Tualang honey (1.2 g/kg) or distilled water was administered orally to the pregnant rats. The S and SH groups were subjected to physical stress and their adult male offsprings were given intraplantar injection of 1% formalin. Pain behaviour of the offsprings was recorded for one hour and they were sacrificed two hours post formalin injection. Their spinal cords were removed to assess histological changes and MDA activity. Data were analysed using SPSS, version 22. Pain behaviour score was analysed using repeated measures analysis of variance (ANOVA) with post hoc Scheffe's test. MDA levels and neuronal number were determined by one-way ANOVA. The significance level was taken as 0.05 for these analyses. **Results:** Prenatal stress was associated with increased pain behaviour scores in rats' offsprings. S group demonstrated significantly higher pain behaviour scores compared to SH ($p=0.023$) and C groups ($p=0.0005$). S group showed significantly lower number of Nissl-positive neurons in the lamina I of spinal cord compared to SH and C groups. **Conclusion:** Results from this investigation throw some light on the analgesic and protective effects of Tualang honey in prenatally-stressed rats' offsprings by modulation at the spinal cord level.

OB14 BEE BREAD IMPROVES CARDIOVASCULAR DISEASE RISK FACTORS IN HIGH FAT DIET-INDUCED OBESE RATS

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Objective: To determine the effects of bee bread (BB) on cardiovascular disease risk factors in high fat diet (HFD)-induced obese rats. **Methodology:** Thirty two (32) male Sprague-Dawley rats were divided into 4 groups (n=8/group) i.e. normal (on normal diet), HFD (on HFD), HFD+BB (on HFD and bee bread at 0.5g/kg/day orally) and HFD+O (on HFD and orlistat at 10mg/kg/day orally) groups. After 6 weeks, Lee index was measured to confirm obesity and rats were sacrificed for assessment of serum lipid profiles, atherogenic index (AI), aortic oxidised low-density lipoprotein (Ox-LDL) and presence of atherosclerotic plaque in the aortic arch.**Results:** Lee index, total cholesterol (TC), low-density lipoprotein cholesterol (LDL-c), and aortic ox-LDL were significantly higher in HFD group compared to normal group. However, Lee index, TC, LDL-c, AI and aortic ox-LDL were significantly lower in HFD+BB compared to HFD group. LDL-c, AI and aortic ox-LDL were also significantly lower in HFD+O group compared to HFD group but not significantly different from HFD+BB group. Meanwhile, atherosclerotic plaque was present in HFD group only.**Conclusion:** Bee bread supplementation at 0.5g/kg/day for 6 weeks significantly protects against obesity by improving lipid profile and atherosclerotic formation in high-fat diet induced obese rats. These findings may indicate the potential use of bee bread in reducing the risk of cardiovascular diseases.

OB15 EFFECTS OF TUALANG HONEY SUPPLEMENTATION ON INFLAMMATORY MARKERS AMONG BREAST CANCER PATIENTS

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Objective: To determine the effects of Tualang honey supplementation on inflammatory markers which consists of high sensitivity C-reactive protein (hsCRP), interleukin-6 (IL-6), interleukin-1β (IL-1β) and tumour necrosis factor alpha (TNFα) among breast cancer patients. **Methodology:** A total of 72 breast cancer patients on anastrozole were recruited from Oncology Clinic, Universiti Sains Malaysia. The patients were randomly assigned into two groups (n=36/group): (1) control (without honey) and (2) honey (20 g/day of Tualang honey for 12 weeks) groups. Blood sample was collected at pre- and post-interventions, and inflammatory markers were measured using human enzyme-linked immunosorbent assay kits. **Results:** At pre-intervention, the level of IL-6 in honey group was significantly higher than control group. No significant differences were found for other inflammatory markers between the two groups

at pre- and post-interventions. In control group, the levels of TNFα and IL-1β were significantly higher at post-intervention than at pre-intervention. However, in honey group, there were no significant differences for all the inflammatory markers. **Conclusion:** This study suggests that Tualang honey supplementation at 20 g/day for 12 weeks may prevent the increased inflammation in breast cancer patients.

OB16

EFFECTS OF EVENING PRIMROSE OIL (EPO) ON THE REPRODUCTIVE SYSTEM OF ADULT FEMALE SPRAGUE-DAWLEY RATS

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Objective: The aim of this study was to determine the effects of evening primrose oil (EPO) on the reproductive system of adult female Sprague-Dawley rats. **Methodology:** Rats were divided into two groups; control and treated groups. Rats were either received 103 mg/kg body weight EPO (treated group) or 0.5 ml olive oil (control group) once daily for 28 days. After 28 days of treatment, regularity of oestrous cycle was determined by examining the vaginal smear daily for seven days. Then, each rat was anesthetised with ether and euthanised by cervical dislocation. Uteri and ovaries were removed and weighed. All data were analysed using SPSS, version 20. A value of $p<0.05$ was considered to be statistically significant. **Results:** There were no significant differences in the mean length of oestrus cycle and the mean uterine weight when compared between the two groups. . However, , the mean ovarian weight in EPO-treated group was higher than those in control group ($p<0.05$). **Conclusion:** Daily EPO administration for 28 days significantly increased the mean ovarian weight. Further studies are required to determine the reproductive hormones levels and to explore the possible mechanisms for the female reproductive system effects of EPO.

OB17

EFFICACY OF HARUAN (*CHANNA STRIATUS)* EXTRACT AND GLUCOSAMINE ON AN EXPERIMENTAL RABBIT OSTEOARTHRITIS MODEL

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Objective: To evaluate the efficacy of oral *Channa striatus* (CS) extract versus glucosamine sulphate (GlcN) on histomorphometric examinations of knee osteoarthritis (OA) induced New Zealand White rabbits. **Methodology:** Anterior

cruciate ligament transection (ACLT) was performed to induce OAin thirty three maleNew Zealand White rabbits and was randomly divided into three groups: CS, GlcN and control group. The animals were treated orally for eight weeks before they were sacrificed. The articular cartilage was evaluated macroscopically and histologically using semi-quantitative and quantitative methods. **Results:** Macroscopic analysis of cartilage showed that the CS groups have a significantly lower severity grade of total macroscopic score compared to the control ($p < 0.001$) and GlcN ($p < 0.05$) groups. Semi-quantitative histology examination showed that the CS groups and GlcN had lower severity grading in terms of total histology score compared to the control group ($p < 0.001$). No statistical differences was found between CS and GlcN groups. However, CS group significantly had lower degenerative changes compared to the control group in three compartments of the joint (medial femur, medial tibia plateau and lateral tibia plateau) compared to GlcN which had significantly lower severity grading compared to the control group in medial tibia plateau section only. The quantitative histomorphometric analysis showed that cartilage thickness, area, and roughness in the CS ($p < 0.001$) and GlcN ($p < 0.05$) groups were statistically superior compared to the control group. The CS-treated group also demonstrated significantly less cartilage roughness compared to the GlcN - treated group ($p < 0.05$). **Conclusion**: Both oral administration of CS extract and GlcN exhibited chondroprotective action on an ACLT OA-induced rabbit model. However, CS was superior to GlcN in maintaining the structure of the cartilage.

OB18

LABISIA PUMILA LEAVES SUPPLEMENTATION PREVENTED POSTMENOPAUSAL LOSS OF BONE STRENGTH IN SPRAGUE-DAWLEY RATS

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Objective: Current study aims to evaluate the relative osteoprotective potency of the leaves and roots of *Labisia pumila* var alata *(LPva)* in search of safer and effective alternative to estrogen in managing postmenopausal osteoporosis. **Methodology:** Two groups (n=6) of ovariectoized female Sprague-Dawley rats, MPv and MPr, were treated for 8 weeks with 20mg/kg/d oral dose aqueous leaf and root extracts of *LPva*, respectively. After treatment, left femora bone samples were harvested from humanely sacrificed animals and investigated for changes in bone mechanical strength parameters using a universal mechanical strength testing machine (Shimadzu, AGS-X 500N). Results obtained were analysed (SPSS V20.0) in comparison with that of positive control group (n=6), ERT (treated with 64.5µg/kg/d dose of estrogen, Premarin®), Sham group (untreated sham-operated, n=6) as well as a negative control group, OVXC (untreated ovariectomized control, n=6) that were subjected to the same experimental conditions. **Results:** Biomechanical strength properties, maximum load and maximum stress, were found to be significantly higher ($P<0.05$) in leaf extract treatment group (MPv) only when compared with OVXC. **Conclusion:** Aqueousleaf extracts of *LPva*, to a similar extent as *ERT*, prevented loss of bone mechanical strength when compared with ovariectomized negative control

group. Thus, as a potential alternative to estrogen in managing postmenopausal osteoporosis, the leaves of *LPva* possess better activity than its roots.

OB19 AWARENESS AND USE OF TRADITIONAL & COMPLEMENTARYMEDICINE (TCM) AMONG MEDICAL STUDENTS

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Objective: This study explored the level of awareness and use of TCM among medical students in clinical years (years 3, 4, & 5) of UniKL RCMP. **Methodology:** This was a cross sectional descriptive study conducted from 7th November 2014 till 22nd January 2015. Out of total 370 students in clinical years, the minimum sample size was calculated as 188 using Epi info, assuming that 50% of the study population were aware of TCM and use TCM with 95% confidence interval and 5% precision limit. A simple random sampling method was used for collection of data by using structured questionnaire on socio-demography, awareness on TCM and use of TCM. The data was analyzed using SPSS version 21. **Results:**Out of total number of 199 participants 99% were aware about TCM. Awareness on Traditional Malay Medicine, the response varied from 42.2% (indigenous massage) to 96.5% (Malay traditional massage and cupping). Similarly, awareness on Traditional Chinese Medicine varied between 39% (Tuinalogy) to 99% (Acupuncture). Regarding Traditional Indian Medicine, 89.9% were aware of yoga and only 24.1% were aware of Siddha. About complementary medicine, 82.9% knew about Homeopathy followed by 82.4% (psychotherapy), 79.4% (hypnotherapy), and 71.9% (Ruqyah). 80.4% participants had knowledge that 11 Government hospitals in Malaysia offering TCM practice. As regards the use of TCM, 63.8% used one form TCM or other at some time in their life time, out of which 49.2% used Malay traditional massage, 36.7% herbal medicine, 45.2% Acupuncture, 21.1% homeopathy and Ruqyah, and 16% yoga. **Conclusion:** Our study concluded that 99% of the respondents were aware of TCM whereas only 63.8% used TCM in their life time. We strongly recommend that TCM should be incorporated in medical curriculum to make our future doctors knowledgeable on TCM and more scientific studies to be conducted on TCM to establish their safety and efficacy.

OB20 LIPOPOLYSACCHARIDE-INDUCED LEARNING AND MEMORY IMPAIRMENT IN RATS

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Objective: The present study aimed to investigate the effects of Tualang honey and its extract on learning and memory functions in systemic lipopolysaccharide (LPS)-treated rats. **Methodology:** Ninety male Sprague Dawley rats were divided into 5 groups of eighteen individuals: (i) control, (ii) untreated LPS (iii) Tualang honey 200 mg/kg, (iv) honey methanol extract 150 mg/kg and (v) memantine 10 mg/kg. All treatments were administered once daily via intraperitoneally for 4 days prior to LPS injection (5mg/kg) and were continued for 10 consecutive days. Cognitive abilities were assessed by using Morris water maze (MWM) and novel object recognition tests. **Results:** In the MWM, both honey and its extract significantly shortened the escape latency and distance to reach hidden platform. Treatment of honey also significantly increased the target crossing and time spent in the target zone during probe test. Swimming speed did not significantly change in all treated groups throughout the experiment. As for object recognition test, supplement of honey and its extract markedly improved the discrimination index. **Conclusion:** The present results suggest that Tualang honey and its extractimproves spatial and recognition memory in LPS-treated rats.