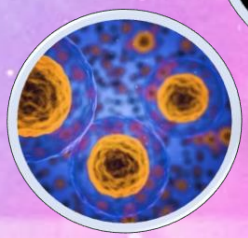
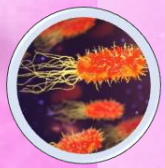
INTERNATIONAL HEALTH AND MEDICAL SCIENCES CONFERENCE 2019







ABSTRACT BOOK

8th – 9th March 2019
Taylor's University Lakeside Campus
Subang Jaya
Malaysia

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JOURNAL OF HEALTH & TRANSLATIONAL MEDICINE
JUMMEC
Print ISSN:1823-7339
E-ISSN:2289-392X

JOURNAL OF HEALTH AND TRANSLATIONAL MEDICINE
(JUMMEC)

Special Issue 2019

The artwork on the cover page was designed by Dr. Yow Hui Yin from School of Pharmacy, Faculty of Health and Medical Sciences, Taylor's University.

The IHMSC2019 Conference was held on the 8-9th of March, 2019 in Taylor's University Lakeside Campus, Subang Jaya, Selangor, Malaysia. The co-host for the conference was Griffith University, Australia. One of the publishing partners was the JUMMEC journal. There were plenary sessions and four concurrent oral sessions as well as poster presentations during the conference.

ISSN:1823-7339
Published by: Faculty of Medicine, University of Malaya

Foreword

The 1st International Health and Medical Sciences Conference 2019 (IHMSC2019) was organized by the Faculty of Health and Medical Sciences, Taylor's University, Malaysia with our co-organizer, the School of Pharmacy and Pharmacology, Griffith University Australia and colleagues from the Faculty of Medicine, University of Malaya, with special thanks to the editorial board members of the JUMMEC journal.

IHMSC2019 provided a platform for researchers and medical personnel from across the globe to share their current research findings and contemporary development in the field of health and medical sciences. The scope of the conference covered four focused areas of cancer, infectious diseases, aging, and obesity with related complications.

Essentially, this conference served as a platform for encouraging interdisciplinary discussion and research alliance in line with the theme of translational and precision medicine, towards expediting the discovery of novel diagnostic tools and therapeutic modalities, in a "bench-to-bedside" approach.

The post-conference hands-on workshops were aimed at faculty development and capacity building. We sought to bring in the latest technologies for the post-conference workshops such as 3-D printing in medical applications and ultrasound workshop for medical practitioners in collaboration with our industry partners, for the benefit of early- and mid-career clinician scientists and biomedical scientists for successful future career advancement.

It is hoped that it was a dynamic conference with meaningful interactions and collaboration among the participants so that they left the conference with renewed energies and ideas to implement the knowledge learnt for the betterment of healthcare.

Prof. Dr. Chong Pei Pei
Chairperson of IHMSC 2019

Dr. Looi Chung Yeng
Chair, Scientific Committee

Scientific Committee

Chairperson

Dr. Looi Chung Yeng

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LIST OF ABSTRACTS FOR ORAL PRESENTATIONS
OID-1

Menaquinone mimetics as novel antimicrobial agents

M. Zunk,[1,2,3] M. Boersch,[1] S. Rudrawar[1,2,3], G. Grant[1,2,3]
[1]*School of Pharmacy and Pharmacology, Griffith University, Gold Coast, Australia*
[2]*Quality Use of Medicines Network, Griffith University, Gold Coast, Australia*
[3]*Menzies Health Institute Queensland, Griffith University, Gold Coast, Australia*
E-mail: m.zunk@griffith.edu.au

Menaquinone plays an important role in electron transport in bacterial cells. It is the primary electron transport molecule between NADH Dehydrogenase II, succinate dehydrogenase, Cytochrome bc_1 complex, as well as nitrate and fumarate reductase enzymes, present in bacterial cell membranes. MenA a bacterial enzyme, catalyses the penultimate step of the menaquinone biosynthetic pathway in all aerobically aspiring microorganisms. MenA has one known natural inhibitor, a relatively new quinoline antibiotic Aurachin RE (Figure 1). Although displaying impressive antibacterial action (MIC values in the 100 nM range), Aurachin RE is largely hindered by its lack of aqueous solubility. This lack of solubility in water presents a major issue in bacterial cell uptake and delivery to the infection site if it was to be used therapeutically. It has therefore been suggested, that improvements to increase the overall polarity of this compound may improve its inhibition results further, as well as improve its usefulness as a potential therapeutic agent. This work will cover synthesis efforts within our lab toward the total synthesis of Aurachin-based derivatives along with similar more polar 2,3-dihydro-4-(1*H*)-quinolinone structures. Work to date has concentrated on utilising an adapted Stetter reaction in order to create derivatised 3-substituted-2,3-dihydro-4-(1*H*)-quinolinone core structural motifs. These compounds are further substituted in order to introduce lipophilic or polar characteristics as required to produce novel broad spectrum antibiotics similar to Aurachin RE. Compounds presented have potential to target latent phase TB and drug resistant antimicrobial strains via a novel MenA inhibitory mechanism.

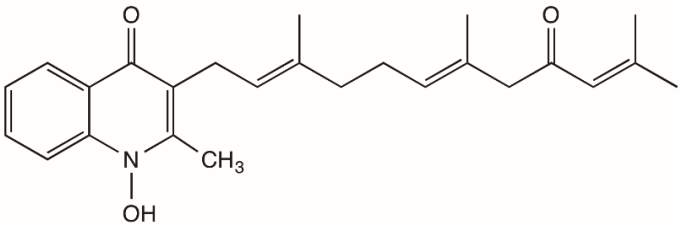

Figure 1. The bacterial produced antibiotic, Aurachin RE.

OID-5

Developing new antimicrobial therapies using synergistic mixtures of plant extracts and conventional antibiotics

Ian E. Cock[1] and Matthew J. Cheesman[2,*]
[1]*Environmental Futures Research Institute and School of Environment and Sciences, Griffith University, Australia*
[2]*School of Pharmacy and Pharmacology and Quality Use of Medicines Network, Griffith University, Australia*
**Corresponding author: m.cheesman@griffith.edu.au*

The discovery of penicillin nearly 90 years ago revolutionised the treatment of bacterial disease. Since that time, numerous other antibiotics have been discovered from bacteria and fungi, or developed by chemical synthesis and have become effective chemotherapeutic options. However, the misuse of antibiotics has lessened the efficacy of many commonly used antibiotics. The emergence of resistant microbial strains has seriously limited our ability to treat pathogenic illness and new antibiotics are desperately needed. Antibiotic drug development has predominantly focused on the discovery of new compounds derived from microbial sources, or on the synthesis of new compounds using existing antibiotic scaffolds, to the detriment of other lines of discovery. Both of these methods have been fruitful. However, for a number of reasons, these strategies are unlikely to provide the same wealth of new antibiotics. Indeed, the number of newly developed antibiotics have decreased dramatically in recent years. Instead, a re-examination of traditional medicines has become more common, and has already provided several new antibiotics. Traditional medicine plants are likely to provide further new antibiotics in the future. However, the use of plant extracts or pure natural compounds in combination with conventional antibiotics may hold greater promise for rapidly providing affordable treatment options. Indeed, some combinational antibiotic therapies are already clinically available. This study will discuss some recent studies in our laboratory group that are aimed at developing combinational therapies against bacterial pathogens.

OA-5

Audit on the incidence & management of drug-related hospital admissions for drug-induced gastro-intestinal bleeding

Maxwell L Baker[1], Hannah Leiblich[1], Maryssa A Paulose[1], Carly Schiller[2], Matthew Pegoli[2], Lucas Panagopoulos[2], Tim Martin[2], Gregory Roberts[2], Vijayaprakash Suppiah[1,3].
[1]*School of Pharmacy and Medical Sciences, University of South Australia, Adelaide, SA, Australia,*
[2] *SA Pharmacy, Government of South Australia, Adelaide, SA, Australia,*
[3]*Australian Centre for Precision Health, University of South Australia, Adelaide, SA, Australia*

Introduction. There are an estimated 230,000 drug-related hospital admissions in Australia annually. In 2016, these admissions costed the national healthcare system approximately AU $1.2 billion. Drug-induced gastrointestinal (GI) bleeding is the most common adverse drug reaction (ADR) requiring hospitalisation and is the leading cause of death in patients presenting to hospital due to an ADR. **Aims.** 1) To assess the prevalence of GI bleeding admissions to hospital that are drug-related. 2) To determine potentially reversible risk factors and 3) To identify management patterns for the treatment of drug-induced GI bleeding. **Methods.** A multi-site retrospective study was conducted at three South Australian metropolitan hospitals between July and December 2017. Patients case notes and medical discharge summaries were utilised to gain comprehensive data from drug related GI bleeds due to anti-platelets and anticoagulants, selective serotonin reuptake inhibitors/serotonin-norepinephrine reuptake inhibitors (SSRIs/SNRIs) and non-steroidal anti-inflammatory drugs (NSAIDs). **Results.** During the data collection period, a total of 327 patients were admitted to the three hospitals for GI bleeds, of whom 207 (63.3%) were taking at least one medication of interest. The most prevalent drug class of interest were antiplatelets (50.2%), followed by anticoagulants (31.4%), SSRIs/SNRIs (18.5%) and lastly, NSAIDs (15.0%). **Discussion.** GI bleeds may be life-threatening. In our study, mortality rates ranged from 3% to 14%, with older age and comorbidities increasing this risk. GI bleeding could be caused or exacerbated by a range of common medications. This serious adverse effect should prompt clinicians to always consider the indication for prescribing drugs of interests and potential alternatives.

OA-1

Comparison of microglial models for *in vitro* neuroinflammation and neurodegeneration research

McFarland AJ[1, 2], McDermott CM[3], Lewohl JM[4], Grant GD[1,2], Arora DS[1,2], Davey AK[1,2], Anoopkumar-Dukie S[1, 2]
[1] *School of Pharmacy and Pharmacology, Griffith University, Queensland Australia*
[2] *Quality Use of Medicines Network, Queensland, Australia*
[3] *Department of Biomedical Science, Bond University, Gold Coast, Australia*
[4] *School of Medical Science, Griffith University, Gold Coast, Australia*

Introduction: Microglia are the resident immune cells of the central nervous system (CNS) and have crucial roles in maintaining homeostasis within the neuroparenchyma. Presently, there are a lack of well-validated *in vitro* models which display morphological, biochemical and functional characteristics of microglia. Our aim was to compare two microglial models (HAPI cells and differentiated THP-1 cells) for their suitability for *in vitro* neuroinflammation and neurodegeneration research. **Methods**: Two microglial models were compared: highly aggressive proliferating immortalised rat microglia (HAPI) and PMA-differentiated THP-1 microglial-like cells (dTHP-1). To validate functional microglial behaviour, 24 h treatment with lipopolysaccharide (LPS) from *Escherichia coli* (B5:055) was used to induce neuroinflammation. Release of IL-1β, PGE_2 and TNF-α was quantified by ELISA; ROS production was determined fluorometrically using DCFH-DA. Conditioned media from each model was also transferred to SH-SY5Y neuroblastoma cells and neuroinflammation-induced neurodegeneration evaluated after 24-48 h using resazurin reduction as an index of cellular proliferation. Data were analysed by one-way ANOVA with Tukey-Kramer multiple comparisons test using GraphPad Prism (v6.01). **Results**: Following LPS stimulation, both HAPI and dTHP-1 cells had significantly increased release of IL-1β ($p<0.05$ and $p<0.001$ respectively), PGE_2 (both $p<0.001$), and TNF-α (both $p<0.001$), with dTHP-1-associated responses significantly higher than equivalent HAPI responses ($p<0.05$). Both HAPI and dTHP-1 were associated with increased DCF fluorescence ($p<0.01$ and $p<0.001$ respectively), however dTHP-1 fluorescence was significantly higher than HAPI fluorescence ($p<0.001$). When conditioned media from dTHP-1 cells was transferred to SH-SY5Y cells, there was no significant effect on cellular proliferation at 24 or 48 h. When conditioned media from HAPI cells were transferred to SH-SY5Y cells, a significant reduction in cellular proliferation was seen at both 24 h and 48 h ($p<0.001$). **Discussion and significance**: This is the first study to compare the suitability of dTHP-1 and HAPI cells for neuroinflammation and neurodegeneration research. Our data indicate that both models demonstrate the functional characteristics of microglia when exposed to pro-inflammatory LPS insult. However, when modelling neuroinflammation-induced neurodegeneration *in vitro*, only the HAPI model was able to mimic the degenerative component. Thus, HAPI cells represent a reliable and suitable microglial model for both neuroinflammation and neurodegeneration research *in vitro*.

OO-2

Obesity as a risk factor for early-onset type 2 diabetes in adults aged 18-44 years

P.V. Ajithkumar, MD, MSc (Diabetes), MPhil[1]*
[1]*Sree Gokulam Diabetes Center , Sree Gokulam Medical College & Research Foundation , Trivandrum -695607,Kerala ,India.*
**Corresponding author: kumarajith38@yahoo.co.in*

Background and rationale: Diabetes is a global public health problem. Recently, there is an epidemiologic transition in the age of onset of diabetes, with an exponential increase in prevalence of type 2 diabetes in the young population. There is also a parallel increase in prevalence of obesity in this population. The loss of productivity, disability, decreased quality of life and early mortality due to diabetes create huge economic, social and personal burden warranting early and aggressive risk factor management in this population. Studies have shown that life style modification in the form of weight reduction and exercise can bring about improvement in risk for diabetes. This study was done to find the association of obesity and type 2 diabetes in the age group of 18-44 years. **Primary Objective:** To assess the role of obesity as a risk factor for type 2 diabetes in adults aged between 18 and 44 years. S**econdary Objective:** To describe the other selected metabolic factor's independent contribution of risk for early-onset type 2 diabetes in the same population. To study the association of socio demographic variables for early - onset type 2 diabetes. To assess the relative frequency of cardiovascular risk factors among subjects with early onset diabetes. **Materials and methods:** Study design: Case control study Setting: Sree Gokulam Medical College & Research Foundation, Venjaramoodu , Thiruvananthapuram – a tertiary care teaching hospital . Sample size calculated for unmatched case control model as 107 cases and 214 controls . (α error = 0.05, β error = 0.20 ,odds ratio = 2 ,case: control = 1:2 Methods:Socio demographic characteristics, anthropometric and biochemical measurements were carried out using standard techniques. Physical activity was measured using Global Physical Activity Questionnaire. **Results:** Frequency of overweight -obesity was significantly different for cases (94.39 %) and controls (74.42 %) OR = 6.407 (95 % CI 2.667-15.393). On Logistic regression, overweight and obesity showed strong association with early-onset diabetes OR =4.167(95%CI 1.427-12.166) p 0.009. In the multivariate analysis, the seven variables that turned out with significant association with early-onset type 2 diabetes mellitus were - overweight-Obesity, low physical activity, history of prediabetes , family history of diabetes , HDL –C < 35 mg % & or TG > 250 mg %.& age above 32 years. **Conclusion:** Overweight and obesity increases the risk of early – onset type 2 diabetes mellitus. Those with EOD have 4 times more odds of obesity in young population. Overweight people have similar risk as obese people for early -onset type 2 diabetes. Risk for early - onset type 2 diabetes increases significantly from 32 years age. 60 % of early – onset type 2 diabetes patients had at least 2 other cardio vascular risk factors at diagnosis

OA-2

The Effect of Sex, Socioeconomic Status, and Emotional Support on Older Adults' Aging Perception

Ameneh Yaghoobzadeh[1], Hamid Sharif Nia[2], Saeed Pahlevan Sharif[3], Mobin Mohammadinezhad[4]
[1]*Geriatric Nursing Faculty, Tehran University of Medical Sciences, Iran*
[2]*School of Nursing and Midwifery Amol, Mazandaran University of Medical Sciences, Sari, Iran*
[3]*Taylor's Business School, Taylor's University, Subang Jaya, Malaysia*
[4]*MSc of nursing*, *Student Research Committee, Iran university of medical sciences*, *Tehran* , *Iran*

Introduction: Self-perception is found to be a central predictive factor in experiencing successful aging. The aim of this study was to explore the role of sex, socioeconomic status, and emotional support in elders' aging perception. **Materials & Methods:** A cross-sectional design was used with 300 older aged participants recruited from 23 clinics and health centers in Qazvin, Iran. Data were collected included questions to elicit demographic information and Barker's aging perception questionnaire. **Results:** Exploratory multiple linear regression showed that the level of emotional support (β: -12.10; 95% CI: [-20.72, -3.48]), socioeconomic status (β: 2.84; 95% CI: [0.25, 5.43]), and women (β: -4.34; 95% CI: [-6.91, -1.77]) were associated with aging perception among elders. Educational level and marital status did not significantly contribute to the variance of AP. **Conclusion:** Findings revealed that aging perception was related to individual differences as well as social and emotional factors. Researchers, health-care professionals and elders may benefit from thinking about old age as an inevitable life stage.

Keywords: *aging perception, socioeconomic status, emotional support, older, sex, elder*

OO-5

Elucidating the function of exosomes derived from obese-colorectal cancer patients as regulators of the immune system

Othman, N[1]., Jamal, R[1]., *Abu, N[1]
[1]*UKM Medical Molecular Biology Institute, UKM Medical Centre, Jalan Yaa'cob Latiff, Bandar Tun Razak, 5600 Cheras, Kuala Lumpur, Malaysia*
**Correspondence author: NA; nadiah.abu@ppukm.ukm.edu.my*

Obesity is one of the major challenges of public health due to its health prevalence and link with greater risk of developing chronic diseases. Many studies have provided evidence of a strong direct and indirect association between obesity and colorectal cancer. One mechanism by which obesity contributes to cancer development is through chronic inflammation. The inflammatory and carcinogenic process share several signaling pathways including apoptosis, proliferation and angiogenesis. Therefore, sustained exposure to the inflammatory process may contribute to the initiation, promotion, growth and invasion of tumors by providing inflammatory mediators that can infiltrate the tumor microenvironment. However, the exact mechanism on how obesity is related to anti-tumour still needs to be further elucidated. In this study we postulated that exosomes, nano-sized extracellular vesicles, play a role in the signaling of immune players. Exosomes from obese and lean colorectal cancer (CRC) patients was isolated and co-cultured with PBMCs; alongside exosomes from obese and lean healthy non-colorectal cancer (non-CRC) patients as controls. Functional assays were then performed to determine the role of exosomes in suppression of anti-tumor immunity through the regulation of immune cells and cytokine activation. Profiling of the cytokines demonstrated dysregulated expression of various cytokines between obese and lean patients, as well as between CRC and non-CRC patients. Furthermore, results from the apoptosis assay indicated that lean CRC exosomes were able to induce a higher percentage of CD8 cell death, in comparison to obese CRC exosomes. With further analysis in regards to dysregulation of gene expression, using the microarray, the outcome of this study will aid in the understanding of exosome function released from cancer cells with and without obesity in relation to the anti-tumor immunity.

Keywords: *obesity, exosomes, immunity, cancer*

OID-2

Illness severity assessment for children with RTI: do parents and GPs agree?

Esther T. van der Werf[1,2], Niamh M Redmond[1,3], Sophie Turnbull[1], Hannah Thornton[1], Matthew Thompson[4], Paul Little[5], Tim J Peters[6], Peter S Blair[7] and Alastair D Hay[1].
[1]*School of Medicine, Taylor's University, Lakeside Campus, 1, Jalan Taylor's, 47500 Subang Jaya, Selangor D.E., Malaysia*
[2]*Centre for Academic Primary Care, Population Health Sciences, Bristol Medical School, University of Bristol, Canynge Hall, 39 Whatley Road, Bristol BS8 2PS, UK*
[3]*National Institute for Health Research Collaborations for Leadership in Applied Health Research and Care West (NIHR CLAHRC West), University Hospitals Bristol NHS Foundation Trust, 9th Floor, Whitefriars, Lewins Mead, Bristol, BS1 2NT, UK*
[4]*Department of Family Medicine, University of Washington, Seattle, WA, USA.*
[5]*Primary Care and Population Sciences Unit, University of Southampton, Aldermoor Health Centre, Aldermoor Close, Southampton, SO16 5ST, UK*
[6]*Population Health Sciences ,Bristol Medical School, University of Bristol, Bristol, UK*
[7]*Population Health Sciences ,Bristol Medical School, University of Bristol, University of Bristol, Level D, St Michael's Hospital, Southwell St, Bristol BS2 8EG*
**Corresponding author: Esther.Vanderwerf@taylors.edu.my*

Background. Children's respiratory tract infection (RTI) severity assessments are known to differ between parents and clinicians, but determinants are unknown. **Aim.** To investigate the agreement between, and compare the determinants of, parent and clinician severity scores. **Design and Setting.** Secondary analysis of data from a prospective cohort study of 8394 children aged 3 months to 16 years presenting to primary care with acute (≤28 days) cough and RTI. **Method.** Data on sociodemographic factors, parent reported symptoms, clinician reported physical examination findings and global illness severity assessments was used. Kappa statistics used to investigate agreement and multivariable logistic regression to identify the factors associated with illness severity. **Results.** Parents reported higher (mean 5.2 (SD= 1.8), median 5 (IQR 4-7)) illness severity than clinicians (mean 3.1 (SD= 1.7), median 3 (IQR 2-4), p<0.0001). There was low positive correlation between these scores (+0.43) and poor inter-rater agreement between parents and clinicians (kappa 0.049). Number of clinical signs was highly correlated with clinician scores (+0.71). Parent reported symptoms (in the past 24 hours) independently associated with higher illness severity scores (in descending order of importance) were severe fever, severe cough, breathing quickly, severe reduced eating, severe reduced fluid, severe disturbed sleep and change in cry. Three of these symptoms (severe fever, breathing quickly and change in cry) along with inter/subcostal recession, crackles/crepitations, nasal flaring, wheeze and drowsiness/irritability were associated with higher clinician scores. **Conclusions.** Clinicians and parents use different factors and make different judgements about children's RTI severity. Improved understanding of the factors concerning parents could improve parent-clinician communication, consultation outcomes and appropriate use of antibiotics.

OC-5

Colour coded surgery for resection of malignant gliomas using 5 aminlevulinic acid (5ALA). 8-year of experience at a Single Institution

Mohammad Jaweed[1]* , Liew Boon Seng[2], Azmin Kass Rosman[2], Saiful Azli[2], Johari Siregar Adnan[3], Mohammad Ajmal Yasin[4]
[1]School of Medicine, Faculty of Health and Medical Sciences, Taylors University, Hospital Sugai Buloh 47000 Selangor Dural Ehsan, Malaysia,
2Department of Neurosurgery, Hospital Sungai Buloh, Selangor, Malaysia,
3Department of Neurosurgery, Hospital Kuala Lumpur, Malaysia,4 Department of Internal Medicine Jamaica Hospital Medical Centre, 8900 Van Wyck Expy, Richmond Hill, NY 11418, USA.
**Corresponding author: Mohammad.Jaweed@taylors.edu.my*

Introduction: Malignant primary brain tumours are highly infiltrative and aggressive. Achieving gross total resection (GTR) using conventional white light microsurgical technique is a challenge. The use of 5-aminolevulinic acid (5 ALA) induced protoporphyrin IX (PpIX) fluorescence in cases of malignant glioma helps surgeon to perform a more radical but safe surgery with preservation of neurological functions and improvement in progression-free disease survival periods. The use of this technique in clinical practice is relatively new in Malaysia. The Department of Neurosurgery, Hospital Sungai Buloh adopted this technique with the aid of neuronavigation. We evaluated the extent of malignant glioma resection under fluorescence-guided resection (FGR) retrospectively using volumetric MR neuroimaging. **Methods:** A retrospective cohort study was carried out on patients who underwent for fluorescence guided resection (FGR) of malignant glioma using 5-ALA over a period of seven years, from 2010 to 2017.All cases were subjected to post-operative MRI within two weeks of surgery. The Extent of Resection (EOR) was then classified into three categories: A gross Total Resection (GTR) was defined as the absence of any abnormal enhancement on the postoperative MRI. A nearly gross total resection had been accomplished when less than 10% of the preoperatively enhancing mass was still seen. A partial resection was indicated by the presence of more than 10% of the enhancing lesion on the postoperative MRI. Patients diagnosed with malignant glioma were divided into two groups: 1) the study group (n = 41), patients who received oral administration of 5-ALA fluorescence and 2) control group (n=38), patients who did not receive oral 5-ALA fluorescence prior to surgical resection. Quality of life was assessed according to Karnofsky Performance Scale (KPS) score and neurological status. 5-ALA diluted in 50 mL of water at 20 mg/kg body-weight, 3hours (range 2-6) prior induction of anaesthesia orally given. Glioma resection was evaluated pre-and post-operatively with enhanced T1 contrast magnetic resonance imaging (MRI). **Results:** Gross total resection (GTR) rates were significantly different in between the two patient groups. (Chi-squared Test p=0.016) Two patients in the study group and four patients in the control group had transient neurological deterioration. One patient in the control group had permanent hemiplegia. **Conclusion:** We conclude that the use of 5-ALA fluorescence in the management of malignant glioma surgery dose significantly extend the degree of gross total resection compared to conventional method without the use of 5-ALA fluorescence.

Keywords: *5-aminolevulinic acid; glioma; GBM; fluorescence-guided surgery; neuronavigation; MR*

OC-6

Extracellular Vesicle-derived Circ_FCSHD2 as a Therapeutic Target for FOLFOX-Resistant Colorectal Cancer

Nadiah Abu[1]*, Hon Kha Wai[1], Nurul Syakima Ab Mutalib[1], Nik Muhd Aslan Abdullah[2], Rahman Jamal[1]
[1]*UKM Medical Molecular Biology Institute (UMBI), UKM Medical Center, Universiti Kebangsaan Malaysia, Kuala Lumpur*
[2]*Department of Oncology and Radiotherapy, UKM Medical Center, Kuala Lumpur*
**Corresponding author: nadiah.abu@ppukm.ukm.edu.my*

Introduction: Colorectal cancer (CRC), being the one of the most diagnosed cancer worldwide, is still challenging to treat, particularly those involving chemoresistance. Circular RNAs (circRNA) were once thought to be a splicing error and were disregarded until recently, where it was discovered that circRNAs do have cellular regulatory roles. It was also discovered that circRNAs are enriched as circulating entities especially in extracellular vesicles (EV). We aimed at identifying differentially expressed EV-derived circRNAs between FOLFOX-resistant HCT116 cells and its parental cells. **Method:** The resistant cell line was obtained by culturing the cells in sub-lethal doses of oxaliplatin and 5-fluorouracil for several cycles and maintaining it in lower doses of the drugs. The resistance was determined by the value of the IC50 and drug resistance index. We further isolated EVs from the cell culture medium via ultracentrifugation. Then, we characterized the physical properties of the isolated EVs by Zetasizer analysis, transmission electron microscopy and western blot. We then extracted the total RNA from the EVs and subjected it to global microarray profiling of circRNAs. **Results**: The EVs isolated were between 30-200 nm in range, and were TSG101 positive. Based on our results, there were 105 upregulated and 34 downregulated differentially expressed circRNAs between EVs derived from HCT116 resistant and parental cell lines. We further validated 4 circRNAs in EVs isolated from serum of 20 CRC patients (n=10; responders and n=10; non-responders) that underwent FOLFOX chemotherapy. From there, circ_FCSHD2 seemed promising and was further functionally validated *in vitro*. Upon transfection with siRNA targeting circ_FCSHD2, the resistance towards 5-fluorouracil and oxaliplatin were sensitized. We further discovered that circ_FCSHD2 was able to be transferred via EVs from resistant to parental cells. Moreover, oncogenic proteins were also dysregulated among knockdown of circ_FCSHD2 such as HMOX-1 and Urokinase 5. **Conclusion:** Collectively, our data suggest that EV-derived hsa_circ_0000338 may become a potential target for targeting FOLFOX resistance in CRC patients.

Keywords: *exosome, circular RNA, chemoresistant, colorectal cancer, FOLFOX*
Acknowledgement*: DIP-2016-013*

OID-6

Expression and function of podoplanin in *Helicobacter pylori*-infected macrophages

Cheok, Y.Y.[1], Tan, G.M.Y.[2], Vadivelu, J.[1], Looi, C.Y.[3], Wong, W.F.[1,*]
[1]*Department of Medical Microbiology, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia*
[2]*Department of Microbiology and Immunology, University of Otago, Cumberland Street, 9054 Dunedin, New Zealand.*
[3]*School of Biosciences, Taylor's University, Lakeside Campus, 1 Jalan Taylor's. Subang Jaya, 47500 Selangor.*
**Corresponding author: wonfen@um.edu.my*

Podoplanin (Pdpn) is a 36- to 43-kDa small transmembrane glycoprotein that has been related to metastasis and invasiveness of cancer cells. This protein has also been described to be highly expressed in macrophages following lipopolysaccharide (LPS) stimulation. However, its role in the macrophage and immune response remains largely ambiguous. In this study, we wish to investigate the expression and function of Pdpn in macrophages upon *Helicobacter pylori* infection. *H. pylori* is a Gram-negative carcinogenic bacteria that causes gastric cancer by colonizing and damaging the human gastric epithelium. Previous microarray analysis has shown Pdpn to be highly expressed following *H. pylori* infection. Hence, to examine the expression pattern of Pdpn, RT-PCR was conducted using the RNA extracted from the *H. pylori*-infected human THP-1 or mouse RAW264.7 monocytic macrophage cells. Besides, we performed Pdpn deletion in the RAW264.7 cells using CRISPR-Cas9 approach to investigate the function of the gene through migration and phagocytosis assay. The results showed significant upregulation of Pdpn in the macrophages following stimulation by *H. pylori* J99 and SS1 strains. Pdpn-deleted cells demonstrated significant differences in their ability to migrate and heal wounds. Pdpn-deleted cells are also less capable to perform phagocytosis. However, there are no significant differences in the expression of inflammatory cytokines (TNF-α, IL-1β and IL-6) following LPS stimulation, suggesting Pdpn may not be directly involved in the inflammatory pathway. Protein remodeling analysis was also performed using online Phyre 2.0 software to identify possible molecules that interacts with Pdpn. This study provides an insight into the immune function of Pdpn as a receptor/ligand on the macrophage following *H. pylori* infection.

Keywords: *Podoplanin, macrophage, Helicobacter pylori*

OC-7

Quantitative and Qualitative Assessment of 3D-Printed Heart Models in Assisting Clinical Evaluations

Yeong, C.H.[1,*], Lau, I.[2], Wong, Y.H.[1], Sun, Z[2].
[1]*School of Medicine, Taylor's University, Lakeside Campus, 1 Jalan Taylor's. Subang Jaya, 47500 Selangor.*
[2]*Discipline of Medical Radiation Sciences, School of Molecular and Life Sciences, Curtin University, Perth, Western Australia*
**Corresponding author: chaihong.yeong@taylors.edu.my*

Introduction & Objective: Congenital heart disease (CHD) is a type of birth defect that involves structural anomalies in the heart and major blood vessels. Current visualization techniques lack the ability to provide a comprehensive viewing of the cardiac anatomy as the images can only be viewed from a flat, two-dimensional (2D) screen. Three-dimensional (3D) printing has therefore been used to replicate patient-specific hearts in 3D views based on medical imaging datasets. This technique has been shown to have a positive impact on the preoperative planning of corrective surgery, patient-doctor communication, and the learning experience of medical students. This study aims to evaluate the accuracy and effectiveness of a 3D printed CHD model in assisting the pre-operation treatment planning. **Methods:** Two cases of de-identified cardiac computed tomography angiogram (CCTA) with CHD were retrospectively obtained from two public hospitals. The images were imported for segmentation using commercially available software, Materialise. The STL files were then sent to a 3D printer (Ultimaker2 Extended+) for printing. The modes were then scanned under a CT scanner mimicking a real clinical scenario. Quantitative and qualitative analysis were performed to assess the dimensional accuracy of the cardiac anatomy and pathology by comparison between the 3D-printed models and the original CCTA images. **Results:** Excellent correlation (r = 0.99) was found for the measurement of major blood vessels and cardiac chambers between the 3D-printed models and CCTA images. Qualitative evaluation that was performed by a cardiologist, a cardiac surgeon and a radiologist showed an average satisfaction score of 8.7/10.0 and all the evaluators mentioned that they would recommend the use of 3D printing to their colleagues. **Conclusion:** The 3D printed CHD models showed excellent anatomical correlations with the patients' CT images. The models provided satisfactory results for qualitative evaluations by the cardiologist, cardiac surgeon and radiologist.

Keywords: *3D printing, congenital heart disease, Materialise, Ultimaker, computed tomography*

OID-7

Awareness and Knowledge of Chikungunya Infection in Pakistan; A Nationwide Survey among Health Care Students and Professional Following Its Outbreak

Tauqeer Hussain Mallhi[1], Yusra Habib Khan[2], Raja Ahsan Aftab[3]*, Amama Aftab[4]
[1]*Department of Pharmacy Practice, Faculty of Pharmaceutical Sciences, Government College University Faisalabad, Faisalabad, Pakistan*
[2]*Institute of Pharmacy, Lahore College for Women University, Lahore, Pakistan*
[3]*School of Pharmacy, Taylors University, 47500, Selangor, Malaysia*
[4] *International Islamic Medical college, Rawalpindi, Pakistan*
**Corresponding author: Raja Ahsan Aftab (rajaahsan.aftab@taylors.edu.my)*

Background: There is no documented evidence that revels the awareness and knowledge among healthcare students and workers (HCSW) despite the Chikungunya (CHIK) outbreak in Pakistan. Poor disease knowledge may result in significant delay in diagnosis and treatment. **Aims and Objective:** The current study was aimed to evaluate the awareness and knowledge of CHIK among HCSW. **Methods:** A cross-sectional study was conducted among HCSW from teaching institutes and hospitals in seven provinces of Pakistan. We collected information on socio-demographic characteristics of the participants and their knowledge by using a 30-item questionnaire. The cumulative knowledge score (CKS) was calculated by correct answers with maximum score of 22. The relationship between demographics and knowledge score was evaluated by using appropriate statistical methods. **Results:** There were 563 respondents; mean age 25.2 ± 5.9 years with female preponderance (62.5%). Of these, 319 (56.7%) were aware of CHIK infection before administering the survey. Gender had no impact on disease awareness in the present study whereas health students were significantly (p = 0.002) associated with unawareness of disease. The average knowledge score was 12.8 ± 4.1 (% knowledge score: 58.2%). Only 31% respondents had good disease knowledge while others had fair (36.4%) and poor (32.6%) knowledge. Out of five knowledge domains, domain III (vector, disease spread and transmission) and V (prevention and treatment) scored lowest among all i.e. percent score 44.5% and 54.1%, respectively. None of the respondent socio-demographic characteristics had no influence on knowledge score. **Conclusion:** Approximately one-half of participants were not aware of CHIK infection and those who were aware had insufficient disease knowledge. Findings of the current study underscore the dire need of educational interventions not only for health care workers but also for students.

LIST OF ABSTRACTS FOR POSTER PRESENTATIONS
PC-1

Psychometric evaluation of a Persian version of the Death Depression Scale-Revised among patients with advanced cancer

Sharif Nia H[1], Pahlevan Sharif S[2], Lehto RH[3], Boyle C[4], Yaghoobzadeh A[5], Mobin Mohammadinezhad [6], Goudarzian AH[7].
[1] *Department of Medical-Surgical Nursing, School of Nursing and Midwifery Amol, Mazandaran University of Medical Sciences, Sari, Iran*
[2] *Department of Taylor's Business School, Taylor's University Malaysia, Subang Jaya, Malaysia*
[3] *Department of Nursing, Michigan State University College of Nursing, Michigan, USA*
[4] *Graduate School of Education. University of Exeter, UK*
[5] *Master in Geriatric Nursing, Tehran University of Medical Sciences, Tehran*
[6] *MSc of nursing , Student Research Committee , Iran university of medical sciences, Tehran , Iran*
[7] *BSc of Nursing, Student Research Committee, Mazandaran University of Medical Sciences, Sari, Iran*

Objective: The surfacing of thoughts and depressive affect associated with the prospect of death are prevalent among patients with advanced cancer. Because death cognitions and associated negative affect occur along an adaptive-less adaptive continuum, it is essential that valid and reliable instruments are available to measure death depression. The present study aimed to determine the psychometric properties of the Death Depression Scale among Iranian patients with advanced cancer. **Methods:** About 497 cancer patients completed a Persian version of the 21-item Death Depression Scale-Revised. The face, content and construct validity of the scale were ascertained. Reliability was also assessed using internal consistency, construct reliability and intra-class correlation coefficient (ICC). **Results:** Construct validity determined one factor with an eigenvalue greater than 1. The model had a good fit (χ^2 (179, N = 248) = 520.345, P < 0.001; χ^2/df = 2.907, CFI = 0.916, TLI = 0.902, IFI = 0.917, SRMR = 0.049 and RMSEA = 0.088 (90% confidence interval = 0.079-0.097)) with all factors loadings greater than 0.5 and statistically significant. The internal consistency, construct reliability and ICC were greater than 0.70. Convergent validity of the scale was demonstrated. **Conclusions:** Findings revealed that the Persian version of the Death Depression Scale-Revised is valid and reliable, and may be used to assess and evaluate death depression in Iranian patients with advanced cancer.

PC-2

The moderating effect of disease stage on the relationship between religious coping and death depression in cancer patients

Pahlevan Sharif S[1], Lehto RH[2], Nia HS[3], Goudarzian AH[4], Yaghoobzadeh A[5], Nazari R[6], Mobin Mohammadinezhad[7]
[1]*Taylor's Business School, Taylor's University Malaysia, Subang Jaya, Malaysia*
[2]*College of Nursing, Michigan State University, East Lansing, MI, USA*
[3]*School of Nursing and Midwifery Amol, Mazandaran University of Medical Sciences, Sari, Iran*
[4]*Student Research Committee, Mazandaran University of Medical Sciences, Sari, Iran*
[5]*Modeling in Health Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran*
[6] *School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran*
[7]*MSc of nursing , Student Research Committee , Iran university of medical sciences, Tehran , Iran*

Purpose: The study investigated relationships among the extent of disease, religious coping, and death depression in Iranian patients with cancer. **Method:** A descriptive cross-sectional study was conducted with a convenience sample of 482 Iranian cancer patients. Participants completed demographic and health, death depression, and religious coping surveys. **Results:** After controlling for demographic and health characteristics, positive and negative religious coping behaviors were significantly related to the experience of death depression. There was an interaction effect between negative religious coping and extent of disease with significant positive relationships to the experience of death depression. **Conclusions:** Negative religious coping was found to be more closely associated with death depression in patients with earlier stage disease than those with advanced stages of cancer in this sample of patients with cancer from Iran. Findings support assessing patients for use of religious coping strategies. Muslim patients who are religiously alienated and have existential anguish may be vulnerable and need heightened support following diagnosis and during treatment of early stage cancer.

Keywords: *Cancer; Culture; Death depression; Muslim; Religious coping*

PC-15

Effect of Different 3D Printing Parameters on Radiological Properties of 3D Printed Models

Wong, Y.H.[1], Mohd Fabell, M.K.[2], B.J.J.[1,2] and Yeong C.H.[1*]
[1] *School of Medicine, Faculty of Health and Medical Sciences, Taylor's University, 47500, Subang Jaya, Selangor, Malaysia.*
[2] *Department of Biomedical Imaging, University of Malaya Medical Centre, 59100 Kuala Lumpur, Malaysia.*
**Corresponding author: chaihong.yeong@taylors.edu.my*

Purpose: Three-dimensional (3D) printing has been strongly utilized in medical and clinical applications to fabricate medical phantoms for both imaging and dosimetric studies. Radiological properties of the phantoms have to be corresponded to real tissues in order to simulate human organs. This study evaluated the effect of different printing parameters on the radiological properties of the model printed using commercially available materials. **Methods:** A 2-cm radius phantom was designed and printed with different infill percentages (20–100%) and infill patterns (grid, triangles, cubic, concentric, cross etc.) using hard (polylactic acid, acrylonitrile butadiene styrene) and flexible (thermoplastic urethane) materials. For the radiological evaluation of the phantoms, a 128 slices multi-detector CT scanner (SOMATOM Definition, Siemens AG- Healthcare, Germany) was used to scan the phantoms at the voltage of 100, 120 and 140 kVp. **Results:** The CT number of the phantoms of different materials varied with different infill percentages and patterns. Variations of infill pattern and percentage directly influence the attenuation properties of the models, thus altering the CT number. With the combination of different printing materials and printing parameters, it is possible to simulate the radiological properties of different tissues such as bone, soft tissue, fat etc. **Conclusions:** 3D printed model using different printing parameters can simulate a variety of body tissues, which can be used to create phantoms for different tissues. The data presented could be used as reference to produce different tissue mimicking phantoms using 3D printing technology.

Keywords: *3D Printing, Radiological Properties, Medical Phantom*

PID-4

The awareness on antimicrobial stewardship and its importance among healthcare professionals in a tertiary hospital Malaysia

Yow, H.Y.[1,*], Loke, R.Z.[1], Lau, C.L.[2]
[1]*School of Pharmacy, Taylor's University, Lakeside Campus, 1 Jalan Taylor's. Subang Jaya, 47500 Selangor.*
[2]*Department of Pharmacy, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latiff, Bandar Tun Razak, Cheras, 56000 Kuala Lumpur.*
**Corresponding author: huiyin.yow@taylors.edu.my*

Antimicrobial stewardship (AMS) has been initiated as a direct response to the rise in antimicrobial resistance (AMR). Assessing the awareness, perception and knowledge of the importance of AMS among healthcare professionals is needed to guide the necessary steps required to educate them. This research study primarily aimed to assess the level of awareness on AMS and its importance among doctors and nurses across various disciplines in Universiti Kebangsaan Malaysia Medical (UKMMC). This cross-sectional study was conducted in various locations within UKMMC by convenient sampling. A total of 253 subjects have responded to the self-administered questionnaire. The subjects comprised of 74 doctors and 179 nurses. 94.6% of doctors were aware of AMS whereas only 28.5% of nurses were familiar with the term "AMS". A significant difference in AMS awareness was noted between doctors and nurses ($p < 0.001$). Awareness on AMS among healthcare professionals was significantly different across various disciplines in PPUKM ($p = 0.031$). Similarly, 97.3% of doctors were aware of the importance of AMS whereas only 70.4% of nurses were aware of its importance. The awareness among doctors on the importance of AMS was significantly higher than that of the nurses ($p < 0.001$). However, there was no significant difference for awareness on the importance of AMS among healthcare professionals across various disciplines in PPUKM. The awareness of AMS and its importance among doctors in PPUKM has been well established. In contrast, the awareness of AMS and its importance is still low among the nurses, thereby prompting the need for AMS trainings and education for this group of healthcare professionals.

Keywords: antimicrobial resistant, antimicrobial stewardship, antimicrobial prescribing form, awareness

PID-5

Helicobacter pylori-infected macrophages and cloning of C-type lectin receptors (CLRs) into a lentiviral vector system

Lee, C. Y. Q.[1], Cheok, Y. Y.[1], Tan, G. M. Y.[2], Looi, C. Y.[3], Wong, W. F.[1]*
1Department of Medical Microbiology, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia.
2Department of Microbiology and Immunology, University of Otago, Cumberland Street, 9054 Dunedin, New Zealand.
3School of Biosciences, Taylor's University, Lakeside Campus, 1 Jalan Taylor's. Subang Jaya, 47500 Selangor, Malaysia.
**Corresponding email: wonfen@um.edu.my*

Helicobacter pylori is a Gram-negative bacterium recognized as the most common cause of gastric cancers. Once infected, the host is often unable to completely eradicate the infection, which leads to long-term persistence, indicating the ability of *H. pylori* to evade immune detection. Recent studies suggest that several pattern recognition receptors (PRRs) are involved in *H. pylori* evasion of the host immune defense. Toll-like receptors (TLRs) and C-type lectin receptors (CLRs) are two families of membrane bound PRRs that recognizes ligands on pathogen cell surface or internalized nucleic acids. Our preliminary microarray study showed that *H. pylori* infection disrupted the expression pattern of multiple PRRs in the macrophages. Thus, this study aims to investigate the changes in the expression of TLRs and CLRs in immune cells upon *H. pylori* infection. This is followed by the cloning of several CLRs into a Lentivirus vector system to further elucidate their role in *H. pylori* infection. Human monocytic macrophage cells THP-1 were infected with *H. pylori* strains J99 and SS1 for 16 hours. RNA extraction and qRT-PCR were then performed to identify the changes in expression levels of 10 TLR targets (TLRs 1 to 10) and 3 CLR targets (Mincle, Dectin-1 and Dectin-2). An upregulation in relative expression was observed in most TLRs and CLRs upon exposure to *H. pylori*. Amongst the PRRs studied, the 3 CLRs showed the most significant increase in expression levels. Subsequent cloning of the CLRs into pLVX-Puro plasmid vector produced Lentivirus constructs that were used to establish stable CLRs-expressing cells. An exogenous CLRs-overexpression system would pave the way for further investigation of their role in bacterial recognition and the strategies utilized by *H. pylori* to evade immune detection.

Keywords: *Helicobacter pylori, macrophage, pattern recognition receptors (PRRs) , Toll-like receptors (TLRs), C-type lectin receptors (CLRs).*

PID-6

Gene expression profiling reveals a role of Pgp3 protein *Chlamydia trachomatis* pathogenesis

Cheong, H.C.[1], Cheok, Y. Y.[1], Lee, C.Y.Q.[1], Chang, L. Y.[1], Wong, W. F[1,*], Arulanandam, B.[2]
[1] *Department of Medical Microbiology, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia.*
[2] *Center of Excellence in Infection Genomics, South Texas Center for Emerging Infectious Diseases, University of Texas at San Antonio, 78249 Texas, USA.*
**Corresponding author: wonfen@um.edu.my*

Chlamydia trachomatis is the causative agent for the most common bacterial sexually transmitted infection around the globe. Ascending genital tract infection by *C. trachomatis* in females is related to the development of adverse long-term reproductive sequelae which encompass pelvic inflammatory disease (PID), ectopic pregnancy, and tubal factor infertility (TFI). Most clinical isolates of *C. trachomatis* naturally bear a conserved plasmid of around 7.5 kb that carries eight open reading frames (ORF) designated *Pgp1-8* with uncertain biological significance. The plasmid *Pgp3* gene encodes for a ~28 kDa protein that is produced by *C. trachomatis* as a homotrimer (~84 kDa) late in its developmental cycle that is secreted into the cytosol of the infected cells. Pgp3 protein is highly immunogenic in humans and anti-Pgp3 antibodies are developed in a majority of patients who are seropositive to *C. trachomatis*. Furthermore, animal studies showed that *C. trachomatis* isolates transformed with shuttle vectors harboring *Pgp3* gene displayed enhanced infectivity and elicited stronger host inflammatory response in comparison with the plasmid-deficient parental isolate, suggesting Pgp3 as a virulence factor in chlamydial pathogenesis. Nonetheless, the molecular mechanisms underlying Pgp3-host interactions remain undefined. Here, we expressed and purified Pgp3 protein and performed stimulation of HeLa cervical epithelial cells. RNA was extracted from HeLa-229 cells at 24-hour post-stimulation and gene expression was analyzed. Analysis of gene expression of stimulated Hela-cells showed that Pgp3 induced prominent secretion of host inflammatory cytokines including IL-6, IL-8, TNF-α, and CXCL1, indicating a possible role of Pgp3 in augmenting the inflammatory reaction which may exacerbate the immune-mediated pathology that typically ensues after chlamydial infection. The results provide a paradigm for greater understanding and insight into the role of Pgp3 protein in the pathogenesis of *C. trachomatis*.

Keywords: *C. trachomatis, Pgp3, inflammatory cytokines*

PID-10

Prevalence of *Clostridium difficile* in hospitalized adult patients from southwest region of Saudi Arabia

Ahmad Hassn Ahmad Ghzwani[1], Khalid Ammash Mohammed Zain[1], Ahmed Abdulhaq[1], Mohammed Uthman A. Alamoudi[1], Vinod Kumar Basode[1*]
[1]*Unit of Medical Microbiology, Department of Medical Lab Technology, Faculty of Applied Medical Sciences, Jazan University, Jazan, Saudi Arabia.*
**Corresponding author: bvinodkumar2006@yahoo.com*

Clostridium difficile is a spore-forming, gram-positive, anaerobic bacillus, which is a frequent cause of antibiotic-associated diarrhoea, especially amongst hospitalized patients. This organism may cause antibiotic associated diarrhoea, occasionally leading to a life-threatening condition and pseudomembranous colitis. *C. difficile* is known as the most common hospital acquired infection in the patients in western countries, with limited number of studies from developing countries including in Saudi Arabia. Apart from this there is no study from the Jazan province, Saudi Arabia. Hence the following study was carried out. A two-step testing algorithm for detection of toxigenic *C. difficile* in stool, based on initial screening of stool samples by using certest *C. difficile* GDH+Toxin A+B (Cer Test, Spain) and confirmed by molecular analysis by using GeneXpert *C. difficile* polymerase chain reaction (PCR) assay (Cepheid, CA, USA) that detects the toxin B gene (tcdB), the binary toxin gene (cdt) and tcdC gene was carried out. There are about 7.40% of samples were positive by immunological method and 4.62% were positive by PCR technique out of 108 total samples collected. Understanding of the prevalence and molecular characterization of *Clostridium difficile* will provide appropriate therapeutic decisions and also help to control infection from *Clostridium difficile.* This study will provide a clear and comprehensive picture on the current status of *Clostridium difficile* in Jazan province.

PA-2

Can financial rewards compliment altruism to raise deceased organ donation rates? Evidence from Malaysia

Navaz Naghavi[1], Rajah Rassiah[2], Muhammad Shujaat Mubarik[3],
[1]*Taylor's Business School, Faculty of Business & Law, Taylor's University, Lakeside Campus, Selangor, Malaysia.*
[2] *Department of Development Studies, Faculty of Economics and Administration, University of Malaya, Kuala Lumpur, Malaysia.*
[3]*Faculty of Business Administration & Social Sciences, Mohammad Ali Jinnah University, Pakistan*

Organ supply-demand gap in developing countries worldwide has continued to widen. Hence, using a large survey (n=10,412) this study seeks to investigate if human psychology could be used to inculcate philanthropy to raise deceased organ donation rates. Three models were constructed to examine multidimensional relationships among the variables. Structural equation modeling was applied to estimate the direct and indirect influence of altruism, financial incentives, donation perception and socioeconomic status simultaneously on willingness to donate deceased organs. The results show that altruism amplifies the impact of Socioeconomic Status and Donation Perception on willingness to donate. Also, the results show that financial incentives cannot complement altruism to raise organ donation rates. Hence, investing in education and public awareness enhances altruism in people, which then increases the propensity to donate. The evidence suggests that governments should allocate resources to increase awareness of the public about organ donation. Awareness programs about the importance of philanthropic donations and the participation of medical consultants at hospitals in the processes forms the foundation of such a presumptive approach.

PA-3

A Model of Aging Perception in Iranian Elders

Ameneh Yaghoobzadeh[1], Ozkan Gorgulu[2], Saeed Pahlevan Sharif[3], Hamid Sharif Nia[4] , Mobin Mohammadinezhad[5]
[1]*Ameneh Yaghoobzadeh, Tehran University of Medical Sciences, Tehran, Iran*
[2]*Ozkan Gorgulu, PhD, Ahi Evran University, Kırşehir, Turkey*
[3] *Saeed Pahlevan Sharif, PhD, Taylor's University, Subang Jaya, Malaysia*
[4] *Hamid Sharif Nia, PhD, Mazandaran University of Medical Sciences, Sari, Iran*
[5] *Mobin Mohammadinezhad, MSc of Nursing Student Research Committee, Iran university of medical sciences,Tehran, Iran*

Background: Aging perception plays a central role in the experience of healthy aging by older people. Research identified that factors such as hope, life satisfaction, and socioeconomic status influence the perception of aging in older populations. **Objective:** This study sought to test a hypothetical model to quantitatively evaluate the relationship between hope, life satisfaction, and socioeconomic status with aging perception. **Design:** A cross-sectional design was used with 504 older aged participants who live in Qazvin, Iran. Data were collected using the Barker's Aging Perception Questionnaire, Life Satisfaction Index-Z, and Herth Hope Index. **Results:** The results of path analysis showed that hope was the most important factor affecting aging perception. Results drawn from correlation analysis indicated that there was a positive significant correlation (r = .383, p < .001) between hope and aging perception. Further analysis found that hope had the strongest impact on aging perception compared with the other variables analyzed (e.g., life satisfaction and socioeconomic status). **Conclusions:** A model of aging perception in Iranian elders is presented. The findings suggested that hope had a significant and positive impact on aging perception. Implications for clinical practice and research are discussed.

Keywords : *aging perception, hope, life satisfaction, socioeconomic status, elder, path analysis*

PA-5

Folic acid supplementation is associated with reduced depressive symptoms in heart failure patients

McFarland AJ[1, 2], Balmain BN[3,4], Sabapathy S[3,4], Morris N[3,4,5].
[1] *School of Pharmacy and Pharmacology, Griffith University, Queensland Australia*
[2] *Quality Use of Medicines Network, Queensland, Australia*
[3] *School of Allied Health Sciences, Griffith University, Queensland, Australia*
[4] *Menzies Health Institute Queensland, Australia*
[5] *The Prince Charles Hospital, Brisbane, Queensland, Australia*

Introduction: Congestive heart failure (HF) is a chronic and complex clinical syndrome. It has been reported that most HF patients experience a mental health condition, which is associated with reduced quality of life, and increased morbidity and mortality. Folic acid (FA) supplementation has been shown to augment mental health in many patient groups, with improvements in depressive symptoms, and other psychosocial aspects of functioning. Despite numerous observational reports, there are no studies to date which prospectively investigate the effect of FA supplementation on mental health status in HF. **Methods**: Ten patients with HF (New York Heart Association Class I–II) and 10 healthy age-matched controls (CON) were given 5 mg FA daily for 6 weeks. No patients had anaemia, or current/historical mental health conditions. All patients completed the Patient Health Questionnaire (PHQ) and had venous blood collected pre- and post-FA treatment. Blood was tested for levels of FA, 5-methyltetrahydrofolate (5-MeTHF), homocysteine (HCY), TNF-α and IL-6. Data were analysed via paired t-test using GraphPad Prism (v6.07). **Results**: Levels of FA or 5MeTHF in HF and CON were not significantly different at baseline. After 6 weeks, FA and 5-MeTHF significantly increased in both CON ($p<0.01$ and $p<0.05$ respectively) and HF (both $p<0.05$). Baseline PHQ scores were significantly higher in HF vs. CON ($p<0.05$), with differences only observed in the depression module. At 6 weeks, the PHQ score had significantly reduced in HF patients, however no significant change was observed in CON. This was consistent with a decrease in serum TNF-α ($p<0.01$) and IL-6 ($p<0.05$) in HF patients, but no change in CON. HCY levels did not significantly change. **Discussion and significance**: Despite no diagnosed mental health conditions, HF patients exhibited higher incidence of baseline depressive symptoms compared to CON. Following 6-week supplementation of FA (5 mg/day), depressive symptoms in HF patients significantly decreased which coincided with reduced systemic inflammation. Based on these preliminary findings, FA may represent a means of reducing depressive-like symptoms in HF. As FA is a well-tolerated and readily available supplement, these preliminary findings warrant further investigation in a larger scale study, including clinically depressed HF populations.

PA-11

Pyrrolidinyl and naphthalene amide derivatives as acetylcholinesterase inhibitors against Alzheimer's disease

Pang, H.Y.[1], Narendra Sharath Chandra, J.N.[2], Narendra Babu, S.N.[1,*]
[1]*School of Pharmacy, Taylor's University, Lakeside Campus, 1 Jalan Taylor's. Subang Jaya, 47500 Selangor, Malaysia.*
[2]*Bharat Institute of Technology-Pharmacy, Hyderabad, India.*
**Corresponding author: NarendraBabu.ShivanagereNagojappa@taylors.edu.my*

Alzheimer's disease is neurodegenerative disorder characterised by progressive loss of cognitive ability related to loss of cholinergic neurons and increase in cholinesterase activity that lead to low level of acetylcholine in brain. There is currently a limited choice of drugs which only provide symptomatic relief for the management of Alzheimer's disease. In this view, there is a need for the discovery of novel and safe acetylcholinesterase inhibitors for the management of Alzheimer's disease. New molecules having significant acetylcholinesterase inhibitory activity could be designed with the aid of computational drug design strategy and their physicochemical properties could be calculated computationally. Present study was aimed to design the molecules containing 4-(1-Pyrrolidinyl) benzoyl moiety and Naphthyl moiety as potential acetylcholinesterase inhibitors. Molecular docking study was performed to identify the interactions formed between proposed compounds with acetylcholinesterase enzyme. Physicochemical properties of each compound were determined using Molinspiration calculation. Five best compounds were chosen based on their appropriate physicochemical properties and ease of synthesis. Chosen compounds were synthesized using acid amine coupling method by using HATU as coupling agent. Synthesised compounds were characterized by using various physical and analytical techniques. *In-vitro* acetylcholinesterase inhibitory activity of synthesized compounds was performed by using modified Ellman's method. Among the five synthesized compounds, three compounds were found to have good acetylcholinesterase inhibition with IC_{50} value of 545.673µM, 794.654µM and 872.841µM.

Keywords: *Alzheimer's disease, Acetylcholinesterase, 4-(1-Pyrrolidinyl) benzoic acid, Naphthalene*

PO-5

Design and development of novel transdermal nanocream for the delivery of metformin

Panda BP [1*], Chan J ER [1], Krishnamoorthy R [1] , Patnaik S [2]
[1] *School of Pharmacy, Taylor's University, Lakeside Campus, No 1, Jalan Taylor's, 47500 Subang Jaya, Selangor, Malaysia.*
[2] *University College of Pharmaceutical Sciences, Kakatiya University, Warangal, Telangana, India.*
**Corresponding author: bibhuprasad.panda@taylors.edu.my*

Medicated nanocream aids in delivery of medication through skin with low therapeutic dose and improves bioavailability with less side effects and better patient compliance. The objective of this research is design, development and characterisation of Metformin HCl transdermal nanocream. Metformin HCl, a drug used in Type 2 diabetes mellitus, pre-diabetes, polycystic ovarian syndrome, and other known diabetes associated disorders. The formulated metformin transdermal nanocream were developed by varying different ratios of water and oil phase (cetostearyl alcohol and liquid paraffin) employing different homogenization speeds (10,000, 12,000 and 14,000 rpm) to optimize the emulsion with nanonization of drug particles for transdermal delivery. To optimize the nanoemulsion, all formulations were evaluated for organoleptic characteristics, pH, viscosity, spreadability, particle size, polydispersity index, zeta potential and in-vitro drug diffusion. The viscosity and spreadability were affected by the solid oil and water phase ratio of the formulation. Solid oil phase has a positive effect on viscosity and negative effect on spreadability of formulation. The pH for nanocream formulations were found in the range from 5.177 to 5.453. The nanocream M1F8 was found as an optimized formulation, composed of cetostearyl alcohol, liquid paraffin, distilled water in the ratio of 10:10:62 respectively. Optimized nanocream formulation M1F8, developed with homogenization speed of 14, 000 rpm, exhibited mean particle size 197.2 nm, PDI 0.078 and zeta potential -20.2 mV with cumulative drug release 88.95% at 8 hours. Fourier Transform Infrared Spectroscopy and Differential Scanning Calorimetry studies proved that drug and excipients used in the development and optimization of nanocream formulation are compatible. This research study emphasizes that developed and optimized Metformin HCl nanocream can be explored as an alternative dosage form over oral delivery with minimum therapeutic dose in diabetic management, which is a potential dosage form for pharmaceutical commercialization.

Keywords: *Transdermal nanocream, Diabetes mellitus, Metformin HCl, Type 2 diabetes management*