ORAL

O01 E-Counsellor: Architecture, Design, Implementation and Evaluation

Sellappan Palaniappan & Tan Jun-E
Malaysia University of Science and Technology (MUST)

This study focuses on the development of an online counselling web site that we have named the E-Counsellor. Online counselling, or also known as "e-therapy", has sparked interest of medical professionals since the late 1990s. The emerging trend of conducting counselling online had spurred research activity in that area, mostly in risks and opportunities of e-therapy and ethical concerns. A search through the Internet also revealed numerous therapists offering their services online.The aims of this study are two-fold – first, to establish an understanding of "online psychotherapeutic interventions", as phrased by Childress (1998). A literature review will be conducted to understand various aspects researched by current experts in the field. Current research on the subject of e-therapy focuses on the benefits, risks, and ethical issues and best practices. A brief review on online counselling website does not reveal any local non-profit website that offers professional counselling and self-help articles. Second, the study documents the design and construction of a working system to facilitate online counselling, i.e. the E-Counsellor. The system will function as an operational platform for counsellors and counselees to congregate and also collect demographic data of counselees that had registered within the site. The paper elaborates on system architecture, design and implementation of the website, illustrated by diagrams.The paper closes with a sample demonstration and an evaluation of the strengths and weaknesses of the E-Counsellor website.

ORAL

O02 GlutathioneS-Transferase, Alkaline Phosphatase Activity and Histological Changes during Hepatocarcinogenesis in Rats Treated with *Berberis vulgaris* Fruit Extract

[1]G Motalleb, [1, 2]F Othman, [3]P Hanachi & [4]A Rahmat

[1] Department of Biomedical Science, [2] Laboratory of Immunotherapeutic & Vaccine
[4] Department of Nutrition and Dietatics, [1,4]Faculty of Medicine and Health Sciences
[2] Institute of Bioscience, [1,2,4]Universiti Putra Malaysia,
43400 UPM Serdang, Selangor, Malaysia
[3]Reproductive Biomedicine and Stem Cell Department
Al-Zahra University, Tehran, Iran

The chemopreventive activity of *Berberis vulgaris* fruit extract has been investigated against Solt & Farber (1976) protocol of hepatocarcinogenesis in the liver of female Sprague dawley rats. Forty-four Sprague dawley (weighing 150-250 g) were divided into 2 groups, normal and cancerous. Each group was further divided into 4 groups. The first group of the normal group acted as normal control while the others were treated with differenet doses of *Berberis vulgaris* fruit extract i.e. 25, 50 and 100mg/kg/bodyweight of rats respectively considered as NC, NB_{25}, NB_{50} and NB_{100}. The first group of cancerous rats acted as cancer control while the others were treated with 25, 50 and 100 mg/kg of *Berberis vulgaris* fruit extract and considered as C, C_{25}, C_{50} and C_{100} respectively. Glutathione s-transferase, alkaline phosphatase activity and histological changes in the liver were investigated during hepatocarcinogenesis in rats. Treatment with *Berberis vulgaris* fruit extract (25, 50 and 100mg/kg/bodyweight) decreased GST and ALP activities in the liver cytosol of rats. GST and ALP activity in cancer control group was significantly higher ($p<0.05$) compared with other groups. In the portal and lobular regions, the lesion score showed a significant difference at $p<0.05$ between normal control group and DEN/AAF control group. The lesion score was significantly different ($p<0.05$) in portal region between the DEN/AAF control group and DEN/AAF control group treated with 25, 50 and 100 mg/kg/body weight of *Berberis vulgaris* fruit extract, but in lobular region, there was no significant difference ($p>0.05$) between DEN/AAF control group and DEN/AAF control group treated with 25mg/kg/body weight of *Berberis vulgaris* fruit extract.

ORAL

O03 Transfection Microchips for High Throughput Screening

[1]S-E How, [2]AM Fara, [3]BE Yingyongnarongkul & [2]M Bradley

[1]School of Science and Technology, Universiti Malaysia Sabah
Kota Kinabalu, Sabah, Malaysia
[2]School of Chemistry, University of Edinburgh, West Mains Road, Edinburgh, UK
[3]Department of Chemistry, Faculty of Science, University of Ramkhamhaeng
Bangkok, Thailand

Gene therapy aims to treat diseases by delivering DNA, mRNA, or PNA into cells in order to alter gene expression at the level of transcription or translation within a specific cell, thereby manipulating a cellular process or response. With efficient delivery, the therapeutic promise of gene therapy ranges from tackling genetic diseases and inhibiting the growth of tumours to fighting against viral infection and preventing neurodegenerative diseases. A need to evaluate multiple transfection agents against a number of cell lines as well as the efficient delivery of different type of genes has led to the exploration of a new microarray method, so-called "transfection microchips", for high throughput screening (HTS) in which miniaturisation and automation are enforced. The basis of the transfection microchip is that each spot on the microarray contains DNA-dendrimer complex and therefore a single microarray can be used as a platform for a variety of assays. A series of 15 dendrimeric gene delivery vectors synthesised via solid phase methodology was chosen for the development of the cell-based transfection microchips in transfecting HEK293T, HeLa, ND7 and B16F10 cell lines. Stabilised DNA complex was printed onto a glass slide using a microarray spotter (Genetix Q^{Mini} Array) and cells were transfected (24 h) on the surface of the spot. The transfected microchip was fixed with paraformaldehye and the results were analysed using a CCD camera-based fluorescent scanner (LaVision BioTech Bioanalyzer 4F Scanner). There was a high correlation between transfection microchips and traditional assays in transfecting HEK293T cells. The efficiency of this cell-based microarray approach for HTS of dendrimeric compounds as DNA delivery systems was demonstrated, and the multiplexing capability of this new method was exploited, allowing the screening of many libraries on a broad range of cells in a very rapid manner.

ORAL

O04 Prevalence of Metabolic Syndrome of Type 2 Diabetes Patients in Malaysia Defined by International Diabetes Federation and National Cholestrol Education Programme

[1]Riyadh Saif-Ali , [1,2]Wan Zurinah Wan Ngah, [2]Musalmah Binti Mazlan, [1] A Rahman A Jamal, [1]Roslan Harun, [2]Siti Harnida & [2]Nor Azmi Kamaruddin

[1] Institute of Molecular Medicine, [2] Faculty of Medicine
Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia

International Diabetes Federation (IDF) has proposed a new definition of metabolic syndrome that waist circumference is specific threshold for determining ethnic central obesity. The aim of this study was to estimate and compare the prevalence of metabolic syndrome among Type 2 Diabetes in Malaysia based on IDF and the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATPIII) definition. Four hundred and seventy seven men and women aged > 30 years of type 2 diabetes who received treatment at Hospital Universiti Kebangsaan Malaysia were included in this study. According to IDF definition the prevalence of the metabolic syndrome was 76.9% (67.5% in men and 83.8% among women). In the ethnic groups, the highest was in Indians (93.1%), the next Malays (75.7%) and the lowest in Chinese (69.1%). According to NCEP definition, the prevalence of the metabolic syndrome was 74.6% (65.0% in men, and 81.6% in women). In the ethnic groups, the highest was in Indians (81.6%), the next Malays (74.9%) and the lowest in Chinese (69.8%). The prevalence of metabolic syndrome in the present study is slightly higher according to IDF definition. However the prevalence of the single criterion is much higher based on IDF than NCEP criteria; waist circumference double-fold (77.8% vs 36.1%), HDL-Cholesterol is 1.5-fold (86.8% vs 58.1%), and triglyceride is 1.2-fold (44.9% vs 36.1%). The use of the IDF definition leads to a higher prevalence of the metabolic syndrome among Type 2 Diabetes than that estimated according to the NCEP definition.

ORAL

O05 A Computerised Technique to Estimate Future Risk of Developing Breast Cancer from a Single Mammogram

[1]N Jamal, [2]K-H Ng, [2]L-M Looi, [3,4]D McLean, [5]A Zulfiqar & [2]LK Tan

[1]Malaysian Institute for Nuclear Technology Research, Kajang
[2]University of Malaya, Kuala Lumpur, [3]Westmead Hospital, Sydney, Australia
[4]University of Sydney, Lidcombe, Australia
[5]Hospital University Kebangsaan Malaysia, Kuala Lumpur, Malaysia

Breast density is one of the major indicators for future risk of developing breast cancer. A senior consultant radiologist (ZA) subjectively classified 150 normal craniocaudal mammograms according to five parenchymal Tabar's patterns (30 for each pattern). All mammograms were digitised using a high-resolution film digitiser. A computerised technique was developed for the assessment of breast density from a single mammogram using MATLAB GUI application. The same radiologist analysed the mammograms using the computer technique. The correlation of results between the subjective classification and those obtained from the computerised technique was analysed. The classification performance by using the computerised technique was also analysed. The results of the computerised technique correlated well ($r^2 = 0.92$) with the subjective Tabar's patterns classification by the radiologist (correctly classifies 83% of the digitised mammograms). The technique may be used to predict future risk of developing breast cancer.

ORAL

O13 Subjective Memory Complaint Accompanies Cerebral Glucose Metabolic Changes in Apolipoprotein E-ε4 Gene Carriers

[1,2]Nat Lenzo, [1,3]Jing Wu, [1] Michael McCarthy, [1]Andrew Campbell, [3]Kristyn Bate & [2,3]RalphMartins

[1]Royal Perth Hospital, [2]Edith Cowan University (ECU)
[3]Hollywood Hospital, Australia

Genetic markers such as the apolipoprotein E-ε4 (ApoE) have been associated with an increased risk of developing Alzheimer's disease (AD). ApoE-ε4 carriers have a reduction of regional cerebral glucose metabolism in positron emission tomography (PET) measurement. Subjective memory complaint (SMC) is common in later life and it may associate with an increased risk of developing dementia. Increased presence of neurological soft-signs (NSS) has been observed in ApoE ε4 carriers and in subjects with typical or atypical AD and the predictive potential of NSS for cognitive decline is under discussion. The aim of study was to investigate the AD type pathological changes on FDG-PET imaging in 30 ApoE-ε4 carriers who have or don't have SMC, without clinical evidence of dementia, and the correlations among the severity of regional impairment of glucose metabolism, the prevalence of NSS, and the results of neuropsychological assessment. Cognition was assessed with a neuropsychological battery including the MMSE, CVLT and the CAMCOG. All participants received a physical and neurological examination focused on 13-item of soft-signs assessed by an experienced neurologist. Descriptive statistics is performed using SPSS. FDG PET was performed on a GSO PET camera. PET data was analysed and grouped findings compared to a normal FDG database utilising Neurostat. In this study of 30 ApoE-ε4 carriers (23 SMCs and 7 control non-memory complainers), we found declines of brain glucose metabolism in the regions of temporal lobes, posterior cingulate cortex, and anterior cingulate cortex. Comparisons between the groups and between the groups and a normal database reached borderline significance in certain areas such as the anterior cingulate gyrus. There were no significant differences seen MMSE scores, CAMCOG scores and numbers of NSS observed between the age, educational levels and gender matched SMC and control groups. There appears to be mild differences in regional cerebral glucose metabolism in ApoE-ε4 carriers depending on whether they have subjective memory complaint. This is despite no change seen in neuropsychological assessment. This suggests a potential further factor in SMC rather than solely ApoE-ε4.

ORAL

O07 Determination and Kinetics of Paracetamol by Oxidation Reduction Method Using Ammonium Metavanadate

[1]N Singh, [2]SS Pandey & [1]A Pandey

[1]Department of Chemistry, Dr H S Gour University, Sagar (MP)

[2]Veterinary College of Science and Animal Husbandary, Mhow (MP) India

Paracetamol (4-hydroxyacetanilide) is the acetyl derivative of P-amino phenyl and it is the most common antipyretic used nowadays. Although the oxidation of organic and inorganic substrates with V(v) has been studied such as alcohol, ketone, amino acids, carbohydrates etc., little attention has been focused on V(v) reactions with pharmaceuticals, particularly with respect to te oxidation kinetics of antipyretic. Transition metal induces the redox transformation, depending on their oxidation state; vanadium is a transition element having oxidation state from 0 to -5. It is also a powerful oxidising agent and gives a coloured solution. It is a biologically essential element. Its presence in some enzymes such as bromoperoxidase and nitrogenase increases its importance in redox chemistry. There is hardly any reference to the kinetics of oxidation of this drug with V(v) in the literature. We therefore wished to study the oxidation kinetics of this drug by V(v) to see if we could understand the mechanism of metabolic conversion of paracetamol in biological systems. It has been established that Vanadium(V) in acidic solution exists as pervanadyl ion $VO2^{2+}$. The method is described for the oxidation of Paracetamol (PAM) in pure form, and in tablet form. In this titrimetric method, an aliquot of the drug solution containing different concentrations was allowed to react with a ammonium metavanadate in sulphuric acid medium, and after the redox reaction, V(IV) produced was titrated with potassium dichromate solution using N-phenyl anthranilic acid indicator. The rate is first order in [V(v)] and fractional order in [Drug] and $[H^+]$. Activation parameters for the overall reaction have been computed. Michaelis menten type of kinetics has been proposed. The proposed method for the determination is based on the redox reaction between PAM and V(v) with a green coloured complex formation as intermediate.

ORAL

O08 Effect of Sodium Lauryl Sulphate on the Reaction of the Itraconozole with Ammonium Metavanadate

[1]Archana Shukla, [1]A Pandey & [2]Lokesh Rawat
[1]Department of Chemistry, Dr. HS Gour University, Sagar (MP), India
[2]Torrent Pharmaceuticals, Baddi (H.P.) India

A spectrophotometric method was developed for the estimation of itraconazole (ITCZ) in the pure forms tablets using ammonium metavanadate in acidic media. The method was based on the formation of wine red coloured species on treating Itraconazole (ITCZ) with ammoniummetavanadate of 385nm in the absence and presence of Sodium lauryl sulphate (SLS) at CMC, i.e. 0.0008 M. It is believed that Itraconazole oxidized by V(V) via the intermediate complex formation. The reaction was not influenced by the monomer. This showed the absence of free radicals. Itraconazole is a broad-spectrum triazole antifungal agent used to treat fungal infections. It is a white to yellowish powder and is insoluble in water at all pH[s] in the range 1-12 because of its poor water solubility. Its absolute oral bioavailability is only 53 percent. Surfactants are frequently used in the preparation of many topical formulations and their induction is normally based on the effects they have on its stability; attention is given to any effects they may have on the thermodynamic activity of a compound within a formulation, or on the permeability of the skin itself despite a wealth of information indicating that many of the more frequently used surfactants exert a considerable influence on both. The proposed method was based on the oxidation of Itraconazole with V(V) in acidic medium to form a stable wine-red chromogen absorbance maxima at 410 nm. Similar studies have been carried out in the presence of anionic surfactant, i.e., SLS. The surfactant greatly increased the rate of reaction. The CMC was determined by Broxton method a conductometric method. The rate of reaction increases with increasing (SLS). The reaction was studied at different concentrations of anionic surfactant, i.e. sodium lauryl sulphate. The plot of an observed rate constant (k_ψ) versus [Surfactant] shows that the reaction increases up to maximum and then decreases with different concentrations of SLS. At a constant [V(V)], the reaction rate increases steadily with an increase in [substrate]. Michale-Menten types of kinetics are observed. A plot of 1/ (Itcz) against $1/k_0$ was linear and does not pass through origin. A positive intercept shows that 1:1 complex was formed prior to the rate limiting step between V(V) and [Itcz]. Plot of lg k_0 and lg k_m versus log[subs] was linear with unit slope, confirming that the reaction shows first order dependence on substrate. The increase in $[H^+]$ accelerated the reaction rate and showed a direct first order dependence on $[H^+]$ with a straight line having a unit slope. There was considerable rate enhancement with increasing concentrations of SLS. A plot of k_ψ versus catalyst concentration had a sigmoid shape.

ORAL

O11 A Prospective Study of the Influence of Anionic Surfactant on Alcohol Oxidation

V Yadav & A Pandey

Department of Chemistry, Dr. Hari Singh Gour Vishwavidyalaya, Sagar (MP) India

The study of surfactants and their role in pharmacy is of paramount importance, especially with respect to their ability to solubilise hydro drugs. The use of micelles in pharmacy is a tool that found numerous applications. Exosurf Neonatal (Colfosceril palmitate) was recently approved for the prevention and treatment of neonatal respiratory distress syndrome (RDA). RDA results from a lack of natural lung surfactant, colfosceril palmitate (dipalmitoyl phosphatidylcholine, DPPC), which additionally contains two hydroxyl group, helps normalise surface tension at the air-lung interface, improves the respiratory function and significantly increases neonatal survival. The present system under investigation is alcohol-vanadium-SLS. The reaction rate was determined under pseudo-first order rate conditions, with each alcohol and sulphuric acid in excess over vanadium(V), by monitoring the appearance of vanadium(IV) at 740 nm. The bath water was circulated and maintained at the required temperature (±0.1K). The oxidation progress was followed in a 1 cm thermostated quartz cell for up to four half-lives. The first-order rate constant, k_0 (and k_m) were determined from the slopes of the linear plots of ln [V(V)] against time, and were reproducible within ±5%. The reaction follow first order kinetics with respect to disappearance of V(V) in aqueous and micellar media. The data shows that rate of reaction are linearly increased by increasing the substrate concentration clearly indicating that order of reaction is one. The plots of $1/k_o$, $1/k_m$ Versus 1/[substrate] found to be linear intercept on y-axis indicates that reaction pathway involves formation of complex. The increase in $[H^+]$ accelerates the rate of reaction. The plots of k_o and k_m versus $[H^+]$ gave a straight line with a unit slope showing a direct first order dependence on $[H^+]$. The psuedo first order rate constant increases with the increase in the percentage of acetic acid in aqueous and micellar media. The Hammett's and Bunnett's plot indicates the participation of H_2O molecule in the rate determining step. The reaction rate increased considerably on increasing the temperature in the range of 5°C. The data satisfy the Arrhenius law. A mechanism is discussed in terms of psuedophase ion exchange model suggested by Piszkiewicz. A plot of $\log[k_y - k_o/k_m - k_y]$ Versus [SLS] is linear having a slope equal to the empirical co-operativity justifying the model. Stoichiometric studies revealed that one mole of each substrate consumed one mole of V(V). The rate law for alcohol oxidation in aqueous as well as in micellar media could be written as follows:

$$\frac{-d[V(V)]}{dt} = k_0[VO_2^+][Sub][H^+]$$

$$\frac{-d[V(V)]}{dt} = k_m[VO_2^+][Sub][H^+]$$

[where k_o=pseudo first order rate constant in aqueous, k_m=pseudo first order rate constant in micellar media]. The rate of chemical reaction was accelerated by the presence of anionic surfactant, due to the nucleophilic effect of anionic surfactant and possibility of ion pair between vanadium specie and anionic surfactant at lower polarity condition. Oxidation of alcohol by vanadium(V) is first order involving free radical mechanism, in the aqueous and Micellar media.