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Scientific Tracks & Abstracts
Day 1
**Track 1 & 2**

**Day 1 August 25, 2014**

**1: Evaluation and Identification of Phytoconstituents**  
**2: Analytical Techniques in Phytochemistry**

<table>
<thead>
<tr>
<th>Session Chair</th>
<th>Session Co-Chair</th>
<th>Session Co-Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yoshinori Asakawa</td>
<td>Ehab A Abourashed</td>
<td>Yong Jiang</td>
</tr>
<tr>
<td>Tokushima Bunri University, Japan</td>
<td>Chicago State University, USA</td>
<td>Peking University, China</td>
</tr>
</tbody>
</table>

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**Session Introduction**

**Title:** Phytochemical analysis and preliminary pharmacological evaluation of horse apple as a sustainable source for bioactive isoflavones  
Ehab A Abourashed, Chicago State University, USA

**Title:** Phytochemical and biological investigation of Verbena tenara spring cultivated in Egypt  
Taghreed A Ibrahim, King Saud University, Saudi Arabia

**Title:** Bioactivity-guided fractionation of the stem barks extract of Pterocarpus dalbergioded Roxb. Ex Dc growing in Egypt  
Camilia George Michel, Cairo University, Egypt

**Title:** Exploration of Morus plant as a source of bioactive chemicals  
Euis Holisotan Hakim, Bandung Institute of Technology, Indonesia

**Title:** Targeted analysis of biomarkers for the screening of botanicals in herbal food supplements by LC-MS/MS  
Christen Philippe, University of Geneva, Switzerland

**Title:** Enhancement of gefitinib-induced growth inhibition by Marsdenia tenacissima extract in non-small cell lung cancer cells expressing wild or mutant EGFR  
Shuyan Han, Peking University Cancer Hospital & Institute, China

**Title:** Isolation and simultaneous determination of five bioactive compounds in Mushroom Inonotus obliquus  
Haixia Chen, Tianjin University, China

**Title:** Determination of thirteen nucleosides and nucleobases in the natural fruiting body of Ophiocordyceps sinensis and its substitutes  
Wenming Cheng, Anhui Medical University, China

**Title:** The use of linear ion trap for rapid one-run ginsenoside profiling in roots and ginseng based products  
Igor Rodin, Lomonosov Moscow State University, Russia

**Title:** The processing mechanism of traditional Chinese medicine radix polygoni multiflori based on pharmacokinetics study in vivo  
Yan-xu Chang, Tianjin University of Traditional Chinese Medicine, China

**Title:** Studies on the quality analysis of traditional Chinese medicines based on qHNMR technology  
Yong Jiang, Peking University, China

**Title:** Tualang honey: An emerging natural remedy in regenerative medicine  
Jun Jie Tan, Universiti Sains Malaysia, Malaysia

**Title:** Polyphenolic compounds from selected Malaysian ferns and their potential medicinal properties  
Choon Sheen Lai, Universiti Sains Malaysia, Malaysia

**Title:** Pharmacognostical and preliminary phytochemical studies on stem and leaves of Alysicarpus monilifer  
Mehalingam P, V H N Senthikumara Nadar College, India

**Title:** Media optimization in immobilized culture to enhance the content of curcumin in Curcuma longa (Zingiberaceae) and protein profile of treated samples in static culture  
Pratibha Chaturvedi, Haffkine Institute for Training, Testing and Research, India
Phytochemical analysis and preliminary pharmacological evaluation of horse apple as a sustainable source for bioactive isoflavones

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The fruit of *Maclura pomifera* tree (Raf.) Schneid. (family Moraceae), commonly known as horse apple, has traditionally been used as an insect repellant and its extract is a strong antioxidant. The major constituents of horse apple are the prenylated isoflavones pomiferin and osajin which are responsible for its antioxidant activity as well as other activities, such as cardioprotective and antitumor effects. The tree grows in Southern United States and the Midwest and produces its fruits in abundance during late summer and fall making it a rich and sustainable source for medicinally useful natural products. The first goal of this project was to identify horse apple sources and the best sample preparation procedures leading to extracts with high isoflavone content. The second goal was to investigate the activity of horse apple in new targets for certain disease conditions. To achieve the first goal, a reversed-phase HPLC method was developed, validated and applied to determine the effect of geographical location, degree of development and sample preparation on the levels of pomiferin and osajin in horse apple. For the second goal, the total methanolic extract was evaluated in two panels of *in vitro* assays for anti-inflammatory activity (inhibition of iNOS and NF-kB/induction of NAG), and inhibition of tau protein fibrillation. Phytochemical analysis indicated that the isoflavone content in horse apple may exceed 5% of dry weight and that the degree of maturity of the fruit has a significant effect on its isoflavone content. Some promising results were also obtained from the preliminary *in vitro* evaluation of the total extract.

Biography

Ehab A Abourashed graduated with a Bachelor of pharmaceutical sciences at Cairo University, Egypt. He obtained his Masters and PhD degrees from the Universities of Tennessee and Mississippi, respectively. He worked as senior scientist at GlaxoSmithKline and director of quality assurance at ElSohly Labs, USA. He was a faculty member at King Saud University prior to joining the College of Pharmacy at Chicago State University. He has more than 80 publications and presentations on natural products isolation, structure determination and microbial transformation as well as phytochemical, biochemical and environmental analysis. He is a member of many professional and honor societies.

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Phytochemical and biological investigation of *Verbena tenara* spring cultivated in Egypt

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Essential oil (EO), petroleum ether extract (PEE) and methanol extract (ME) were prepared from *Verbena tenara* Spring flowering herb. Their chemical composition, antioxidant, anti-inflammatory and antimicrobial activities were evaluated. EO was prepared by hydrodistillation method and analyzed by GC and GC/MS, which revealed the presence of ten compounds representing 82.54% of total EO composition. The major constituents were citronellyl acetate (33.2%), menthol (15.64%) and eugenol (13%). Lipoidal matter of PEE was studied by GC and GC/MS, which revealed the presence of eighteen compounds, the main constituents of saponifiable matter were erucic acid (16.85%), palmitic acid (13.6%) and arachidic acid (12.85%). While stigmasterol (25.03%), phytol (4.31%) and β-sitosterol (3.2%) were the main components of unsaponifiable matter. Quantitative study of ME by colourimetric methods revealed that the percentage of phenolics, phenylethanoids and irridoids were 46 ± 0.6, 165 ± 1.87 and 32.77 ± 1.00 µg%, respectively. EO, PEE and ME showed significant antimicrobial activity against the tested microorganisms. Additionally, EO exhibited antioxidant activity, PEE showed anti-inflammatory effect while ME showed significant antioxidant and anti-inflammatory effects.

**Biography**

Taghreed A Ibrahim received her MSc and PhD degree in Pharmacognosy from Cairo University, Egypt. She teaches Pharmacognosy and Phytochemistry courses for Bachelor, PharmD and Postgraduate students in College of Pharmacy, King Saud University, Riyadh, KSA. Her research interests have been in the broad area of traditional herbal medicine, phytochemistry and natural products. She is also the director of Quality Unit, College of Pharmacy, King Saud University. She has published more than 25 papers in reputed journals. She is a member and reviewer of several societies and journals and has been serving as an editorial board member of repute journals.

Bioactivity-guided fractionation of the stem bark extract of *Pterocarpus dalbergiodes* Roxb. Ex De growing in Egypt

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*Pterocarpus* is a genus including about 60-70 species belonging to family Leguminosae. The powdered stem bark of *Pterocarpus dalbergiodes* Roxb. ex Dc was extracted with 70% ethanol to yield 1000 g dried residue (6.7% yield). The dried residue (975 g) were fractionated, with petroleum ether (60-80°C), chloroform, ethyl acetate and n-butanol saturated with water, respectively. Induction of diabetes in rats followed the method described by Eliasson and Samet. Acute anti-inflammatory activity was evaluated using Carrageenan-induced rat paw edema. Based on antihyperglycemic, anti-inflammatory screening of both ethyl acetate and butanol fractions, the butanol fraction (85 g) was chosen to be subjected to fractionation by VLC column chromatography. The median lethal dose of 70% ethanol stem bark extract was 6.9 gm/kg b.wt. suggesting its safety. The extract showed a potent antihyperglycemic activity on blood glucose levels in alloxan-induced diabetic rats at a dose of 200 mg/kg b.wt (potencies 0.70 and 0.72 for acute and chronic effect, respectively) compared to metformin at a dose of 150 mg/kg b.wt. The anti-inflammatory activity of the extract showed pronounced activity as it significantly reduced the edema after 4 hrs of administration (potency 0.74) compared to indomethacin at a dose level of 20 mg/kg b.wt. A bioactivity-guided fractionation of the butanol fraction led to isolation of compound P₁ (Gentisic acid), P₂ (Gallic acid) and F (Genistin). The potent antihyperglycemic and anti-inflammatory activities of butanol fraction and their bioactive subfractions could be attributed to high phenolic content.

Biography

Camilia George Michel has completed her PhD at the age of 32 years from Cairo University benefiting from a Channel System mission with the Institute of Pharmaceutical Biology, Bonn, Germany and postdoctoral studies from Cairo University, Faculty of Pharmacy. She is External Evaluator at the National Authority for Quality Assurance and Accreditation for Education (NAQAAE), the only organization responsible for accrediting Educational Institution in Egypt. She has published more than 20 papers in reputed journals and serving as an editorial board member of repute.

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Exploration of Morus plant as a source of bioactive chemicals
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In the search for bioactive compounds from Indonesian tropical plants, a phytochemical investigation of several species of moraceous plants has been undertaken in author's laboratory. Morus is one of the most important genera belongs to Moraceae family, this genus consist of 15 species where the leaf of this plant are very popular for feeding of silk worm. Most of these species are used as traditional medicine in many places and well known as “sohakuhi” in Japan and “sangbaipi” in China. Phenolic compounds isolated from Morus, mainly stilbenoid and arylenzofuran derivatives in addition to flavonoid and Diels-Alder type adducts, some of which have exhibited interesting biological activity including anti-tumor. Development of root culture of M. macroura yielded mostly Diels-Alder type adduct compounds, while shoots culture of this species produce a prenylated chalcones which identified as dienophile found in Diels-Alder type adduct of Morus. The root culture of M. cathayana afforded O-methylated Diels-Alder adduct compounds which were secreted to the media. Further elicitation of root culture of M. macroura by abiotic and biotic elicitor increased the production of secondary metabolite significantly. Further investigation of enzyme which responsible on Diels-alder adducts production of Morus plant showed a promising data for combinatorial biosynthesis study. And recently it is being tried to develop endophyte microbe of Morus, some strains of fungi content potential secondary metabolites.

Biography
Euis Holisotan Hakim received a Bachelor's degree in Chemistry from Institut Teknologi Bandung (1980) and she joined the research group of Professor Sjamsul Arifin Achmad at ITB. She received Master's degree (1989) and a PhD (1994) from the same University. She got a research Fellow at the University of Tokyo (1988), DSIR, New Zealand (1991), University of Western Australia (1992), and post-doctoral research with Prof. Shigeo Iwasaki, the University of Tokyo (1996) and with Prof. Takeya at Tokyo University of Pharmacy & Life Science (2000). She was promoted to associate professor in 2000 and as full professor in 2004. Her research interests include bioactive natural product compounds for anti-tumor and anti-malaria and development of plant tissue culture for secondary metabolite production and combinatorial biosynthesis.

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Targeted analysis of biomarkers for the screening of botanicals in herbal food supplements by LC-MS/MS

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Botanicals and botanical preparations intended for human consumption as food supplements and related products are widely marketed with various health claims. Such herbal preparations are easily available to consumers through several distribution channels: OTC in pharmacies, in supermarkets, herbalist's shops or via the Internet. There are some general concerns with respect to botanicals and botanical preparations mainly relating to quality and safety issues. In this context, problems related to undeclared, unauthorized or toxic botanicals in food supplements is of growing importance worldwide, because these preparations have generally not been through a rigorous drug testing process. Furthermore, there is a need to conduct anti-fraud analyses by confirming the presence of the declared botanicals. Chemical methods already exist for the detection of plants but they are usually specific for a few plants only. In this study, a generic procedure was developed for the multi-targeted screening of biomarkers in selected botanicals. The analytical approach combined high performance liquid chromatography with hybrid mass spectrometry (Q-Trap) operating in the information dependent acquisition mode which generated MS/MS spectra that can be compared with an in-house library. Each plant was characterized with at least one biomarker, which in turn was identified with its retention time, two specific transitions and their corresponding ratio as well as three enhanced product ion scans. This method enabled identification of 115 biomarkers intended to characterize 90 selected plants.

Biography

Philippe Christen has completed his PhD at the University of Geneva and his postdoctoral studies at London University School of Pharmacy. He is senior scientist at the University of Geneva. His area of interest includes Natural product chemistry, Development of analytical methods for herbal food supplements, Natural products with antiparasitic activity. He is the author of more than 120 papers in reputed journals and serving as an editorial board member of Phytochemical Analysis.

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Enhancement of gefitinib-induced growth inhibition by *Marsdeniatenacissima* extract in non-small cell lung cancer cells expressing wild or mutant EGFR

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Geftinib has demonstrated clinical efficacy in NSCLC patients harboring EGFR mutations or refractory to chemotherapy. However, most of NSCLC patients are with wild type EGFR, and had limited response to gefitinib. The previous study showed *Marsdeniatenacissima* extract (MTE) restored gefitinib efficacy in the resistant NSCLC cells, but whether MTE acts in the sensitive NSCLC cells is the same as it in the resistant one is unknown. Three different sequential combinations of MTE and gefitinib on cell growth were evaluated using IC50 and Combination Index approaches. The flow cytometric method was used to detect cell apoptosis and cell cycle profile. The impact of MTE combined with gefitinib on cell molecular network response was studied by Western blotting. Unlike in the resistant NSCLC cells, results revealed that three different schedules of MTE combined with gefitinib synergistically or additively enhanced the growth inhibition of gefitinib. Among which, MTE → MTE + gefitinib treatment was the most effective one. The Western blotting results showed that MTE → MTE + gefitinib treatment further enhanced suppression of ERK1/2 and PI3K/Akt/mTOR pathway. This combination also blocked the activation of EGFR and c-Met which have cross-talk with each other. Unlike in gefitinib-resistant NSCLC cells, MTE alone also demonstrated certain unexpected modulation on EGFR related cell signal pathways in the sensitive cells. Obtained results suggest that MTE is a promising herbal medicine to improve gefitinib efficacy in NSCLC regardless of EGFR status.

Biography

Shuyan Han has completed her PhD from Peking University in 2008, and did postdoctoral studies from Peking University Cancer Hospital & Institute. Now she is an Associate Professor and Master supervisor in Peking University Cancer Hospital & Institute. Her area of research interests are efficacy evaluation and mechanisms elucidation of anti-cancer herbal medicine, overcoming drug resistance by integrative medicine. She has published more than 25 papers in reputed journals.

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Isolation and simultaneous determination of five bioactive compounds in mushroom *Inonotus obliquus*

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Five main phenolic compounds were isolated from the mushroom *Inonotus obliquus* by a repeated column chromatography. The structures of the five phenolic compounds were identified as 3,4-dihydroxybenzaldehyde (1), vanillic acid (2), caffeic acid (3), syringic acid (4) and 3,4-dihydroxybenzalacetone (5) using $^1$H and $^{13}$C NMR in combination with mass spectrometry. A simple reversed-phase high performance liquid chromatography (RP-HPLC) procedure was developed for simultaneous determination of the five bioactive phenolic compounds. Three extraction methods on *Inonotus obliquus* extract were compared and reflux extraction was the efficient method with the strong antioxidant properties. There are stronger linear relationships between DPPH radical scavenging activity and total phenolic content, caffeic acid and 3,4-dihydroxybenzalacetone content ($R^2>0.95$). Caffeic acid and 3,4-dihydroxybenzalacetone are the major contributors to the observed antioxidant activities. This could be important information for quality control and the structure-activity relationships of phytochemicals of mushroom *Inonotus obliquus*.

Biography

Haixia Chen is associate Professor in Tianjin University. She completed her Postdoctoral research from Ocean University of China during the years 2002-2004. She completed her PhD in Food Chemistry and Natural Products Chemistry from Huazhong Agricultural University in 2002. Her area of interest includes natural product chemistry, bioactivities of the constituents from natural products, analysis method of chemical constituents and functional food.

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Determination of thirteen nucleosides and nucleobases in the natural fruiting body of *Ophiocordyceps sinensis* and its substitutes

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**Background:** *Ophiocordyceps sinensis* is one of well-known and valuable traditional Chinese medicines. Due to the high price of the natural fruiting bodies of *Ophiocordyceps sinensis* (NFOS), scientists have focused on discovering suitable alternatives in recent years. Previous study indicates nucleosides and nucleobases are one of the most important markers of quality control. Reliably identified samples and applicable methods are important for quality control.

**Materials and methods:** The separation was performed on a TSKgel ODS-100V column (5 μm, 4.6 mm×250 mm). The mobile phase was an aqueous potassium dihydrogen phosphate - methanol solution using gradient elution. The UV wavelength was set at 260 nm.

**Results:** The optimized HPLC method was successfully applied for the quantitation of 13 nucleosides and nucleobases in 15 batches of samples from eight *Ophiocordyceps* species and its allies in China. The contents of adenosine (quality marker in 9th China Pharmacopeia), inosine (higher in *Hirsutella hepialii, Acremonium implicatum* and NFOS), cordycepin (rich in the artificial fruiting bodies of *Cordyceps militaris*) and cytosine (abundant in the artificial fruiting bodies of *O. longissima*) seemed to be useful markers for quality control and distinction of different species.

**Conclusion:** The established method might apply as an alternative approach for the quality assessment of nucleosides and nucleobases in *Ophiocordyceps* species.

**Biography**

Wenming Cheng is assistant professor of Anhui Medical University. He completed his Ph.D in Organic Chemistry from University of Science and Technology of China. His main research interest is to discover bio-active compounds from herbal medicine. Currently he is involved in immunological-active ingredients from Cordyceps, an interesting fungi live on insects or other fungi.

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The use of linear ion trap for rapid one-run ginsenoside profiling in roots and ginseng based products

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The pharmacological properties of old Chinese medicine (Ginseng) are generally attributed to its triterpene glycosides, called ginsenosides. Up to now more than 600 ginsenosides have been isolated from Panax species and most of them exhibit two types of aglycone moieties: Protopanaxadiol and protopanaxatriol. One of the main goals of the ginseng researches was the differentiation of the ginsenosides patterns between the different Panax species. Moreover, studies of changes in ginsenosides composition due to different traditional processing of P. ginseng roots such as white and red ginseng have been undertaken. The problem is the pure compounds of the ginsenosides are not available to researches in large quantities. That is the reason why currently the methods of standard-free analysis of ginsenosides are in high demand. New approach of qualitative analysis of ginsenosides in challenging matrices was developed in our laboratory on the basis of high performance liquid chromatography/tandem mass spectrometry. Analysis of extracts was carried out using a reversed-phase chromatography with SB-C18 sorbent. For compounds identification, electrospray ionization and quadrupole/linear ion trap mass-spectrometer in different modes were used. The meticulous study of the fragmentation of ginsenosides in the linear ion trap and its application for analysis of these compounds was made. The method may replace existing HPLC-DAD profiling approaches. The results of this study indicated that HPLC/ESI-LITMS is easily applicable for quality control purposes of marketed products and allows the rapid and direct identification of ginsenosides in crude plant extracts.

Biography
Igor Rodin has completed his PhD from Lomonosov Moscow State University and continues to work in the field of analytical chemistry. He studies the methodology of the modern combined techniques such as HPLC and tandem mass-spectrometry. He has published more than 35 papers in reputed Russian and other international journals.

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The processing mechanism of traditional Chinese medicine radix polygoni multiflori based on pharmacokinetics study in vivo

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The processing of Traditional Chinese Medicine (TCM) is a unique processing technology. In this study, it proposed a scientific hypothesis that the processing of TCM might mainly enhance/reduce absorption of effective ingredients in vivo for the purpose of enhancing efficacy and reducing toxicity. Radix polygoni multiflori was selected as an example. The liquid chromatography-mass spectrometry (LC-ESI-MS/MS) analysis method was successfully developed and validated to determine five active ingredients including gallic acid, polydatin, 2,3,5,4'-tetrahydroxystilbene-2-O-β-D-glucosid (PM-SG), resveratrol and emodin after oral administration of the raw radix polygoni multiflori (R-RPM) extract (3.3 g∙kg\(^{-1}\)) and processed radix polygoni multiflori (P-RPM) extract (1.7 g∙kg\(^{-1}\)). The influence of processing on the absorption of five active ingredients in rats was been studied. The results demonstrated that Cmax and AUC of gallic acid were increased, but Cmax and AUC of PM-SG were decreased. AUC of polydatin and emodin were similar with that of PM-SG. Meanwhile, the effects of dose on the absorption of four typical constituents were also studied. The results showed that the absorption proportion of four typical constituents has positively correlated with the dose ratio. These results demonstrated that influence of the processing could improve the bioavailability of gallic acid and reduce the absorption of PM-SG, polydatin and emodin in rats. The LC-MS/MS method could be used to evaluate the effect of processing on pharmacokinetic of typical constituents in radix polygoni multiflori after oral administration.

Biography

Yan-xu Chang, now is Associate Professor of Institute of Traditional Chinese Medicine, Tianjin University of Traditional Chinese Medicine, the gainer of Program for "131" Excellent Talents Tianjin and young talents of Tianjin plans for promoting science and technology innovation talents. He got his BSc in biology science, MSc in medicine plant at inner Mongolian University, Doctor Degree in pharmaceutical analysis at China Pharmaceutical University. He was a Postdoctorate at Tianjin University of Traditional Chinese Medicine and Jiangsu Kanion Pharmaceutical Co. Ltd., China from 2010 to 2014, Academic Visitor of Imperial College London from 2012.10 to 2013.01. He is well experienced in the field of pharmacognosy and phytochemistry. He has developed and validated bioanalytical and analytical methods for herbal medicine and its metabolites to support drug discovery and development. He has published more than 50 papers in reputed journals.

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Studies on the quality analysis of traditional Chinese medicines based on qHNMR technology

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The quality of traditional Chinese medicine (TCM) is closely related to its chemicals contained, but complex and diverse ingredients are existed in TCM, which makes the quality control being difficult and a bottleneck in the process of modernization and globalization of TCMs. NMR technique is a versatile technology, which was mainly used to resolve the structures of compounds, but in recent years, it has been widely used for the metabolomics and traditional herbal medicine quality analysis. NMR is an unbiased detection tool, which can detect all the metabolites in a single run, and make the compounds with different structural types, polarities and molecular weights present in a same spectrogram. This method also has the advantages of simple sample preparation process, fast detection process, high stability, good reproducibility and sample easy to recycle, which are particularly suitable for the detection of TCMs with the complex constitution. Moreover, this technology does not need the references of the determined components, which supplies a solution for the problem of reference scarcity in the quantitative analysis of TCMs. In the study, it was used Dictamni Cortex, Magnoliae Officinalis Cortex, Vignae Semen, Cistanches Herba, and Strychni Semen as samples to illustrate the application of qHNMR technology in the quantitative and qualitative analysis of TCMs.

Biography
Yong Jiang obtained her PhD in 2003 from Peking University, and made a Post-doctorate research in the Institute of Pierre Fabre, France for one and a half years. Now she is an Associate Professor and PhD supervisor in the School of Pharmaceutical Sciences, Peking University. Her current research interests involve the studies on natural active constituents & new drugs from traditional Chinese medicines, and the quality analysis of traditional Chinese medicines. Up to now, more than 100 papers have been published, and 21 patents have been applied. In 2012, she obtained National Excellent Youth Grant from National Natural Science Foundation of China.

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Tualang honey: An emerging natural remedy in regenerative medicine

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Tualang honey has recently been extensively studied for its anti-microbial activities and uses in traditional medicine. Little is known about its role and potential application in wound repair and tissue regeneration. Here we proved that Tualang honey was able to modulate corneal epithelial progenitor cell functions without affecting its stemness and proliferative capability, but the positive effects could be offset by its cytotoxicity at high concentrations. The honey, which contains higher antioxidant content compared to its counterparts based on a past study, was also found to improve the corneal epithelial progenitor cell resistance to oxidative stress, a crucial characteristic for better transplant engraftment and survival. Interestingly, the benefits observed were attributed to Tualang honey in its native form, but not 5-hydroxymethyl-2-furancarboxaldehyde, the major antioxidant that present in Tualang honey. Moreover, the survival of the corneal epithelial progenitor cells after hydrogen peroxide stress at 100 µM was greater after treated with Tualang honey compared to ascorbic acid-treated controls, suggesting that the antioxidant properties of raw Tualang honey conferred on corneal epithelial progenitor cells the superior resistance to oxidative stress.

Biography
Jun-Jie Tan obtained his bachelor degree in Biomedical Science at Universiti Putra Malaysia in 2007, completed his DPhil studies at University of Oxford in 2011 and currently serves as a senior lecturer at Advanced Medical and Dental Institute, Universiti Sains Malaysia. His research is primarily on stem cells biology and regenerative science, and has recently shifted his interest to explore the use of natural products in pre-conditioning stem cells in vitro to enhance the cell functions and augment the therapeutic effects after cell transplantation. He was awarded the Young Investigator Award in a regional conference of molecular medicine in Malaysia for his recent work on honey in 2013, and has several reputed publications and research grants.

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Polyphenolic compounds from selected Malaysian ferns and their potential medicinal properties

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Ferns have long been taken as food by human and used as medicaments for the treatment of various types of ailments. However, the medicinal properties and potential therapeutic compounds from this group of plants have rarely been explored. Author's group has investigated the phytochemicals and potential pharmacological properties of two fern species commonly found in Malaysia, namely, *Dicranopteris linearis* and *Stenochlaena palustris*. A number of unique compounds have been isolated and characterised from these ferns, including a series of acylated flavonol glycosides from *Stenochlaena palustris*, as well as some highly oxygenated phenols, flavonoids and glycosylated terpenes from *Dicranopteris linearis*. Some of these compounds, when used singly or in combinations as plant fractions exhibited a wide range of interesting properties, including free radical scavenging, antibiotic potentiating, anticholinesterase, cytotoxic, antioxidative, as well as fibroblast cell growth and cell migration promoting effects. In this presentation, the phytochemicals isolated and characterised from *D. linearis* and *S. palustris* done by author's research group will be shown. Various *in vitro* pharmacological properties of these compounds and/or their combinations will also be discussed.

Biography

Choon-Sheen Lai obtained her PhD on Drug Discovery from Universiti Sains Malaysia in 2010. She is currently a Senior Lecturer at Centre for Drug Research in the same University. Her research interests include isolation and characterisation of bioactive natural products, standardisation of multi-constituent plant extracts as well as quality assessment of herbal products. She has won the Merck Young Scientist Award in 2009 and published in a number of reputed journals. She has several research grants and supervises a team of about 12-15 postgraduate researchers. She is also a reviewer for a number of scientific journals.

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Pharmacognostical and preliminary phytochemical studies on stem and leaves of *Alysicarpus monilifer*

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*Alysicarpus monilifer* DC. (Leguminosae) is a small herb which is well known for its medicinal properties and widely used worldwide. *A. monilifer* is an important plant of Indian Ayurvedic System of Medicine which is routinely used to treat certain ailments like inflammation, stomach ache and jaundice. The present study is intended to evaluate the pharmacognostical and preliminary phytochemical characterization of the leaves and stem of *Alysicarpus monilifer*. Since fewer reports are available in this taxon, detailed microscopical and phytochemical studies of this plant were undertaken. All the parameters were studied as per the WHO and pharmacopoeial guidelines. Various parameters like fluorescence analysis and physicochemical constant were also studied. The anatomy of the leaf reveals that adaxial epidermis is stomatiferous and contains prismatic type of calcium oxalate crystals; stomata are paracytic; trichomes are both glandular and non-glandular. The stem shows the presence of hollow vascular cylinder which comprises several independent wedge shaped vascular bundle; xylem elements are surrounded by thick walled fibres. This observation would be immense value in the botanical identification and standardization of the drug in the crude form. This study is used to distinguish the plant from its closely related species. The pharmacognostic characters and phytochemical values reported in this work could be used as a diagnostic tool for the standardization of this medicinal plant. Adulterants if any can be easily identified by adopting fluorescence analysis. The microscopic characters could help in laying down micro-morphological standards as per WHO guidelines for authentication of the drug.

Biography

P Mehalingam completed his PhD Degree from Madurai Kamaraj University, Madurai. Currently he is working as Assistant Professor in Botany, VHNSN College (Autonomous), Virudhunagar, Tamilnadu (India). He has been selected for UGC Research Award Scheme. He has participated and presented his research papers in International Conferences held in The Netherlands, Malaysia and Thailand. He has been engaged in research on Ethnobotany, Pharmacognosy, Pharmacology and Phytochemistry.

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Media optimization in immobilized culture to enhance the content of curcumin in *Curcuma longa* (Zingiberaceae) and protein profile of treated samples in static culture

Pratibha Chaturvedi, Sandeepan Mukherjee, Shraddha Mehta, Piyali Chatterjee and Abhay Chowdhary
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Emerging trends of exploiting plant cell culture for the production of high value phyto-pharmaceuticals, immobilization of plant cell has a very important role. In the described study, the immobilized culture *Curcuma longa* (Zingiberaceae) was used to enhance the production of their active compound curcumin. The maximum content of curcumin was obtained in cultures fed with 5 mg/100 ml of cinnamic acid (3.36% per 300 beads) at the age of two weeks in Zenk medium. To examine the involvement of protein in curcumin biosynthesis, it was also examined curcumin content as well as the protein profile of treated samples of *Curcuma longa* in *in vitro* static culture. Significantly, the seven fold enhancement in curcumin content was obtained in two weeks old rhizome culture, which was maintained on Zenk production media incorporated with 5 mg/l of cinnamic acid (control 1.57% and induced 8.717%). Quantitative estimation was done by using HPTLC with standard curcumin. In protein profile studies, all the treated samples were analysed for their proteomic profile using SDS page and it was observed that protein of 23,420 D was most prominent in all samples. This may be of glycine rich protein (works on defence mechanism) which is already reported in *Curcuma comosa*. The intensity of the bands was reduced in treated samples as compared to control, that may be due to the formation of Reactive Oxygen species (ROS) in culture condition and which modified the protein. In this case, increased level of sucrose (5%) has been added to *Curcuma longa* culture media, that creates an oxidative stress and eventually the curcumin production increased. The significant part of the research is to use the plant explants as source to develop immobilize culture and static rather than callus in Zenk production media, which reduce the time as well as expenditure. Many aspects of research in *Curcuma longa* are being covered in these days but still some aspects are untouched regarding secondary metabolites on proteomics and molecular level. In addition to that it helps in making an ecosystem balance (prevention in deletion of green cover for obtaining natural products).

Biography

Pratibha Chaturvedi is awardee of Women scientist scholarship, Department of Science and Technology, Ministry of Science and Technology, New Delhi, India. She is life member of Indian Science Congress. She has submitted her PhD thesis to Rajasthan University. She has published 25 research papers of national and international repute and three books from Germany. Her area of research interests are secondary metabolites, production and enhancement in tissue culture of medicinal plants and proteomics and plant biochemistry. Her two works have been awarded by IDMA, Indian drugs journal for best research paper in Natural Products Category 2013, and for poster presentation on Curcumin production in tissue culture of *Curcuma longa* by International Conference on Stem Cell and Cancer, October 2013 in Haffkine Institute Mumbai.

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Scientific Tracks & Abstracts

Day 2

Pharmacognosy-2014
Session Chair
Jan Frederik Stevens
Oregon State University, USA

Session Co-Chair
Nehad Abdel Latif
Taif University, Saudi Arabia

Track 3, 4 & 7

3: Herbal Drugs and Formulations
4: Drugs from Natural Sources
7: Phytochemistry and Phytoconstituents

Session Introduction

Title: Characteristics of TCM constitutions of adult Chinese women in Hong Kong and identification of related influencing factors: A cross-sectional survey
Jianping Chen, The University of Hong Kong, China

Title: Aqueous solubility and degradation kinetics of the phytochemical anticancer Thymoquinone; Probing the effects of solvents, pH and light
Jumah Masoud Mohammad Salmani, China Pharmaceutical University, China

Title: Preclinical and clinical studies of topical preparations of rhodomyrtone, antibacterial isolated compounds from Rhodomyrtus tomentosa (Ait) Hassk) for the treatment of skin infections
Dachriyanus, Andalas University, Indonesia

Title: The processing of Panax notoginseng and the transformation of its saponin components
Ying-Jun Zhang, Chinese Academy of Sciences, China

Title: Standardization of a traditional Thai antihypertensive herbal recipe using LC-MS coupling with multivariate data analysis
Tossaton Charoonratana, Rangsit University, Thailand

Title: Design and evaluation of novel antibacterial agents among Benzofuran derivatives
Nehad Abdel Latif, Taif University, Saudi Arabia

Title: The effect of black cumin oil (Nigella sativa L.) for controlling asthma and blood eosinophils level in asthma patients at the pulmonary clinic, Dr. M. Djamil Hospital, Padang
Fatma Sri Wahyuni, Andalas University, Indonesia

Title: Accumulated expression level of cytosolic glutamine synthetase 1 gene (OsGS1;1 or OsGS1;2) alter plant development and the carbon-nitrogen metabolic status in rice
Hongmei Cai, Huazhong Agricultural University, China

Title: Isolation and structural elucidation of aporphine alkaloid from the bark of Actinodaphne macrophylla and its activity against Plasmodium falciparum
Tiah Rachmatiah, National Institute of Science and Technology, Indonesia
Characteristics of TCM constitutions of adult Chinese women in Hong Kong and identification of related influencing factors: A cross-sectional survey

Jianping Chen and Youzhi Sun
The University of Hong Kong, China

Traditional Chinese Medicine Constitution (TCMC) refers to an integrated, metastable and natural specialty of individual in morphosis, physiological functions and psychological conditions. It is formed on the basis of innate and acquired endowments in the human life process, which can be divided into normal constitution and unbalanced ones. The aim of this study was to investigate the distribution of TCMCs of Chinese women in Hong Kong and its association with social-demographic, lifestyle, reproductive, healthy and emotional factors with the formation of unbalanced TCMCs. Local Chinese women between 30 to 65 years old, were recruited from 18 districts of Hong Kong (n=944), and were assessed using the Traditional Chinese Medicine Physical Constitution Scale for their TCMC types. Social-demographic, reproductive, lifestyle, systemic health and emotional status information were collected through structured questionnaire. The associations between different independent factors and each TCMC type, as well as the complex unbalanced TCMC types were tested individually. Significant factors related to unbalanced TCMC types were identified in final models using multiple factor analysis. A total of 764 (80.9%) participants were diagnosed with unbalanced TCMCs. The most common TCMC type was Qi-deficiency constitution (53.9%), followed by Phlegm-wetness (38.9%), Yang-deficiency (38.2%), Yin-deficiency (35.5). The majority of middle-aged Chinese women in Hong Kong had unbalanced and complex TCMCs. Qi-deficiency, Phlegm-wetness and Yang-deficiency constitutions are the most common constitutions. Poor systemic health condition, less-than-satisfactory emotional life, overweight and mental work are associated with and may be contributors for the formation of unbalanced TCMCs, while regular physical exercise was found to be a potential protective factor for unbalanced TCMCs.

Biography
Jianping Chen is Associate Professor at School of Chinese Medicine, The University of Hong Kong, China. Her area of research interest is Breast cancer. She has published more than 100 papers in reputed journals and serving as an editorial board member of repute.

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Aqueous solubility and degradation kinetics of the phytochemical anticancer thymoquinone; probing the effects of solvents, pH and light

Jumah Masoud Mohammad Salmani
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Thymoquinone (TQ) is a potent anticancer phytochemical with confirmed in vitro efficacy. Its clinical use has not yet established, and very few reports have documented its formulation. There also are no reports about the aqueous solubility and stability of this valuable drug, despite their direct correlation with the in vivo efficacy. In the current research, it was established and validated a stability-indicating HPLC method for the detection of TQ and its degradation products under different conditions. It was then investigated the solubility and stability profiles of TQ in aqueous solutions. The stability study was aimed to determine the effect of pH, solvent type and light on the degradation process of TQ, along with the investigation of the kinetics of this degradation. The solubility of TQ varied in different aqueous solvents, and might be compromised due to stability issues. However, these findings confirm that the aqueous solubility is not the major obstacle for the drug formulations mainly due to the considerable water solubility (>500 μg/mL) that may be enough to exert pharmacologic effects if administered via parenteral route. Stability study results showed a very low stability profile of TQ in all the aqueous solutions with rapid degradation that varied with solvent type. The study of the degradation kinetics showed a significant effect of pH on the degradation process. The process followed first order kinetics at more acidic and alkaline pH values, and second order kinetics at pH 5-7.4, regardless of the solvent type. The results also expressed that light has a greater impact on the stability of TQ as a shorter period of exposure led to severe degradation, independent of the solution pH and solvent type. Obtained results also addressed some discrepancies in previously published researches regarding the formulation and quantification of TQ with suggested solutions. Overall, the current study concludes that TQ is unstable in aqueous solutions, particularly at an alkaline pH, in addition to presenting severe light sensitivity. This data indicates the inappropriateness of aqueous solutions as pharmaceutical vehicles for TQ preparations. To the best of knowledge, this is the first study describing TQ aqueous solubility and stability that may lead to the development of a stable and effective TQ formulation.

Biography

Jumah Masoud Mohammad Salmani graduated with a Bachelor of Pharmaceutical sciences at Baghdad University, Iraq 1998 and obtained his Masters and PhD degrees (Pharmaceutics) from China Pharmaceutical University in 2010 and 2014, respectively. He worked at Sammara Drug Industry (SDI) and at Al-Mustansiriya University, Baghdad Iraq. He has more than 7 publications and 2 patents on pharmaceutical sciences.

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Preclinical and clinical studies of topical preparations of rhodomyrtone, antibacterial isolated compounds from *Rhodomyrtustomentosa* ((Ait) Hassk) for the treatment of skin infections

Dachriyanus1, Kamal Rullah2, Rosita Dewi Rahmat1, Fitria Octarita2 and Henny Lucida1

1Andalas University, Indonesia
2Sekolah Tinggi Ilmu Farmasi Riau, Indonesia

In an effort to find an alternative drug for skin infections, isolation of Rhodomyrtone, antibacterial active substances was carried out from the dried leaves of *Rhodomyrtustomentosa* (Ait.) Hassk. Rhodomyrtone was isolated as yellowish white needle crystals with melting range 181-183ºC. This compound was elucidated based on spectroscopic data and comparison was done with literature data. Rhodomyrtone inhibited the growth of *Staphylococcus aureus* ATCC 6538 and *Staphylococcus epidermidis* ATCC 12228 by 18.15 mm and 18.0 mm at a concentration of 1000 ppm respectively. The ability of healing skin infection was determined on rhodomyrtone vanishing cream (2% w/v). This cream was subjected to rabbit skin which had been infected with *Staphylococcus aureus*. Chloramphenicol cream (2% w/v) was used for standard. Edema and eritema in the area of infection were also used as observed parameters. In vivo experiments showed that rhodomytrone cream could reduce infections on rabbit skin. This preparation did not cause irritation both in rabbits and humans.

Biography

Dachriyanus received undergraduate degrees from Andalas University in 1991 and finished his PhD from University of Western Australia in 1999. He got Professorship from Indonesian Ministry of Education in 2005. He has some collaborative research with University of Western Australia and University Putra Malaysia. His research is in chemical and biological activity studies of Sumatran Plants especially Genus *Garcinia* and *Rhodomyrtustomentosa*. He has 49 publications in various journals of repute. From 2005-2008, he held the position of Head of Department of Pharmacy, Andalas University and from 2008-2010 as a Dean Faculty of Pharmacy, Andalas University. In addition, he was also appointed as vice president for academic affair of Indonesian Pharmacist Association in 2009. He has been appointed as a Dean Faculty of Nursing Andalas University from 2012-2016.
The processing of *Panax notoginseng* and the transformation of its saponin components

Ying-Jun Zhang, Dong Wang, Cheng-Zhen Gu, Hong-Tao Zhu and Chong-Ren Yang
Chinese Academy of Sciences, China

Notoginseng [the roots of *Panax notoginseng* (Burk.) F. H. Chen (Araliaceae)] is a well-known medicinal herb in traditional Chinese medicine and mostly cultivated in Yunnan province of China. Traditionally, notoginseng has been used in two forms, raw and processed ones. The former is mainly used for the treatment of injuries from falls, dissipating blood stasis, and cardiovascular disease, whereas the latter is used as a tonic. Notoginseng contains similar chemical constituents as Ginseng (Chinese Ginseng, Korean Ginseng or Asian Ginseng), and dammarane-type triterpenoid saponins are rich containing in this herb and recognized as the main bioactive ingredients. As one part of our systematic studies on *Panax* plants, the roots of *Panax notoginseng* were treated by different processing methods, including steaming and baking, along with the correlative dynamic curves of the transformation of saponins. It was also found, during the steaming process that the five main saponin constituents (ginsenosides Rg1, Rb1, Rd, and Re, and notoginsenoside R1) in raw notoginseng decreased gradually and some other new saponins were formed. Among these, eight newly converted major ginsenosides were identified as 20(S)-Rh1, 20(R)-Rh1, Rk3, Rh4, 20(S)-Rg3, 20(R)-Rg3, Rk1 and Rg5. In addition, more than 30 minor dammarane-type triterpenoids were identified. Some of them are new compounds with potential bioactivities.

Biography

Ying-Jun Zhang completed her PhD in pharmaceutical science at Nagasaki University, Japan on March 2002. She has one year of research experience in Institut de Chimie des Substances Naturelles, Centre National de la Recherche Scientifique, France (2005-2006). She is a group leader focused on plant resources and medicinal chemistry, at the State Key Laboratory of Phytochemistry & Plant Resources in West China, Kunming Institute of Botany, Chinese Academy of Sciences. She has published more than 90 papers in reputed journals.
Standardization of a traditional Thai antihypertensive herbal recipe using LC-MS coupling with multivariate data analysis

Tossaton Charoonratana
Rangsit University, Thailand

Traditional medicine (TM) reproducibility becomes an important issue for the development process in this field since the evidence-based traditional medicine has been trendily focused in clinical trials. To ensure a reliable efficacy and safety assessment, an error in the content of constituents of TM must be minimized. Various protocols, such as TLC, or HPLC chemical fingerprinting coupling with calculation of correlation coefficient, or identification of active constituents, were used to optimize and standardize TMs. Liquid chromatography coupling with mass spectrometry (LC-MS) is also an excellent tool for preliminary investigation due to its high sensitivity, resolution, availability of mass spectrum databanks, and etc. In this article, LC-MS was used to analyze ten lots of the extracted traditional Thai antihypertensive herbal recipe (TTAH) and some modified TTAHs in different solvents. The recognition models of TTAH were established after the data was processed along with principal component analysis (PCA). The quality of the PCA models was validated and found to be acceptable.

Biography

Tossaton Charoonratana has completed his PhD in Pharmaceutical Science since 2012 from Prince of Songkla University, Thailand and won an honorable price for his PhD thesis. He obtained a grant to work as a researcher in Leiden University for six months. Now, he is a lecturer in faculty of Pharmacy, Rangsit University. His research interests have been in various topics of herbal medicine standardization, molecular biology, genetic engineering, metabolomics, and phytochemistry. He has published more than 10 papers in reputed journals.

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Design and evaluation of novel antibacterial agents among benzofuran derivatives

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The present research work describes the synthesis of new heterocyclic compounds using khellinone methyl ether (1) as a starting material. Compound (1) allowed to react with different aldehydes namely, benzaldehyde, p-methoxybenzaldehyde and p-nitro benzaldehyde to give the corresponding chalcones (2a-c). The latter compounds reacted with malononitrile, guanidine, ethylcyanacetate and ethylacetocacetate to yield cyanopyridine, aminopyrimidine, cyanopyridone and cyclohexenone derivatives (3 a-c), (4a-c), (5a-c) and (6a-c) respectively. When (2a-c) reacted with thiourea, it gave thioxopyrimidine derivatives (7a-c). On the other hand compound (7a-c) condensed with 3-bromopropionic acid or chloroacetic acid to yield thiazinopyrimidine (8a-c) and 3-thiazolo-pyrimidine (9a-c) respectively. Compounds (7a-c) were condensed with chloroacetic acid and aromatic aldehyde to yield the aryl methylene derivatives (10a-c) which could be prepared directly by condensation of compound (7a-c) with aromatic aldehyde. The characterization of the resulting products was confirmed by FTIR, 1HNMR, MS and elemental analyses. The newly synthesized compounds were screened for their antibacterial activity against Escherichia coli, Pseudomonas aurignosa, Salmonella typhimurium, Bacillus subtilis and Staphylococcus aureus using the disc diffusion method.

Biography

N A Abdel Latif has completed her PhD at the age of 33 years from Ain Shams University, Cairo, Egypt. She was supervised on 4 MSc theses and 1 PhD. She is an Associate Professor for natural product chemistry since 2008 in Natural Compounds Chemistry Department, Pharmaceutical Industries Division, National Research Center, Dokki, Egypt. Now, she works at Chemistry Department, Faculty of Science, Taif University, Taif, Kingdom of Saudi Arabia (KSA). She has attended a number of conferences in her carrier. She has published more than 20 papers in reputed journals and has been serving as a reviewer for many articles in her specialization. She teaches all the organic courses for the students of Faculty of Science and Faculty of Pharmacy in Egypt and KSA.

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The effect of black cumin oil (Nigella sativa L.) for controlling asthma and blood eosinophils level in asthma patients at the pulmonary clinic, Dr. M. Djamil Hospital, Padang

Fatma Sri Wahyuni¹, Raveinal¹, Oea Khairsyaf¹ and Putri Ramadheni²
¹Andalas University, Indonesia
²Sekolah Tinggi Farmasi Indonesia, Indonesia

Clinical study was conducted on the use of black cumin oil (Nigella sativa L.) against persistent asthma patients at the pulmonary clinic of Dr. M. Djamil Hospital, Padang. Asthmatic patients were divided into two groups: the control and treatment groups. The control group was given hospital standard therapy only, bronchodilator and controller, while the treatment group received standard therapy and black cumin oil with dose 60mg/BW/day orally. The assessment was conducted on the level of asthma control and the value of eosinophils blood during the first month of use. This study showed that black cumin oil increased the level of asthma control in patients as indicated by level up of ACT score (p<0.05). The values of blood eosinophils decreased in the treatment group but not statistically significant when compared with the control group (p>0.05).

Biography

Fatma Sri Wahyuni got bachelor degree in 1998 from Depatment of Pharmacy, Faculty of Mathematic and Natural Sciences, Andalas University and PhD degree from Institute of Biosciences, University Putera Malaysia in 2009. She works as a lecturer at Faculty of Pharmacy, Andalas University. Her research interest is in biological study especially cytotoxic and anti-inflammatory activity of some Sumatran plant including genus Garcina and Nigella sativa. She has 8 publication on her name.

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Accumulated expression level of cytosolic glutamine synthetase 1 gene (OsGS1;1 or OsGS1;2) alter plant development and the carbon-nitrogen metabolic status in rice

Hongmei Cai
Huazhong Agricultural University, China

Nitrogen is an essential macronutrient required for rice growth and development, and it is a major limiting factor in determining yield productivity. Carbon is crucial for plants to perform their routine and fundamental cellular activities. In addition to their independent utilization, the coordination and optimal functioning of the metabolic pathways for nitrogen and carbon assimilation in plants are critical for determining plant growth and, ultimately, biomass accumulation. In higher plants, glutamine synthetase (GS; EC 6.3.1.2) is a key enzyme for the assimilation of ammonium. In our study, we constructed the OsGS1-overexpressing transformants driven by the CaMV35S promoter and obtained transgenic rice plants with the purpose of improving nitrogen use efficiency. Unexpectedly, the GS1;1-, GS1;2-overexpressing plants displayed unobvious growth phenotype at the seedling stage grown hydroponically under both normal and low nitrogen conditions, and decreases in both grain yield production and total amino acids in seeds grown in field with low nitrogen fertilizer. To identify the reasons for these observations, we systematically analyzed the growth phenotype, carbon-nitrogen metabolic status and gene expression profiles in GS1;1-, GS1;2-overexpressing rice and wildtype plants at different developmental stages grown under different nitrogen levels. Our results revealed that the GS1;1-, GS1;2-overexpressing plants exhibited a poor plant growth phenotype and yield and decreased carbon/nitrogen ratio in the stem caused by the accumulation of nitrogen in the stem. In addition, the leaf SPAD value and photosynthetic parameters, soluble proteins and carbohydrates varied greatly in the GS1;1-, GS1;2-overexpressing plants. Furthermore, metabolite profile and gene expression analysis demonstrated significant changes in individual sugars, organic acids and free amino acids, and gene expression patterns in GS1;1-, GS1;2-overexpressing plants, which also indicated the distinct roles that these two GS1 genes played in rice nitrogen metabolism, particularly when sufficient nitrogen was applied in the environment. Thus, the unbalanced carbon-nitrogen metabolic status and poor ability of nitrogen transportation from stem to leaf in GS1;1-, GS1;2-overexpressing plants may explain the poor growth and yield.

Biography

Hongmei Cai obtained her PhD in 2009 from Huazhong Agricultural University. Now she is an Associate Professor and Master supervisor in the College of Resources and Environment, Huazhong Agricultural University. Her current research interests involve the studies on plant nutrient physiology, biochemistry and molecular biology. She has published more than 20 papers in reputed Chinese and international journals and serving as an editorial board member of Trends in Soil Science and Plant Nutrition.

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Isolation and structural elucidation of aporphine alkaloid from the bark of *Actinodaphnemacrophylla* and its activity against *Plasmodium falciparum*

Tiah Rachmatiah and Subaryanti
National Institute of Science and Technology, Indonesia

A study of alkaloidal content and its activity against *Plasmodium falciparum* has been conducted on bark of *Actinodaphnemacrophylla* (Lauraceae). The bark was obtained from Bogor Botanical Garden, West Java, Indonesia. Crude alkaloidal extract was prepared by maceration in dichloromethane after moistened with NH$_4$OH 25%. A major alkaloid was isolated by column chromatography using silica gel and a mixture of CH$_2$Cl$_2$ and methanol as gradient solvent system. Fine white needle crystals were obtained from the isolation process and its molecular structure was determined by analysis of spectra of NMR, IR, MS and compared by references. In vitro bioactivity test of the compound was performed against *P. falciparum*. The results showed that the bark of *A.macrophylla* contained an aporphine alkaloid, actinodaphnine that had activity against *P. falciparum* with IC$_{50}$ value of 0.095 µg/mL.

Biography
Tiah Rachmatiah has bachelor degree from University of Indonesia, Jakarta, Indonesia and Ph. D from University of Indonesia, Depok, Indonesia. Her area of research is phytochemistry and bioactive compounds from natural products. Currently, she is serving as Lecturer at Pharmacy Department, Faculty of Science and Mathematics, National Institute of Science and Technology (ISTN), Jakarta, Indonesia.

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**Track 5 & 9**

**3: Toxicology and Therapeutic Studies of Plant Products**

**4: Natural Products of Medicinal Interest**

**Session Chair**
Yoshiyasu Fukuyama  
Tokushima Bunri University, Japan

**Session Co-Chair**
Jian-ye Zhang  
Guangzhou Medical University, China

<table>
<thead>
<tr>
<th>Title</th>
<th>Speaker</th>
<th>Institution/University, Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bitter tastants alter gastric-phase postprandial hemodynamics</td>
<td>Michael K McMullen</td>
<td>University of Westminster, UK</td>
</tr>
<tr>
<td>Flavonolacetyl glucosides from the aril of Schotia brachypetala Sond. and their antioxidant, antibacterial and antimalarial activities</td>
<td>Jan H Van Der Westhuizen</td>
<td>University of the Free State, South Africa</td>
</tr>
<tr>
<td>Mallotus philippinensis bark extracts promote preferential migration of mesenchymal stem cells and improve wound healing</td>
<td>Akito Maeda</td>
<td>Osaka University, Japan</td>
</tr>
<tr>
<td>Immunomodulatory affects of Hedysarum polybotrys extract in mice macrophages, splenocytes and leucopenia</td>
<td>Guan-Cheng Huang</td>
<td>Fooyin University, Taiwan</td>
</tr>
<tr>
<td>Herbal hepatotoxicity: New advances, challenges and rational usage</td>
<td>Jia-bo Wang</td>
<td>China Military Institute of Chinese Materia Medica, China</td>
</tr>
<tr>
<td>Mechanism investigation of growth inhibition and apoptosis caused by Bruceine D in k562 cells</td>
<td>Jian-ye Zhang</td>
<td>Guangzhou Medical University, China</td>
</tr>
<tr>
<td>Neurotrophic compounds of Javanese Ginger, Zingiber purpureum</td>
<td>Yoshiyasu Fukuyama</td>
<td>Tokushima Bunri University, Japan</td>
</tr>
<tr>
<td>Anti-allergic effect of a Korean traditional medicine, Biyeom-Tang on mast cells and allergic rhinitis</td>
<td>Eunkyung Lee</td>
<td>Korea Promotion Institute for Traditional Medicine Industry, Republic of Korea</td>
</tr>
<tr>
<td>Mechanism of protective effects of Salvia miltiorrhiza (Danshen) against acute and chronic liver injury induced by iron overload</td>
<td>Ying Zhang</td>
<td>Hebei Medical University, China</td>
</tr>
<tr>
<td>Therapeutic potentials of plant extracts</td>
<td>Mandavi Despande</td>
<td>APT Research Foundation, India</td>
</tr>
<tr>
<td>GC-MS identification of alkaloids from the Genus Lycoris</td>
<td>Ying Guo</td>
<td>University of Barcelona, Spain</td>
</tr>
<tr>
<td>Ethnomedicinal plants used by residents in northern Surigao del sur, Philippines</td>
<td>Gemma A Gruyal</td>
<td>Surigao Del Sur State University, Philippines</td>
</tr>
<tr>
<td>Proanthocyanidins are effective in preventing distant organ damage against ischemia/reperfusion injury</td>
<td>Ahmet Gucen</td>
<td>Gulhane Military Medical Academy, Turkey</td>
</tr>
<tr>
<td>Secondary metabolites of endophytic fungi from Morus plant</td>
<td>Elvira Hermawati</td>
<td>Bandung Institute of Technology, Indonesia</td>
</tr>
<tr>
<td>Cinnamon essential oil and its major constituent cinnamaldehyde caused remarkable relaxation on isolated human corpus cavernosum</td>
<td>Alev Tosun</td>
<td>Ankara University, Turkey</td>
</tr>
<tr>
<td>Anti allergic effect of extract combination of Vitex trifolia I and Curcuma xanthorrhiza roxb on ovalbumin-induced active cutaneous anaphylaxis reaction</td>
<td>Zullies Ikawati</td>
<td>Gadjah Mada University, Indonesia</td>
</tr>
</tbody>
</table>

**Pharmacognosy-2014**
Bitter tastants alter gastric-phase postprandial hemodynamics

Michael K McMullen
University of Westminster, UK

Novel pharmacological mechanism: The bitter tastants gentian root (*Gentian lutea* L.) and wormwood herb (*Artemisia absinthium* L.) stimulate oral bitter taste receptors eliciting increases of peripheral vascular resistance and altering postprandial hemodynamics. This vascular response, elicited by chemosensory stimulation, provides a mechanism by which bitter tastants could enhance digestion. Digestive activity is dependent on increased splanchnic blood flow, compared to the fasting state, and customarily splanchnic hyperemia is supported by increased cardiac activity. Problems occur in both the digestive organs and the circulatory system when cardiac activity is insufficient to meet the postprandial demands, digestive problems include poor appetite, bloating and virtually all forms of dyspepsia. Circulatory problems include postural hypotension, angina and stroke. Notably, postprandial hypotension is a predictor of all-cause mortality in the elderly. Chemosensory stimulation of the oral bitter taste receptors by either gentian or wormwood elicits a series of rapid cardiovascular responses. The primary cardiovascular change is increased peripheral vascular resistance which acts to increase blood pressure. This vascular change leads to a reduction in cardiac activity presumably due to the baroreceptor's regulation of blood pressure. The possible applications of the observed response mechanism include management of digestive problems, the traditional application of bitter tasting aperitifs, and cardiovascular conditions relating to postprandial hypotension. In particular those suffering from cardiac insufficiency and some vascular disorders may benefit from treatments based on the findings. These findings demonstrate that some secondary plants metabolites can rapidly change postprandial hemodynamics and influence the gastric phase of digestion.

Biography

Michael K McMullen studied both applied science and psychology before working as a clinical audiologist in Australia. Later, he undertook studies in clinical herbal and nutrition. Since 1986, he has worked as a clinical herbalist in Sweden. He completed his PhD at the University of Westminster, London, UK in 2012. His thesis was entitled “The Impact of Bitter Tastants on the Cardiovascular System”.

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Flavonol acyl glucosides from the aril of *Schotia brachypetala* Sond. and their antioxidant, antibacterial and antimalarial activities

Jan H van der Westhuizen  
University of the Free State, South Africa

*Schotia brachypetala* Sond. (Fabaceae) is a Southern African tree. It is used to treat dysentery, diarrhoea, heart burn, nervous conditions, acne and influenza by traditional healers. We previously reported antioxidant, antibacterial and antimalarial activities from the crude methanol extract. High-speed countercurrent chromatography (HSCCC) was used as the primary chromatography technique to isolate pure compounds from the methanol extract. This all-liquid method avoids extensive tailing and irreversible adsorption of polyhydroxyflavonol glucosides associated with traditional solid column packing materials. We isolated two new flavonol acyl glucosides, 3-0-methylquercetin 7-O-[β-D-6‴-(E-p-coumaroyl) glucopyranoside] and 3,4‴-di-O-methylquercetin 7-O-[β-D-6‴-(E-p-coumaroyl)glucopyranoside], four known flavonol glycosides and one known dihydroflavonol glucoside from the methanol extract of the aril part. In some cases Sephadex was used for final purification. The structures of the isolated compounds were elucidated with 1D and 2D NMR, MS and CD. Acid hydrolysis followed by thiazolidine derivatisation and GC analysis was used to establish the absolute configuration of the sugar moieties. Two pure compounds showed good antioxidant activity in the 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging assay (IC\textsubscript{50} 15.2 and 19.2 µM, respectively) similar to the positive control, quercetin (IC\textsubscript{50} 14.3 µM) and two were inactive at 100 µM. Antimalarial activity using the tritiated hypoxanthine incorporation assay against the chloroquine-resistant FCR-3 strain of *Plasmodium falciparum* was noted for two compounds (IC\textsubscript{50} 5.18 and 7.81 µg/mL, respectively) with lower IC\textsubscript{50} values than in the crude methanol extract (18.95 µg/mL). Moderate to weak activities were found against four reference bacterial pathogens (*Escherichia coli*, *Klebsiella pneumoniae*, *Staphylococcus aureus* and *Enterococcus faecalis*).

Biography  
Jan H van der Westhuizen received his PhD from the University of the Free State. He was a Postdoctoral Research Assistant at the Imperial College, London and spent a sabbatical at Cambridge University. His research group, in collaboration with PAREXEL, received the NSTF Award for Innovation, for the synthesis of internal standards and the development of novel bioanalytical methods. His current research includes the chemistry and composition of flavonoids and commercial proantocyanidin extracts, the discovery of novel bioactive molecules from African plants (guided by indigenous knowledge) and their potential for new drugs. He collaborates in two multidisciplinary EU-funded Seventh Framework programmes.

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Mallotus philippinensis bark extracts promote preferential migration of mesenchymal stem cells and improve wound healing

Akito Maeda
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Mesenchymal stem cells (MSCs) have the ability to differentiate into various cells and secrete a number of proregenerative factors, thereby contributing to tissue repair. Recent studies have indicated that MSCs migrate to the wound site during the wound healing process. Therefore, methods that enhance the mobilization and homing of MSCs to wounds have the potential to accelerate wound healing. Here, we report the effects of the ethanol extract from Mallotus philippinensis bark (EMPB) on MSC proliferation, migration, and wound healing in vitro and in a mouse model. Chemotaxis assays demonstrated that EMPB acted as an MSC chemoattractant and that the main chemotactic activity of EMPB may be due to the effects of cinnamtannin B-1. Flow cytometric analysis of peripheral blood mononuclear cells in EMPB-injected mice indicated that EMPB enhanced the mobilization of endogenous MSCs into blood circulation. Bioluminescent whole-animal imaging of luciferase-expressing MSCs revealed that EMPB augmented the homing of MSCs to wounds. In addition, the efficacy of EMPB on migration of MSCs was higher than that of other skin cell types, and EMPB treatment also improved wound healing in a diabetic mouse model. The histopathological characteristics of tissue regeneration demonstrated that the effects of EMPB treatment resembled MSC-induced tissue repair. Taken together, these results suggested that EMPB activated the mobilization and homing of MSCs to wounds and that enhancement of MSC migration may improve wound healing. Thus, EMPB may represent novel therapeutic potential for the regulation of MSC dynamics during wound healing.

Biography
Akito Maeda has completed his PhD in Medical Chemistry from Kyoto University (1992). Then he worked as Research Scientist at Boehringer Ingelheim, Lecturer in Kansai Medical University, Assistant Professor in Kyoto University, and Director at University-launched venture GenomIdea. Now he is the Professor of PIAS Collaborative Research Skin Regeneration in Osaka University. His research interest includes the identification of compounds with tissue regeneration-inducing activity derived from natural products, and the creation of advanced technology for tissue regeneration. He is serving as an editorial board member of Phytomedicine.

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Immunomodulatory effects of *Hedysarum polybotrys* extract in mice macrophages, splenocytes and leucopenia

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Astragali Radix (Huang-Qi) is a popular traditional Chinese medicine (TCM) commonly used as a constituent in tonic herbal preparations. According to the record of Ben-Cao-Gang-Mu (Compendiumof Materia Medica), Astragali Radix is sweet, with warming properties and manifests its therapeutic effects in the spleen and lung meridians. *Hedysarum polybotrys* Handel-Mazzetti is one species used of Astragali Radix. In this study, the immunomodulatory properties of *H. polybotrys* were explored by LPS-activated and SNP-treated RAW 264.7 cells and splenocytes and, daunoblastina-induced leucopenia BALB/c mice. Formononetin was used as the bioactive marker to monitor the quality of the *H. polybotrys* extracts. *H. polybotrys* was extracted with hot-water and methanol, and MeOH extract partitioned with H$_2$O (M-H) and ethyl acetate (M-EA) to yield four different fractions. M-EA had the highest formononetin and total proanthocyanidin content and showed stronger inhibitory effects on the production and expression of NO, PGE2, iNOS and COX-2 in LPS-activated RAW 264.7 cells and splenocytes than the other fractions. In addition, M-EA significantly stimulated the proliferation of LPS-activated RAW 264.7 cells and splenocytes, enhanced NO radicals scavenging and attenuated NO-induced cytotoxicity. Furthermore, M-EA also significantly increased the rate of recovery of white blood cells level in daunoblastina-induced leucopenia mice. These evidences suggest that this traditional Qi-tonifying herb has potential effects in clinical conditions when immune-enhancing and anti-inflammatory effect is desired.

Biography

Guan-Cheng Huang has completed his MD from Taipei Medical University with the residentship in Koo Foundation Sun Yat-San Cancer center and postdoctoral studies from Policlinico San Matteo Ospitale in Pavia University, Italy. He is the chief of Hemato-Oncology department in Yuan’s General Hospital and assistant Professor in Fooying University. He has published more than 30 papers in SCI journal.

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Herbal hepatotoxicity: New advances, challenges and rational usage

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Herbal hepatotoxicity, an unresolved critical issue which impacts clinical safety of herbal remedies worldwide, has been recognized for many years, but new herbal hepatotoxins are constantly identified. In China, it is newly estimated that nearly 1/4 of drug-induced liver injury (DILI) cases are attributed to herbal medicine and another 1/2 of DILI cases cannot exclude the attribution of herbal medicine. Herbal hepatotoxicity is a fast expanding problem threatening people's health, but recent researches are still insufficient to solve it. First of all, the causality identification of herbal medicine-induced liver injury (HMILI) is quite difficult and needs lots of efforts to achieve fairness due to the complicated composition of herbal medication, as well the frequent combinations with chemical drugs. In addition, early diagnosis of HMILI is challenging yet some cutting-edge techniques (e.g. microRNA array) provided sanguine visions. The fast advances in system biology, including translational toxicology, omics and system biology, network toxicology, pharmacogenomics and pathotoxicology, etc., provide powerful support to HMILI investigation. Most importantly, the rational uses of herbal medicines are helpful to avoid HMILI even the hepatotoxicity indeed exists. In Chinese 5000-years history of herb uses, some theory, principles and procedures to avoid liver injury of herbal medicines are documented and such advances should be paid more attention by the researchers and physicians.

Biography

Jia-bo Wang has completed his PhD from Chengdu University of Traditional Chinese Medicine and postdoctoral studies from the Institute of Automation, Chinese Academy of Sciences. He currently serves on the China Military Institute of Chinese Medicines, 302 Military Hospital, leading the translational research group on herbal hepatotoxicity. He has published more than 45 papers in reputed journals and serving as a guest editor in the Frontiers in Pharmacology. His academic achievements include the Rank 2 National Science and Technology Progress Award of China and Rank 1 Science and Technology Award of China Association of Chinese Medicine.

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Neurotrophic compounds of Javanese ginger, *Zingiber purpureum*

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Neurotrophins (NGF, BDNF etc.) are recognized as important regulatory substance in the nervous system. However, they cannot cross brain-blood barrier because of the properties of their high molecular polypeptides and are easily metabolized by peptidases under physiological conditions. To address this issue, considerable efforts have been made to find small molecules that mimic neurotrophic properties. Javanese ginger Bangle, *Zingiber purpureum*, has been used as a spice as well as an important component of traditional medicine “Jamu” in Indonesia. In the course of efforts to discover natural products with neurotrophic properties, it was found that the EtOH extract of the roots of Bangle (*Zingiber purpureum*) exhibited neuritogenesis activity in PC12 cells. Bioassay-guided fractionation resulted in the isolation of neurotrophic phenylbutenoid dimers 1 and 2, and a new compound 3. The structure of 3 was elucidated by analysis of spectroscopic data and comparing the NMR data with cussumunarin A. Compounds 1 and 2 were found not only to significantly induce neurite sprouting of PC12 cells, but also to increase the neurite length and number of neurites in primary cultured rat cortical neurons, and also showed protective activity against cell death caused by deprivation of serum. Furthermore, chronic treatment of these compounds enhanced hippocampal neurogenesis in dementia model OBX mice. These results suggest that compounds 1 and 2 have both neurotrophic effects and neurogenesis, and thus Bangle may be developed as a valuable functional food for potentially protecting neurodegenerative diseases such as Alzheimer disease.

Biography

Yoshiyasu Fukuyama has completed his PhD degree in Chemistry from Osaka City University and then spent three years as a Postdoctoral Fellow at Oregon State University. He moved to the Institute of Natural Products Chemistry at Otsuka Pharmaceutical Co. Ltd. He has been working as a Professor at Tokushima Bunri University since 1988, and now is Dean of the faculty of pharmaceutical sciences. He has published more than 220 papers in reputed journals and serving as an editorial board member of CPB. His current research interests focus on chemistry and biology of neurotrophic natural products. He is a recipient of Tokushima News Paper Award in 2006.

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Mechanism investigation of growth inhibition and apoptosis caused by Bruceine D in K562 cells

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Objective: To observe the changes of mitochondrial membrane potential (MMP), cytochrome c (Cyto-c), Caspase-3, 9 activity and cleavage of PARP, and determine the apoptosis signaling pathway in Bruceine D -treatment K562 cells.

Method: MTT assay was used to evaluate the cell growth inhibition of Bruceine D in vitro; Flow cytometry were performed to analyze MMP; Western Blot analysis was applied to detect Cyto-c, Caspasases-3,-9 and PARP in K562 cells.

Results: IC50 value of Bruceine D against K562 cells was 6.37 ± 0.39 μM. The percentages of MMP after the treatment of 3.0,6.0,12.0 μM Bruceine D for 24 h were 79.84 ± 4.46%, 59.74 ± 7.48%, 40.66 ± 4.37% (P<0.05) respectively. The release of Cyto-c, activity of Caspase-3, 9 and cleavage of PARP increased compared with the control groups in the Bruceine D induced K562 cell. Moreover, Bruceine D could decrease Phosphorylation level of AKT and ERK.

Conclusions: The collapse of MMP, the increased Cyto-c, the up-regulation of Caspase-3, -9 activity and the augmented cleavage of PARP emerged after K562 cells treated by Bruceine D. The apoptosis of K562 cells induced by Bruceine D might be related to the mitochondrial pathway of apoptosis. Reduction of AKT and ERK Phosphorylation level might be mechanism of growth inhibition of K562 cells mediated by Bruceine D.

Biography

Jian-ye Zhang received BS of Pharmaceutical Sciences and MS of Pharmacognosy from Peking University, PhD of Oncology in Sun Yat-sen University. He has been a visiting scholar at School of Chinese Medicine, Hong Kong Baptist University for two years. He is currently Committee Member of the Society of Anti-Cancer Drugs, Chinese Anti-Cancer Association and Committee Member of Division of Tumor Pharmacology, Chinese Pharmacological Society.

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Anti-allergic effect of a Korean traditional medicine, Biyeom-Tang on mast cells and allergic rhinitis

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Biyeom-Tang, a medicine prescribed by oriental clinics, has been used for the treatment of the allergic rhinitis (AR). In the present study, an ethanol extract of Biyeom-Tang (EBT) was investigated for anti-allergic properties on bone-marrow derived mast cells (BMMC), systemic anaphylactic shock, passive cutaneous anaphylaxis (PCA) and on ovalbumin (OVA)-induced AR model. EBT strongly inhibited a degranulation reaction in a dose dependent manner with an IC$_{50}$ value of 35.6 µg/ml. In addition, the generation of prostaglandin D$_2$ and leukotriene C$_4$ was inhibited in BMMC in a concentration-dependent manner with IC$_{50}$ values of 7.0 µg/ml and 10.9 µg/ml, respectively. When administrated orally, EBT ameliorated compound 48/80-induced systemic anaphylaxis and the mast cell-mediated PCA reaction. In OVA-induced AR model, the increased levels of IgE were reduced by EBT. The levels of cytokines, such as IL-4, IL-5, IL-10, and IL-13 decreased on the splenocyte of EBT-treated mice. The histological analysis shows that the infiltration of inflammatory cells increased by OVA-sensitization was also reduced. In HPLC analysis, six compounds, one lignin and five furanocoumarins, were indentified. Taken together, these results suggested that EBT has anti-allergic and anti-inflammatory effects in vitro and in vivo models.

Biography

Eunkyung Lee has completed her PhD and Postdoctoral studies from Iowa State University, USA. She is a senior researcher of Herbal Medicine Team, a Public Research Institute, South Korea. She has focused on the development for anti-inflammatory and anti-allergic drugs such as asthma and allergic rhinitis. She has published more than 40 papers in reputed journals.

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Mechanism of protective effects of *Salvia miltiorrhiza* (Danshen) against acute and chronic liver injury induced by iron overload

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*Salvia miltiorrhiza* (SM) is a well-known Chinese medicinal herb, which has shown hepatoprotective effects with anti-fibrotic, anti-oxidative, anti-inflammatory and anti-apoptotic properties. Iron is essential for normal biological functioning, yet it is toxic when present in excess. As a central role in regulating iron homeostasis, liver is the most susceptible organ of injury by iron-overload. Patients with iron-overload conditions are at risk for developing acute liver injury, chronic hepatic fibrosis and ultimately cirrhosis. In acute experiment, SM demonstrated protective effects in short-term iron-overloaded liver. Treatment of iron-overloaded liver with either low or high doses of SM significantly attenuated the hepatic dysfunction, decreased the reaction of oxidative stress, and suppressed hepatocytes apoptosis. Histopathological examination showed that treatment with SM reduced iron deposition and ameliorated pathological changes. Meanwhile, the chronic experiment clarified the anti-fibrotic activity of SM in iron-overloaded liver. Besides the results consistent with acute experimental data, treatment of chronic iron-overloaded mice with SM dose-dependently reduced iron deposition and collagen accumulation (type I and III collagens), regulated overexpression of fibrosis-related molecules (TGF-β and MMP-9), and reduced expression of pro-inflammatory cytokines (TNF-α and IL-1α) and apoptotic factor (caspase-3). In summary, SM displayed protective effects against acute and chronic liver injury induced by iron overload, which may be attributed to multi-targeted inhibition of iron deposition and collagen accumulation, as well as oxidative stress, apoptosis and inflammation.

Biography

Ying Zhang got her Master’s degree from Hebei Medical University in 2005, and she is a PhD student and working as Associate Professor at the same university. Her current research interests focus on the effects of Traditional Chinese Medicine with efficacy of promoting blood circulation against iron-overload disorders. She recently found that treatment with *Salvia miltiorrhiza* (Danshen) reduced iron deposition and ameliorated pathological changes in mice with acute and chronic iron-overload.

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The use of plants is as old as mankind. Nature is a great chemist. Today there are at least 120 distinct chemical substances derived from plants that are considered as important drugs currently in use in the world. These plant derived chemical substances are effective in various conditions like cardiovascular, kidney disorders, infections, metabolic disorders and cancers. One of the major metabolic disorders is obesity. Obesity is regarded as a disorder of lipid metabolism and the enzymes involved in this process could be selectively targeted to develop anti-obesity drugs. *Ziziphus mauritiana* (ZM) is a shrub belonging to family Rhamnaceae distributed in warm temperate zone from Western Africa to India. Phytochemical analysis of ZM Bark Powder (ZMBP) aqueous extract showed presence of tannins, saponins and flavonoids. The ZMBP aqueous extract (ZMBPaq) showed 100% lipase inhibitory activity at 400 µg/ml *in vitro*. Adipogenesis is related to obesity. In our studies ZMBPaq showed inhibition of adipocyte differentiation. Anti-obesity activity of ZMBPaq was also confirmed in High Fat Diet (HFD) induced B6D2F1 obese mice. Thirty days administration of ZMBPaq (100 mg/kg) and Orlistat (7.8 mg/kg) showed a statistically significant 18.4% and 25.28% reduction in weight gain respectively, when compared with the obese control group. These results suggest anti-obesity potential in *Z. mauritiana* bark aqueous extract.

**Biography**

Mandavi Deshpande-Garge has submitted her PhD thesis to University of Pune, Maharashtra, India. She has done her Master’s in Microbiology also from University of Pune. She has gained her research experience in different sectors like food, microbiology and toxicology. She is now Research Associate at APT Research Foundation, Pune, Maharashtra, India.

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The genus *Lycoris*, a group of Amaryllidaceae plants distributed in temperate regions of Eastern Asia, is known for containing representative alkaloids typical of this botanical family with a wide range of biological activities (such as lycorine and galanthamine). The alkaloids found in Amaryllidaceae species have shown many pharmacological properties including antiprotozoal, antiviral, antitumoral, and acetylcholinesterase inhibitory activities. One of the most renowned compounds of this group is galanthamine, a drug marketed for the treatment of Alzheimer’s disease (Razadyne®, formerly Reminyl®). In the present work, the species *L. albiflora*, *L. aurea*, *L. chinensis*, *L. haywardii*, *L. incarnata*, *L. longituba*, *L. radiata*, *L. sprengeri*, and *L. squamigera*, and one variety (*L. radiatavar.pumila*) have been evaluated by means of a simple and rapid methodology that exploits the advantages of gas chromatography-mass spectrometry (GC-MS) for alkaloid profiling and direct quantification from dry plant material. GC-MS is a proven useful, fast and specific technique with good sensitivity for the study and identification of complex alkaloid mixtures from various plants of different groups, requiring very low amounts of plant material and no derivatization step. The results were analyzed using AMDIS 2.64 software (NIST). Structures belonging to the lycorine-, homolycorine-, haemanthamine-, narciclasine-, tazettine-, montanine- and galanthamine-series were identified and quantified. Galanthamine and lycorine-type compounds were predominated and showed a high relative abundance in comparison with other alkaloids detected in the extracts. Interestingly, *L. longituba* revealed itself to be a potential commercial source of bioactive alkaloids.

**Biography**

Ying Guo is a PhD student at the Faculty of Pharmacy, University of Barcelona. With four scientific articles published, as well as one recently accepted for its publication, she is currently in the third year of her thesis which is focused on natural products research.
Ethnomedicinal plants used by residents in Northern Surigao del sur, Philippines

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2Mindanao University of Science and Technology, Philippines

The people of Northern part of Surigao Del Sur particularly Carrascal, Cantilan, Madrid, Carmen and Lanuza have, for centuries, been using certain indigenous plants in the treatment of several physical maladies. The information and folk knowledge regarding the medicinal and therapeutic uses of these indigenous plant materials have handed down from generation to generation through verbal communication. With the advent of modern medicine and technology, some of these folk medicines were relegated to the sidelines or are no longer practiced. Today's younger and more “educated” populace no longer values this knowledge or information as being useful. Documentation of information about medicinal plants can provide a data base for future research and potential for the development of new drugs. The present study was conducted to document the medicinal plant utilized for the treatment of different ailments suffered by the residents. The mode of preparation and the ailments being cured were also included in the documentation. A semi-structured questionnaire was being employed ingathering the demographic and ethnobotanical knowledge through interviews. Fifty (50) informants were involved in providing information on the 70 plant species documented as medicinal plants utilized by the residents of Northern Surigao del Sur to treat different kinds of diseases and ailments. The most frequently used plant part in terms of percentage of total number of species was the leaves (84.3%). This was followed by stem (8.9%), roots (7.1%), bark (4.3%), hair and rhizome (1.4%). The methods applied in the preparation of the herbal medicine were pounding, crushing, preheat, soaking, decoction and infusion. The most common health problems treated by the identified medicinal plants were stomach ailments, respiratory diseases, wounds, boils and muscle pains. Some of the medicinal plants used to treat different ailments. Most of the medications were administered internally.

Biography

Gemma A. Gruyal a license Pharmacist graduated from University of San Carlos, Cebu City, Philippines. She received her master’s degree in Science Teaching from Saint Paul University Surigao and now working her Ph.D in Chemistry dissertation at Mindanao University of Science and Technology. Currently connected with Surigao del Sur State University as professor in Chemistry and Biological Sciences.

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Proanthocyanidins are effective in preventing distant organ damage against ischemia/reperfusion injury

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Ischemia/reperfusion injury (IRI) of the organs are complex and multifactorial pathophysiological process that involves the actions of reactive oxygen species (ROS), reactive nitrogen species (RNS), inflammatory cytokines, nitric oxide (NO), and polymorphonuclear lymphocytes (PMNL). Reperfusion of the organs after ischemia causes the activation and adhesion of PMNL, with the release of proinflammatory substances and the formation of free radicals. Circulating proinflammatory substances may cause further damage in distant organs. For example, intestinal IRI induces a systemic inflammatory response, and the release of harmful substances like ROS and RNS may affect the function and integrity of distant organs such as respiratory system, liver, heart, and kidney. There is growing interest in natural products as agents to manage health, particularly from the perspective of prevention. Proanthocyanidins (PA) are powerful polyphenolic antioxidants that have been classified according to their hydroxylation pattern into several subgroups, including procyanidins, prodelphinidins, propelargonidins, profisetinidins, prorobinetinidins, proguibourtinidins, proteracacinidins, and promelacacinidins. Procyanidins are the most common group of naturally occurring PA. Predominant food sources are red wine, tea, chocolate, vegetables, and fruits like grapes, apples, pears, and cranberries. Proanthocyanidins have been demonstrated to exert a novel spectrum of biological, pharmacological, and therapeutic defenses against ROS and oxidative stress. Besides their free radical scavenging and antioxidant activity, PA exhibit anticarcinogenic, anti-inflammatory, antibacterial, antiviral, immune-stimulating, and cardioprotective features, and they inhibit the enzymes phospholipase A2, cyclo-oxygenase and lipo-oxygenase. Hence, we conducted a couple of studies and showed that PA has effective in prevention of distant organ damage against IRI.

Biography
Ahmet Guven has graduated from Gulhane Military Medical Faculty and completed his residence in pediatric surgery at the same faculty. He has published more than 50 papers in reputed journals and continuing his teaching and research program.

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Secondary metabolites of endophytic fungi from *Morus* plant

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Endophytic fungi are defined as fungi that reside in the tissues of living plants, and are promising source of bioactive compounds including anticancer, anti-inflammatory, neuroprotective and antioxidant. *Morus* plants, or locally known as “murbei”, have been widely cultivated for feeding silkworm in silk industry in many countries and widely known can be used as a traditional drug. Phytochemistry study showed that these plants produced phenolic compounds mainly stilbenes, 2-arylbenezofurans, and flavonoids. Three endophytic fungi, *Talaromyces wortmanii*, *Xylaria* sp, and one unidentified endophytic fungi were isolated from *Morus cathayana* and *Morus macroura*. Wortminn and skyrin are two known compounds that are successfully isolated from *Talaromyces wortmanii*, while, 19,20-epoxycytochalasin Q, 18-deoxy-19,20-epoxycytochalasin Q, 19,20-epoxycytochalasin C were isolated from *Xylaria* sp. On the other hand, three new compounds also have been isolated from unidentified fungi, namely two arthrinone derivatives and a presilphiperfoliane sesquiterpene. Cytotoxic evaluation of these compounds showed that 19,20-epoxycytochalasin Q exhibited the most active cytotoxicity with IC₅₀<0.1 μg/mL against murine leukemia P-388. It showed that endophytic fungi are microorganisms that can be an alternative source of bioactive secondary metabolites.

Biography

Elvira Hermawati has received her master degree in chemistry (2011) from Chemistry Department, Institut Teknologi Bandung. Her research is about isolation of medicinal plants and their activities. She joined Natural Product Research Group of Institut Teknologi Bandung. Now, she is still carrying out doctoral program in Institut Teknologi Bandung and currently working with isolation of secondary metabolites from endophytic fungi.

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Cinnamon essential oil and its major constituent cinnamaldehyde caused remarkable relaxation on isolated human corpus cavernosum

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\textsuperscript{1}Ankara University, Turkey \textsuperscript{2}Ankara Numune Education and Research Hospital, Turkey

**Introduction:** *Cinnamomum* is a genus within the Lauraceae family represented by about 300 species all over the world. Cinnamon is one of the earliest known spices. The aromatic bark of the cinnamon tree is used in Ayurvedic and Traditional Chinese Medicine for numerous benefits, such as antidiabetic, antiangiogenic, antispasmodic, antiseptic, anti-inflammatory, anti-viral and immunomodulatory effects as well as respiratory tract diseases. The present study evaluated the action of cinnamon essential oil (CEO) and its main phytochemical as cinnamaldehyde (CA) on the function of human corpus cavernosum smooth muscle (CCSM).

**Methods:** We obtained specimens of human CCSM from patients undergoing penile prosthesis surgery (patient age 48-69 yr, n=8) with prior approval from the local institutional review board. Isolated HCC strips were placed in organ baths containing Krebs solution, and functional experiments were conducted. Isometric tension studies were performed in organ baths after precontraction with phenylephrine (PE, 10\textsuperscript{-5}M). Relaxant responses to CEO (5 and 10 μL) and its constituent CA in cumulative dose-dependent manner (10\textsuperscript{-8}-10\textsuperscript{-3}M) were investigated. The experiments with CEO and CA were repeated in the presence of nitric oxide synthase (NOS) inhibitor (L-NAME) or soluble guanylate cyclase (sGC, ODQ).

**Results:** CEO and CA caused dose-dependent CCSM relaxations (maximum responses: 90.4 ± 3.5%, 83.0 ± 5.0% and 100 ± 0%, respectively). The relaxant responses obtained with essential oiland its major constituent were not attenuated in the presence of L-NAME and ODQ in human CCSM.

**Conclusions:** CEO and its constituent CA induced marked relaxations in CCSM. These responses were not attenuated with NO synthase (NOS) or sGC inhibitors, and probably involved mechanism(s) independent from NO/cGMP pathway. In addition, CA on CCSM has a relatively major contribution to the relaxation obtained by CEO, suggesting the presence of these active CEO constituents which induce NO-independent relaxation of CCSM. We recommend both constituents of CEO that may affect CC relaxant responses or presence of these in CEO may induce a maximal relaxant response. CEO may have a beneficial effect when it is administered to phosphodiesterase (PDE)-5 non-responders.

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Anti allergic effect of extract combination of *Vitex trifolia* L and *Curcuma xanthorrhiza* Roxb on ovalbumin-induced active cutaneous anaphylaxis reaction

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*Vitex trifolia* leaves extract is reported to inhibit histamine release from mast cells, while *Curcum xanthorrhiza* extract poses anti inflammatory activity. Combination of the two extracts is expected to have sinergistic activity as anti allergy. This research aimed to study the anti allergic activity of the extract combination on active cutaneous anaphylactic reaction in rat model. Thirty five Wistar rats were sensitized with 0.1% ovalbumin in Al(OH)₃ subcutaneously at day 1 and 7. On the day 14, the animals were divided into 7 groups and all received Evans Blue dye injection via tail vein. Thirty minutes after Evans Blue injection, the rats in group 1-5 were given 3.15 g/kg BW of extract combination, with the proportion of *V. trifolia*:C. xanthorrhiza as follows: 100:0, 75:25, 50:50, 25:75, and 0:100. The positive control rats received 2 mg/kg BW cromolyn sodium, while the negative control rats were given CMC-Na 0.5% per-orally. Acute cutaneous anaphylaxis reactions were induced 15 minutes later by injecting the animals with 5.25% of ovalbumin in 10% Al(OH)₃ subcutaneously with the volume of 5.0 ml/kg BW. Pigmentation areas (cm²) in rat back versus time (hour) were measured and expressed as area under the Curve (AUC). Histological assay using Toluidine Blue dye to observe mast cells degranulation was also performed to support pharmacological data. The result show that the extract combination of *V. trifolia* and *C. xanthorrhiza* inhibited cutaneous anaphylaxis reaction with various potency. Anti anaphylactic activity (%) of extract combination with proportion of 100:0, 75:25, 50:50, 25:75, and 0:100 were 64.47 ± 1.55; 60.14 ± 2.29; 57.00 ± 5.81; 47.65 ± 2.21; and 49.14 ± 3.62, respectively. It seems that the anti-anaphylactic activity of the extract combination is correlated positively with the increase proportion of *V. trifolia*, despite not significant (P>0.05). Histological assay showed that the extract combination could inhibit mast cells degranulation visualized by toluidine blue staining. This results give insight that the combination of *V. trifolia* and *C. xanthorrhiza* might be developed for anti allergic medication.

Biography
Zullies Ikawati has completed her PhD at the age of 32 years from Ehime University, Japan, and get professorship from Gadjah Mada University Indonesia in 2008. She has published more than 20 papers in reputed national and international journals and has been serving as an editorial board member of several Indonesian national journals.

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Scientific Tracks & Abstracts
Day 3
### Track 6, 8 & 10

**Day 3  August 27, 2014**

**6: Ethnopharmacology**

**8: Industrial Pharmacognosy**

**10: Crude Drugs and Plant Products**

<table>
<thead>
<tr>
<th>Session Chair</th>
<th>Session Co-Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ping Zhang</td>
<td>Mehalingam P</td>
</tr>
<tr>
<td>Chinese Academy of Sciences, China</td>
<td>V H N Senthikumara Nadar College, India</td>
</tr>
</tbody>
</table>

#### Session Introduction

**Title:** Myrmecodia tuberosa effects on quorum sensing-related pathogenicity in *Pseudomonas aeruginosa PA01*

*Triana Hertiani, Universitas Gadjah Mada, Indonesia*

**Title:** Anticancer agents from non edible parts of *Theobroma cacao*

*Zainal Baharum, University Putra Malaysia, Malaysia*

**Title:** Ethnobotany, phytochemistry and pharmacology of *Stephania rotunda* Lour

*Camille Desgrouas, Kasertsart University, Thailand*

**Title:** Antioxidant, antimicrobial activities and total phenolic content of *Prunus spinosa* L. subsp. *sasyphylla* (schur) domin and its secondary metabolites

*Tatti Irem, Hacettepe University, Turkey*

**Title:** From traditional to modern: Research on the vine tea, one of the non-camellia teas in China

*Lijia XU, Peking Union Medical College, China*

**Title:** Anti-inflammatory effects of essential oil of *Zanthoxylum myriacanthum* var. *pubescens* Huang (Ma Qian), a Dai folk medicine

*Ping Zhang, Chinese Academy of Sciences, China*

**Title:** Evaluation of the wound healing potentials of three *Achillea* species on cultured NIH3T3 fibroblasts

*Tuncay Agar, Hacettepe University, Turkey*

**Title:** Assessment of antioxidant capacity, anti-collagenase and anti-elastase assays of Malaysian unfermented cocoa bean for cosmetic application

*Norliza Abdul Wahab, Universiti Putra Malaysia, Malaysia*

**Title:** An ethnobotanical study of medicinal plants used by the Paliyars aboriginal community in Theni district, Tamil Nadu, India

*Mehalingam P, V H N Senthikumara Nadar College, India*

**Title:** Newer insights into Daodi herb research: Ecotype theory and practice

*Linfang Huang, Chinese Academy of Medical Sciences, China*

**Title:** Enhancement of gefitinib-induced growth inhibition by *Marsdenia tenacissima* extract in non-small cell lung cancer cells expressing wild or mutant EGFR

*Lu Xiao, Tianjin university of TCM, China*

**Title:** Isolation and structure elucidation of new cyclotetrapeptides: Ochrine A and B from *Aspergillus ochraceoperatifomis*

*Ala Ud Din, Bacha Khan University, Pakistan*

**Title:** Clinical study of the *Prunus dulcis* (Almond) shell extract on *Tinea capitis* infection

*Nasreen Thebo, University of Sindh, Pakistan*

**Title:** Proposed categories of larvicidal activity of natural products derived from plants against Anopheles vector larvae

*Mohammad Mehdi Sedaghat, Tehran University of Medical Sciences, Iran*

**Title:** Appraisal of clinical practice guidelines for the management of rheumatoid arthritis in traditional chinese medicine using the AGREE II instrument: A systematic review

*Ya Yuwen, China Academy of Chinese Medical Sciences, China*

**Title:** New ursane type sulfated saponins from the aerial parts of *Zygophyllum fabago* Linn. and their urease inhibitory activity

*Saleha Suleman Khan, University of Karachi, Pakistan*
Myrmecodia tuberosa effects on quorum sensing-related pathogenicity in Pseudomonas aeruginosa PAO1

Triana Hertiani, Maya Indra, Putri Khaerani and Sylvia Utami Tunjung Pratiwi
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Myrmecodia tuberosa Jack (Rubiaceae) has been used in West Papua as part of traditional remedy with wide therapeutic value including as immune enhancer. Pseudomonas aeruginosa and Staphylococcus aureus have been correlated with pathogenic opportunistic in immunesuppressed patient and this plant has been reported as a potential immunomodulator. Therefore research on this plant effect on the quorum sensing of these strains is worth exploring. Quorum sensing inhibition assay of the plant’s fractions was performed towards Pseudomonas aeruginosa inoculated on cetrimide agar. Samples in two fold dilution were prepared to gain 2-0.0625 mg/mL concentration. The effects on swimming, swarming and twitching motility of P. aeruginosa PAO1 were recorded over control. All experiments were done in triplicate. Bioautography was performed on the extract in order to explore the active constituent. Obtained results suggested that the ethyl acetate fraction of M. tuberosa showed a prominent effect on quorum sensing inhibition of P. aeruginosa. Significant activities as quorum sensing inhibitor and anti motility were observed over control in a concentration dependent manner. Bioautography assay performed on the fraction showed no inhibition zone suggesting that quorum sensing inhibition may be a result of additive effect of compounds content. Nevertheless, phenolic compounds was identified as active fraction for planktonic growth inhibition. Myrmecodia tuberosa ethyl acetate fraction might be developed as anti-infective against P. aeruginosa through inhibition of the microbe pathogenicity.

Biography

Triana Hertiani has completed her PhD degree from the Pharmazeutische Biologie und Biotechnologie Institute, Heinrich-Heine Universiteit, Duesseldorf, Germany, 2007. She is currently the Chief of Pharmaceutical Sciences Master Degree Program of the Faculty of Pharmacy, Universitas Gadjah Mada, Indonesia. Her research interest is exploring Indonesian natural resources for antiinfective.

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Anticancer agents from non-edible parts of *Theobroma cacao*

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In order to establish anticancer and antioxidant properties from the non-edible cocoa (*Theobroma cacao*) plant parts, the studies on cocoa leaf, bark, husk, shell (fermented), shell (unfermented), pith, root and cherrele were performed by extracting in methanol to obtained crude extracts. In this study, antioxidant activity was determined using DPPH method, total phenolics content was performed using Folin-Ciocalteu method, antilipid peroxidation was determined using MDA method and anticancer activities were evaluated using MTT method. The extract with potent anticancer activity was further fractionated using bioassay guided fractionation and identified using GCMS. Based on the EC50 values, cocoa root extract showed the highest antioxidant activity about 358.33 ± 6.96 µg/ml. However, no EC50 values were obtained from cocoa husk, shell (unfermented), shell (fermented) and pith extract. Cocoa root extract was found to be highest for total phenolics content about 22,000.00 ± 1069.27 mg/100 g extract. At the maximum concentration of 10 mg/ml only cocoa cherrele extract showed antilipid peroxidation activity about 10.39 ±1.09% but other extracts demonstrated no activity. The MTT assay revealed that the cocoa leaf extract presented the highest anticancer activity with moderately active against breast estrogen receptor positive (MCF7) cancer cell line with IC50 value was 41.43 ± 3.26 µg/ml. Subfraction (II/SF7) of cocoa leaf extract was the most active against MCF7 and more than 6 major of synergistic active compounds were identified using GCMS. From this study also, result demonstrated that plant extract possesses a cytotoxic effect on cancer without causing toxicity to normal cells.

Biography

Zainal Baharum currently is a PhD candidate in the Department of Biomedical Science at Faculty of Medicine and Health Sciences, University Putra Malaysia. He is interested on natural products. His thesis project, which he is investigating with his supervisor Dr. Abdah Md Akim, was looking at antiproliferative activity from non-edible cocoa plant parts. He received his master degree from same university in Environmental Biotechnology. He is also a Research Officer at Biotechnology Division, Malaysian Cocoa Board, Malaysia since 2003 until now. He also has experienced on study of antibacterial activity from tree.

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Ethnobotany, phytochemistry and pharmacology of *Stephania rotunda* Lour

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*Stephania rotunda* Lour. (Menispermaceae) is an important traditional medicinal plant that is grown in Southeast Asia. The stems, leaves, and tubers have been used in the Cambodian, Lao, Indian and Vietnamese folk medicine systems for years to treat a wide range of ailments, including asthma, headache, fever, and diarrhoea. The traditional uses of *Stephania rotunda* were recorded in countries throughout Southeast Asia (Cambodia, Vietnam, Laos, and India). Different parts of *Stephania rotunda* were used in traditional medicine to treat about twenty health disorders. Phytochemical analyses identified forty alkaloids. The roots primarily contain l-tetrahydropalmatine (l-THP), whereas the tubers contain cepharanthine and xylopinine. Furthermore, the chemical composition differs from one region to another and according to the harvest period. The alkaloids exhibited approximately ten different pharmacological activities. The main pharmacological activities of *Stephania rotunda* alkaloids are antiplasmodial, anticancer and immunomodulatory effects. Sinomenine, cepharanthine, and l-stepholidine are the most promising components and have been tested in humans. The pharmacokinetic parameters have been studied for seven compounds, including the three most promising compounds. The toxicity has been evaluated for liriodenine, roemerine, cycleanine, l-tetrahydropalmatine, and oxostephanine. Pharmacological investigations have validated different uses of *Stephania rotunda* in folk medicine. The three most promising compounds of *Stephania rotunda*, sinomenine, cepharanthine, and l-stepholidine could constitute potential leads in various medicinal fields, including malaria and cancer.

Biography

Desgrouas Camille has completed his PhD at the age of 28 years from Aix-Marseille University and is actually in Postdoctoral fellowship at the Faculty of Agriculture of Kasetsart University, Bangkok. She has published 9 papers.

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Antioxidant, antimicrobial activities and total phenolic content of Prunus spinosa L. subsp. dasphylla (Schur) Domin and its secondary metabolites

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The genus Prunus L. belonging to the family Rosaceae is represented by 5 species in Anatolia. Prunus species specially Prunus spinosa L. subsp. dasphylla are thorny shrub or small trees in North, West and South Anatolia. They have been known as “çakal eriği, güvem, güvem eriği, yabanı erik ve güvemdeniken” in Anatolia. The leaves, flowers and fruits of the plant species have been used for constipation and as diuretic, anthelmintic and laxative. Furthermore, the fruits were used for eczema, diabetes, heart diseases, kidney infections, colds and the treatment of asthma. In this study, the antioxidant activity of the methanol extract of Prunus spinosa L. subsp. dasphylla as well as its partitionated derivatives (CH₂Cl₂, EtOAc and n-BuOH) was determined against DPPH radical spectrophotometrically. As compared to α-tocopherol and ascorbic acid used as standard, the extracts were found to be dose-dependent active. The total phenol content of the extracts was determined with Folin-Ciocalteau reagent; results are reported at gallic acid equivalent. The antimicrobial activity of the extracts were tested in vitro against E. coli ATCC 25922, Enterococcus faecalis ATCC 29212, P. aeruginosa ATCC 27853, S. aureus ATCC 29213, Candida albicans ATCC 90028, C. krusei ATCC 6258, C. parapsilosis ATCC 90018 strains by using the CLSI (Clinical and Laboratory Standards Institute) microdilution method. Ciprofloxacin and fluconazole were used as controls. Ethnobotanical information obtained from traditional healers may serve as an initial lead for bioactive compounds. According to the results, we used bioassay guided fractionation procedure, and isolated two glycosilated benzyl alcohol derivatives.

Biography

Irem Cankaya graduated from the Faculty of Pharmacy, Hacettepe University in 1996 and in the same year she began the graduate program in the Department of Pharmacognosy. She obtained MSc in Pharmacognosy in 1999. She completed a Doctorate program in Pharmacognosy in 2004. Between 2000-2002, and in 2004 and 2012, she studied in the United States, University of Mississippi, National Center for Natural Products Research and School of Pharmacy. After Postdoctoral research at Faculty of Pharmacy, Mississippi University, she became a senior scientist at the Department of Pharmaceutical Botany in Ankara, Turkey. Since 2009, she is an Associate Professor at the University of Hacettepe. She is a member of Association of Pharmacognosy and Phytotherapy (one of the member of ESCOP) since 2005. She has presented more than 45 papers at international scientific conferences and has published more than 50 peer-reviewed scientific publications and book chapters. In recognition to her work on natural products, she recently received the 2010-Hacettepe University Scientific award (Ankara, Turkey), 2011-Turkish Pharmacist Association Academy of Pharmacy award and for her work on antifungal activities she obtained the USDA’s International Scientific Enhancement Programme (ISEP) Award in US, 2004.

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From traditional to modern: Research on the vine tea, one of the non-camellia teas in China

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Chinese tea originated from southwestern China, the settlement of minority ethnic groups where there is rich geographical, biological, anthropological and cultural diversity. In fact, except for *Camellia sinensis*, various plants (not belonging to the family Theaceae genus Camellia) are popularly used to prepare tea beverages locally in different part of China, such as vine tea. The vine tea originated from *Ampelopsis grossedentata* (Vitaceae family) with Chinese name: “Teng Cha”, it has been used for a very long history in the south part of China. Locally, it is brewed as tea for drinking mainly used for the treatment of icteric hepatitis, cold caused by wind-fire, sore throat, furuncle and carbuncle, alcohol intoxication and constipation, etc. Herein, the authors summarized the herbal record of vine tea in the ancient Chinese medicinal book and investigated its folk application mainly in Hunan and Guizhou provinces. Dihydromyricetin (DMY) is the major bioactive flavonoid ingredient of the vine tea, according to our study, we found out that contain of DMY in different vine samples varies from 3.1~32.9%. At the same time, the antioxidant activities and the protect effect on methylglyoxal (MG)-induced PC12 cell line were investigated. The results indicated that vine tea may become a potent healthy tea to prevent chronic disease such as diabetic encephalopathy.

Biography

Lijia Xu has completed her PhD from Institution of Medicinal Plant Development, Chinese Academy of Medical Science, Peking Union Medical College, Beijing, China. She is now an Associate Professor in the Institution of Medicinal Plant Development, Chinese Academy of Medical Science. Her current research interest is in the folk application and bioactive flavonoids of non-Camellia teas in China.

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Anti-inflammatory effects of essential oil of *Zanthoxylum myriacanthum var. pubescens* Huang (Ma Qian), a Dai folk medicine

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*Zanthoxylum myriacanthum var. pubescens* Huang (Ma Qian) is a common plant grown in mountainous areas in Xishuangbanna, Yunnan province. The fruits are used as a flavoring agent in food processes such as barbecue and stewing. In Dai folk medicine, it is used for the treatment of insect bites and intestinal problems. As some essential oils are reported to have anti-inflammatory effects, we want to test whether Ma Qian essential oil has similar effects. Ma Qian essential oil was made from dried fruits. Chemical analysis showed the major ingredient of Ma Qian essential oil is D-limonene. To study the anti-inflammatory effects of the essential oil, we started with macrophage 264.7 cell line. Ma Qian essential oil inhibited NO production from LPS stimulated macrophage in a dose dependent manner without affecting cell viability. Similar inhibitory effects were also observed for TNF-alpha and IL-1beta. *In vivo* anti-inflammatory effect of Ma Qian essential oil was further tested in DSS-induced colitis model. Groups of Kunming mice were given two doses of Ma Qian essential oil and the control group was given the vehicle. Mice were given essential oil for 7 days before DSS and continued for 7 days. Notably, Ma Qian essential oil completely prevented mortality induced by DSS. Moreover, mice on Ma Qian essential oil showed less weight loss compared with control in a dose dependent manner. These data suggest that Ma Qian essential oil has potent anti-inflammatory effect and might be used as a safe anti-inflammatory agent in many settings.

Biography

Ping Zhang completed her PhD at Texas A&M University, College Station, USA and did Postdoctoral studies from Wake Forest University, Oklahoma University Health Science Center, and Duke University Medical Center. She is currently a Professor at Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences. Her work covers polyunsaturated fatty acids as well as T cell biology in health and disease. Her recent interests extend to immune-modulatory effects of phytochemicals from foods and medicinal plants. She is serving as a reviewer for the British Journal of Nutrition and World Microbiology and Biotechnology.

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Evaluation of the wound healing potentials of three *Achillea* species on cultured NIH3T3 fibroblasts

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The genus *Achillea* L. (Asteraceae), is represented by more than 140 species worldwide which is widespread in the northern hemisphere. Most of the *Achillea* species are used in folk medicine as wound healing, appetizer, digestive, diuretic and anti-inflammatory. Pharmacological activity studies have been focused on for their antioxidant and anti-inflammatory activities, as well as wound healing activity. This study was conducted for the first time to evaluate the *in vitro* wound healing activity of aqueous extracts of *A. coarctata* Poir., *A. kotschyi* Boiss. subsp. *kotschyi* and *A. lycaonica* Boiss. & Heldr. on NIH3T3 fibroblast cells. Fibroblasts have a major role in the wound healing process due to their ability to synthesize collagen. MTT assay was used to determine non-cytotoxic concentrations of *Achillea* extracts and titrated extract of *Centella asiatica* (TECA) as a positive control on NIH3T3 cells at 24 and 48 hours. The extracts were added to cell culture at the concentrations of 2.5, 5, 10, 20, 40 μg/ml and NIH3T3 cells were incubated for 24 hours for morphological examination. Staining of cultured NIH3T3 cells was conducted according to Masson's trichrome staining procedure. After staining, the controls and extracts treated fibroblasts were examined under a light microscope. The results were given by comparing with concentrations of TECA on cultured NIH3T3 cells. The most abundant activity was observed in *A. kotschyi* subsp. *kotschyi*. The activity showed a positive relationship with antioxidant activity and total phenolic contents. Stimulation of collagen synthesis and the fibroblast migration may be responsible for wound healing activity.

Biography

Tuncay Agar has completed his MSc at the age of 26 years from Hacettepe University Faculty of Pharmacy Department of Pharmaceutical Botany. He continues his PhD studies at Anadolu University Faculty of Pharmacy Department of Pharmacognosy in Turkey. He has published a book section about medicinal plant monographs in a national book in Turkish. He has attended several symposiums, conferences and education programs. He is a member of two societies in his research area. His research interests are plant morphology, anatomy and systematics, biological activities and quantitative analysis.

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Assessment of antioxidant capacity, anti-collagenase and anti-elastase assays of Malaysian unfermented cocoa bean for cosmetic application

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Recent trends in anti-aging research projected the use of antioxidant compound derived from botanical products. Phenolic acids, flavonoids and high molecular weight polyphenols are some of antioxidants which are able to protect human skin against the harmful effects of UV irradiation, i.e., photoaging and skin cancer development. Various studies have demonstrated cocoa beans to contain polyphenols and possess health promoting effects mainly on antiradical property. In this study, the HPLC/DAD quantification of (-)-epicatechin from PBC123 and PBC140 Malaysian unfermented cocoa bean extracts (CBEs) were 121.01 and 118.09 mg/g DW, whereas concentration of (+)-catechin were 6.65 and 6.53 mg/g DW, respectively with no significant differences ($p<0.05$). In term of antioxidant capacity, Ferric reducing/antioxidant power (FRAP) of the respective clones were assayed at 822.10 and 795.99 mM FeSO$_4$/g DW. Inhibition of proteinases expression induces by reactive oxygen species (ROS) were exhibited in the in-vitro anti-collagenase and anti-elastase assays. The anti-collagenase activity of PBC123 and PBC140 were 62.99% and 59.96% whereas anti-elastase has been measured at 36.60% and 15.75%, respectively. Positive and high correlation were observed within (-)-epicatechin content (1), FRAP (2) and anti-collagenase (3) with significant relationships for both PBC123 and PBC140 ($r_{12}=0.901$, $r_{13}=0.768$ and $r_{23}=0.908$). A statistical One-Way ANOVA showed that there was no significant difference obtained between PBC123 and PBC140 in terms of (-)-epicatechin, FRAP and anti-collagenase assays, however, significant difference was observed from anti-elastase assessment ($p<0.05$). These results indicate unfermented PBC123 cloneas a potential source of natural ingredient in a cosmetic industry.

Biography
Norliza Abdul Wahab is pursuing her PhD at the Halal Products Research Institute, University Putra Malaysia Serdang in a Halal Products Development programme. She has been working as a research officer at the Malaysian Cocoa Board, a government organization for nearly 12 years mainly in cocoa-based cosmetic products development. Her current research is about bioactive component from unfermented cocoa bean for anti ageing property due to its high antioxidant capacity. Based on this research, she has received several awards including a gold and a bronze medal at the SIIF2008 (Korea) and MTE2014 being held at Malaysia, respectively.
An ethnobotanical study of medicinal plants used by the Paliyars aboriginal community in Theni district, Tamil Nadu, India

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An ethnobotanical survey in various Paliyar tribal pockets of Western Ghats in Theni District, Tamil Nadu (India) was conducted. Most of the information included in this study was gathered from elderly and experienced medicine men those who have long acquaintance with the use of medicinal plants. The indigenous knowledge of local traditional healers on the native plants used for medicinal purposes was collected through personal interviews and informal conversations, during field trips of the study. The collected plants were identified by referring standard compilations, and arranged in alphabetical order with binomial of the plant, the vernacular name and ethnomedicinal use in brief. The voucher specimens have been deposited in herbarium of Department of Botany, V H N S.N College (Autonomous), Virudhunagar. About 76 plant species belonging to 44 families towards 36 types of ailments are described along the method of drug preparation, mode of administration, probable dosage and duration of treatment. The present study not only prescribed the remedies for common diseases in human beings but also has drawn attention for the need of detailed study on medicinal plants of the area, which could provide better and efficient remedies for many dreadful diseases. This study showed that many people in pockets of Western Ghats of Theni district still continue to depend on medicinal plants at least for the treatment of primary healthcare. At the same time the traditional healers are dwindling in number and there is a grave danger of traditional knowledge disappearing soon as the younger generation is not interested to carry on this traditional work.

Biography

Mehalingam P completed his PhD Degree from Madurai Kamaraj University, Madurai. Currently he is working as Assistant Professor in Botany, VHNSN College (Autonomous), Virudhunagar, Tamilnadu (India). He has been selected for UGC Research Award Scheme. He has participated and presented his research papers in international conferences held in The Netherlands, Malaysia and Thailand. He has been engaged in research on ethnobotany, pharmacognosy, pharmacology and phytochemistry.

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Newer insights into Daodi herb research: Ecotype theory and practice

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Daodi herb plays essential roles in Traditional Chinese Medicinal, and is unique for Chinese Medicinal Materials (CMM). It means good quality, high yield, special processing technique, and most importantly, it is usually produced in specific geographic region. Due to complex and diverse climatic and geographical ecological conditions in China, unique eco-diversity of CMM has been formatted, which is characterized by multi-local, multi-Daodi herb. Currently, the comparative research on Daodi herb vs. non Daodi herb is hot topic within China. However, some questions need to be answered: How to identify and authenticate the Daodi herb? What are the ecological characteristics of Daodi herb and what are the critical ecological factors influencing the formation of Daodi herb (ecotype)? What are the correlations between the ecotypes and environment, quality and hereditary basis? Here, updated case studies on ecotypes of *Cistanche deserticola* based on chemical component and molecular traits; quality variation and ecotype division of *Panax quinquefolium* L. in China; correlative study between ecological factors and chemical constituents of *Notopterygium Rhizoma* Et Radix of endangered plateau plant and *Dendrobium* are reported.

Biography

Linfang Huang received PhD degree in Pharmacognosy in 2003 from Chengdu University of Traditional Chinese Medicine. She got Postdoctoral training in Kyoto University, Japan. She is a full-time Researcher in Institute of Medicinal Plant Development, Chinese Academy of Medical Sciences. As a first and corresponding author, she has published more than 100 scientific papers in reputed journals, and obtained 3 patents. She currently serves as a reviewer for more than 10 scientific journals. Her research interests are focused on Daodi drug, medicinal plant resources, quality evaluation & identification, as well as the drug discovery from natural resources.

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A summary and evaluation of the current evidence for traditional Chinese medicine for myocardial infarction

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Objective: A comprehensive summary and evaluation of the current evidence profile of the role of traditional Chinese medicine (TCM) in myocardial infarction management was conducted to provide evidence-based recommendations for clinical application and evoke thoughts for future researchers.

Methods: CNKI, VIP, CBM, PubMed and the Cochrane Library were searched systematically for literature on TCM for myocardial infarction. After screening, studies were categorized in terms of type into five levels, i.e., systematic review (SR), randomized controlled trial (RCT), observational study, case study, and basic research. General information was abstracted, and quality of these studies and conclusions made were summarized and assessed.

Results: A total of 452 studies involving 10 SRs, 123 RCTs, 47 observational studies, 28 case studies, and 244 basic researches were included. Clinical studies centered primarily on herbal decoction and most were not rigorously performed. High-quality studies were predominantly on patent drugs such as Danshen injection, Shenmai injection, Shengmai injection, and QishenYiqi dripping pills. The most frequently observed pattern of drug combinations was decoction plus injection. A summary of findings from systematic reviews and clinical research show that TCM may reduce mortality, decrease risk for complication, reduce myocardial injury, improve cardiac function and inhibit ventricular remodeling. Results of experimental studies also support the active role of TCM in reducing infarct size and myocardial injury, promoting angiogenesis, preventing ventricular remodeling and improving cardiac function. According to the current bodies of evidence, TCM has proven effects in the prevention and treatment of myocardial infarction. It was also found that the effects of Chinese patent drugs vary with indications. For instance, Shenmai injection has been observed especially effective for reducing incidence of acute clinical events, and patent drug with qi-nourishing and blood-circulating properties has been proved good at inhibiting ventricular remodeling. High-quality evidence supports the use of TCM injection for acute myocardial infarction and Chinese patent drug medication for secondary prevention. Reports on adverse events and other safety outcomes associated with Chinese medicine for myocardial infarction are not many, but the current evidence indicates a good safety profile of TCM.

Biography

Lu Xiao is assistant professor at Tianjin University of TCM, China. Her major research interest includes evaluation of various traditional medicines towards various ailments.

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Isolation and structure elucidation of new cyclotetrapeptides: Ochrine A and B from *Aspergillus ochraceopetaliformis*

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Ochrine A and B were isolated from the culture broth of Hawaiian marine sediment-derived-fungus *Aspergillus ochraceopetaliformis* (088702A) after impressive cytotoxic data of its crude extract. The structures of these compounds were found to be new cyclotetrapeptides; cyclo[-L-lle-L-Thr-L-O-Me-Tyr-L-pro-] for Ochrine A and cyclo[-L-lle-L-Thr-L-O-Me-Tyr-L-N-Me-Ala-] for Ochrine B. The sequence and absolute configurations of amino acids were determined by ESI-TOP-MS, NMR and Marfey's analysis.

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Clinical study of the *Prunus dulcis* (almond) shell extract on *Tinea capitis* infection

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*Prunus dulcis* (Almond) shell extract has been demonstrated for their biomedical applications. Shell extract was prepared by Soxhlet method and further characterized by UV-visible spectrophotometer, atomic absorption spectrophotometer (AAS) and MIC control method. In this study the antifungal activity of almond shell extract was observed against clinically isolated pathogenic fungi by strip method. The antioxidant potential of crude shell extract was evaluated by using DPPH (2,2-diphenyl-1-picyrylhydrazyl) and radical scavenging system. The possibility of short term therapy was only 20 days. The total antioxidant activity varied from 94.38 to 95.49% and total phenolic content was found 4.455 mg/gm in almond shell extract. Finally the results provide a great therapeutic potential against tinea capitis infection of scalp. Included in this study of shell extract show scientific evidence for clinical efficacy, as well as found to be more useful in the treatment of dermatologic disorders and without any doubt it can be recommended to be patent. The levels of antifungal activities and antioxidant activities observed suggest that the cheapest and discarded shell is a potential source of bioactive compounds that could be relevant in antimycotic drugs formulation.
Proposed categories of larvicidal activity of natural products derived from plants against *Anopheles* vector larvae

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*Anopheles* mosquitoes are the most important vectors among the arthropods. Human malaria is transmitted through the bites of female *Anopheles* mosquitoes. It is estimated that malaria is responsible for 627,000 deaths globally. The usage of natural products such as larvicides is considered as a significant method for mosquito control. Natural products have beneficial advantages including efficacy, degradability and non-toxic effects on non-target organisms. Based on laboratory and field experiences, descriptive studies or reports, six categories are considered for larvicidal activity of natural products derived from plants including extremely active, highly active, moderately active, slightly active and non-active. This guidance suggests the likely larvicidal activity of plant essential oils based on the LC$_{50}$ value. We consider natural products derived from plants extremely active when its LC$_{50}$ is up to 1, highly active when its LC$_{50}$ is between 1-5, active when its LC$_{50}$ is between 5-50, moderately active when its LC$_{50}$ is between 50-100, slightly active when its LC$_{50}$ is between 100-200 and non-active when its LC$_{50}$ is more than 200. It seems three classes extremely active, highly active and active are required more attention, while there is no priority of research for the rest of categories.

**Biography**

Mohammad Mehdi Sedaghat is Associate Professor at Tehran University of Medical Sciences (TUMS). He completed his doctoral study in integrated molecular and morphological systematic of *Anopheles* at the school of Public Health, Tehran University of Medical Sciences and Natural History Museum, London in 2002. He is head of Vector Biology lab and acts as research deputy of department of Medical Entomology and Vector Control at TUMS. His area of interest includes medical and molecular entomology and also vector control using natural products. He has published many research and review articles in the international peer reviewed journals and served as reviewer of the reputed journals in these fields.

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Appraisal of clinical practice guidelines for the management of rheumatoid arthritis in traditional Chinese medicine using the AGREE II instrument: A systematic review

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Introduction: An increasing number of clinical practice guidelines (CPGs) in traditional Chinese medicine (TCM) for rheumatoid arthritis (RA) have been issued, and all have been developed in China but their quality is unclear. This study aimed to systematically review the quality and consistency of recommendations on the TCM CPGs for RA in China using the AGREE II instrument.

Methods: TCM CPGs identified from five electronic databases and hand searches through related handbooks published between January 1990 and December 2012. The CPGs were categorized into Evidence Based (EB) guideline, Consensus Based with no explicit consideration of Evidence Based (CB-EB) guideline and Consensus Based (CB) guideline according to the method reported previously. Four reviewers independently appraised the CPGs based on the Appraisal of Guidelines for Research and Evaluation (AGREE II) instrument, and compared the recommendation on TCM pattern (Zheng) classification and treatment.

Results: Five TCM CPGs satisfied the inclusion criteria. The quality score of EB guideline was higher than CB-EB and CB guidelines. Five TCM patterns in the CPGs were recommended in the EB CPG. The herbal preparations including *Tripterygium wilfordii* recommended in the EB CPG were mostly recommended for RA treatment. The recommendations on non-drug management in the CPGs were fairly consistent, and the recommendations are different based on the different TCM patterns accordingly.

Conclusions: EB CPG for RA treatment in TCM show higher quality with measurement of AGREE II instrument, and it suggested that TCM CPG could be better developed with clinical evidence.

Biography
Ya Yuwen received a PhD from China Academy of Chinese Medical Sciences in 2009. Now she is associate researcher of China Academy of Chinese Medical Sciences, and the member of TCM standardization office of State Administration of Traditional Chinese Medicine of P.R.C. She has published more than 80 academic papers in reputed journals and serving as the reviewer of Chinese Journal of Integrated Traditional and Western Medicine.

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New ursane type sulfated saponins from the aerial parts of *Zygophyllum fabago* Linn. and their urease inhibitory activity

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The genus *Zygophyllum* belongs to the family *Zygophyllaceae* and consists of about 285 species and 22 genera, distributed in deserts and steppes from Mediterranean to Central Asia, South Africa and Australia. In Turkey only one species *Zygophyllum fabago* is found (locally named as *YabaniKimynu*). Aerial parts of the plant collected at flowering stages have been used as an anti-rheumatic, anti-helminthic, cathartic and anti-asthmatic. Extracts may also contain photo-sensitizers. Antiviral activities were only observed at high concentrations closer to the upper limit for testing. These important pharmacological properties of the species prompted us to work on its phytochemical investigation as discussed elsewhere. The present studies describe the isolation and structure elucidation of seven new triterpenoid glycosides. Their structures were elucidated through spectral studies including 2D-NMR experiments (HMQC, HMBC, COSY and NOESY). The urease inhibitory effect as well as their molecular docking studies also been carried out to check the structure activity relationship.

**Biography**

Saleha Suleman Khan completed her PhD work in the field of organic Chemistry from H.E.J. Research Institute of Chemistry, University of Karachi and also worked in lab of Prof. Dr. James S. Nowick at the University of California Irvine, USA as a synthetic chemist on Higher Education Commission Pakistan Scholarship. Currently, she is working in Herbion Pakistan Pvt. Ltd., in Research &Development department and her main work is to develop new methods for the quantitative and qualitative determination of markers & biomarkers of medicinal herbs. She has published more than 23 papers in internationally reputed journals with more than 30 impact factor.She has been awarded Research Productivity Award in 2011 & 2012 to acknowledge her contribution in development of science in Pakistan by Pakistan Council of Science & Technology (PCST).

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