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Symposium Introduction

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Introduction to the 1st International Symposium on Phytochemicals in Medicine and Food (ISPMF 2015)

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Abstract: 1st International Symposium on Phytochemicals in Medicine and Food (ISPMF2015) was hold in Shanghai, China from June 26th to 29th, 2015. 1st ISPMF was organized by Phytochemical Society of Europe (PSE) and Phytochemical Society of Asia (PSA). More than 270 scientists from 48 countries attended this meeting. The programme of ISPMF2015 consisted of 12 plenary lectures, 20 invited talks, 55 short oral presentations in 16 sessions, including phytochemistry, phytomedicine, pharmacology and application of phytochemicals in medicine and food. 1st ISPMF has obtained support from Critical Reviews in Food Science and Nutrition, Food Chemistry, Phytochemistry Reviews, and Nutrients. As supported by Prof. Thomas F. Hofmann, a special issue on Journal of Agricultural and Food Chemistry (ACS) for 1st ISPMF has been scheduled since January 2015.

Keywords: ISPMF2015; Phytochemicals; Medicine; Food

The 2015 Nobel Prize for Physiology and Medicine was awarded for research in the field of natural products and neglected diseases. Half of the prize was considered for discovering the novel antimalarial drug artemisinin in a traditional Chinese medicine by Chinese scientist Prof. Youyou Tu. In 2015, we successfully organized 1st Phytochemical Society of Europe (PSE) - Phytochemical Society of Asia (PSA) joint meeting - International Symposium on Phytochemicals in Medicine and Food (ISPMF2015) in Shanghai, China from June 26th to 29th.

More than 270 scientists from 48 countries attended this meeting. The international organizing committee (**Figure 1**) and scientific advisory board of ISPMF 2015 were comprised of outstanding scientists from around the globe such as Prof. Simon Gibbons (University of London, UK), Prof. Milen I. Georgiev (Bulgarian Academy of Sciences, Bulgaria), Dr. Krystyna Skalicka-Woźniak (Medical University of Lublin, Poland), Prof. Amir Reza Jassbi (Shiraz University of Medical Sciences, Iran), Prof. Franz Bucar (University of Graz, Austria), Prof. Satya Sarker (Liverpool John Moores University, UK), Prof. Francisco A. Macías (University of Cadiz, Spain), Prof. Chin-Kun Wang (Chung Shan Medical University, Taiwan), Prof. Petra Högger (Würzburg University, Germany), Prof. Maurizio Battino (Univ Politecnica delle Marche, Italy), Prof. Randolph Arroo (Leicester School of Pharmacy, UK), Yonglin Wang (Guizhou Medical University, China), Prof. Elvira Gille (the "Stejarul" Biological Res Cent, Romania), and Prof. Anca Miron (Univ Med & Pharm "Grigore T. Popa", Romania).

Dr. Jianbo Xiao and Prof. Zhihongjiang from Macau University of Science and Technology were the co-chairman of the International Organizing Committee. Dr. Jianbo Xiao and Prof. Mei Han from Beijing Normal University moderated the opening address on June 26. The programme of ISPMF2015 consisted of 12 plenary lectures, 20 invited talks, 55 short oral presentations in 16

sessions, including phytochemistry, phytomedicines, pharmacology and application of phytochemicals in medicine and food.

1st ISPMF has obtained support from Critical Reviews in Food Science and Nutrition (Taylor & Francis) (1), Food Chemistry (Elsevier) (2), Phytochemistry Reviews (Springer) (3), Nutrients (MDPI) (4). The conference abstracts edited by Prof. Petra Högger (Würzburg University, Germany) and Dr. Jianbo Xiao were published as a special issue on Nutrition and Medicine (Würzburg University Press.) (2015, 3, S1). A special issue Journal of Agricultural and Food Chemistry (ACS) for 1st ISPMF has been scheduled from January 2015 by Prof. Thomas F. Hofmann. The issue focuses on the papers with the subject of phytochemicals in food, presented in 1st ISPMF.

Exploring medicinal plants to identify bioactive natural compounds has never stopped as new drug-like molecules have continued to be discovered from medicinal plants. Satyajit D Sarker (UK) presented a journey of a phytochemist - witnessing the changing face of phytochemical research. A new approach for creating dereplicated phytochemical libraries to feed into the high-throughput-screening was incorporated. Most recently, a more holistic and multidisciplinary approach in phytochemical research, known as 'plant metabolomics', has been developed. The Agavaceae family includes more than 480 species natively in America. The major natural products isolated in those plants are steroidal saponins with many bioactivities. Prof. Francisco A. Macías (Spain) presented the phytotoxicity of the isolated saponins on the standard target species *Lactuca sativa*. Young-Joon Surh (South Korea) presented the bioactive phytochemicals in spices and herbs in the development of pharmaceuticals and nutraceuticals. His group has evaluated the cancer chemopreventive and cytoprotective effects of curcumin (*Curcuma longa* L., Zingiberaceae), [6]-gingerol (*Zingiber officinale* Roscoe, Zingiberaceae),

capsaicin (*Capsicum annum* L., Solanaceae), zerumbone (*Zingiber zerumbet (L.)* Sm., Zingiberaceae), yakuchinone A and B (*Alpinia oxyphylla* Miquel, Zingiberaceae), and eupatiline (*Artemisia asiatica* Nakai), etc. Amir Reza Jassbi (Iran) reported bioactive phytochemicals from shoots and roots of *Salvia* species.

Phytochemicals demonstrate appreciable levels of activity against clinically-relevant strains of bacteria and in some cases the selectivity of these compounds warrants their further evaluation Simon Gibbons (UK) presented the potential phytochemicals as sources of new anti-infectives and psychoactives. Zingiberaceae are a pantropical plant family with 53 genera and more than 1200 species including many medicinal and aromatic plants. Franz Bucar (Austria) summarized the antimicrobials and resistance modulators from Zingiberaceae. Shao-ping Nie (China) reported the structural characteristic and bio-activity of polysaccharides from *Dendrobium officinale*. Kalin Yanbo Zhang (Hong Kong) investigated the mechanisms and clinical study of polysaccharide of *D. officinale* in alleviating cigarette-induced COPD.

Aging is a natural progress of life for human beings. Chin-Kun Wang (Taiwan) evaluated the antiaging activity of green tea, tea polyphenols containing milk, roselle, chlorella, marigold flower and Si Wu Tang from animal model to human clinical. Human clinical trials indicated the health benefits on the liver (green tea, chlorella), skin (Si Wu Tang, tea polyphenols containing milk and roselle), and eyesight (marigold flower).

Polyphenols are a group of compounds commonly found in fruits, vegetables, cereals, chocolate, and beverages such as tea, coffee and wine. Epidemiological studies have unambiguously shown that there is a positive correlation between regular fruit and vegetable intake and a lower occurrence of a variety of diseases. Randolph Arroo (UK) presented the role of flavonoids in preventing degenerative diseases. The intake flavonoids exert beneficial actions

on cells not through their potential to act as antioxidants but rather through different mechanisms, e.g. direct interference with cell signaling cascades seems likely, especially considering that flavonoids can express benefits *in vivo* through these mechanisms at relatively low concentrations. Wenhua Ling (China) summarized the basic and applied studies of anthocyanins preventing atherosclerotic cardiovascular diseases. His group found that protocatechuic acid, a gut microbiota metabolite of Cy3G, has remarkable biological effects in attenuation of inflammation response and promoting macrophage reverse cholesterol transport. Shang-Gao Liao (China) presented pharmacology and phytochemicals of *Polygonum capitatum* – an ethnic Miao's herb used in the treatment of urinary tract infections. The traditional use of *P. capitatum* for the treatment of UTIs was attributed to flavonoid and polyphenolic glycosides. Thomas Netticadan (Canada) reported the cardio-protection with polyphenols and concluded that polyphenols have strong cardio-protective properties and may therefore have a potential in the prevention and treatment of CVD. Milen I. Georgiev (Bulgaria) over-viewed the phytochemical (incl. NMR-based metabolomics), pharmacological and biotechnological aspects of research on phenylethanoid glycosides.

The standardized extract of the French maritime pine *Pinus pinaster* Ait. (Pycnogenol®) is rich in procyanidins and polyphenols. Petra Högger (Germany) reported the pharmacokinetics and cellular effects of a French maritime pine bark extract in humans. A new metabolite produced from catechin units by gut microbia, (3,4-dihydroxy-phenyl)-valerolactone was found in the plasma, which showed a higher *in vitro* bio-activity than its metabolic precursor. Yoshitaka Takahashi (Japan) reported the inhibitory effects of tea extracts on atherogenic 12-lipoxygenase activity. The major components inhibiting leukocyte-type 12-lipoxygenase were identified as ethyl gallate and quercetin. Mingfu Wang (Hong Kong) presented novel roles of

phenolics in management of food quality and human health. Anca Miron (Romania) reported stilbene derivatives occurring in *Pinus cembra* L. bark that induce cytotoxic effects on HeLa cells. Fang Chen (China) summarized the prevention of phytochemicals on the toxicity of compounds formed during food processing. Three potential aspects including excellent antioxidant activity, DNA damage prevention function and enzyme induction contribute to the successful protection mechanism. Maurizio Battino (Italy) updated and discussed the molecular and cellular mechanisms proposed in recent studies to elucidate the healthy effects of strawberry polyphenols against the most common chronic diseases, such as cancer, cardiovascular diseases, metabolic syndrome, and inflammation. Hye-Kyung Na (South Korea) reported that piceatannol induced Nrf2-mediated antioxidant gene expression and inhibits NF-κB-mediated pro-inflammatory gene expression in human mammary epithelial cells.

Finally, ISPMF2015 has been dedicated to create a stage for exchanging the latest research results in phytochemicals for food and human health. 2nd International Symposium on Phytochemicals in Medicine and Food (2-ISPMF) will be hold in Fuzhou, China from April 7th to 10th, 2017. 2-ISPMF). 2-ISPMF is sponsored by Phytochemical Society of Europe (PSE) and International Society for Chinese Medicine (ISCM) and co-organized by Fujian Agriculture and Forestry University and University of Macau. 2-ISPMF also has obtained supports from Phytochemistry Reviews (Springer), Food and Chemical Toxicology (Elsevier), and Molecules (MDPI) (5).

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(4) http://www.mdpi.com/journal/nutrients/special_issues/selected-papers-ispmf2015

(5) http://www.mdpi.com/journal/molecules/special_issues/2_ISPMF_2017

Figure 1. The photo of international organizing committees. (From right to the left: Randolph Arroo, Franz Bucar, Mei Han, Francisco A. Macías, Jianbo Xiao, Simon Gibbons, and Amir Reza Jassbi).