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Report from the Second International Conference of Traditional and Complementary Medicine on Health 2015

A B S T R A C T

The Second International Conference of Traditional and Complementary Medicine on Health was held from October 24th through 27th at the GIS National Taiwan University Convention Center in Taipei. Twenty-seven invited speakers, representative of fourteen Countries, delivered their lecture in front of an audience of more than two hundreds of attendees. In addition, a poster exhibition with seventy-two presenters completed the scientific sessions. The leitmotif of the Conference was to promote a common platform in which all medical knowledge is integrated to improve the health care system. Traditional medicine and complementary medicine are characterized by a holistic approach to prevent and cure diseases, making use of natural products and/or physical manipulations. In this context, the Conference emphasized the importance of the Quality Control and of standardized methods for the authentication, preparation and characterization of the herbal products and nutrient supplements, as well as the need for controlled clinical trials and for experimental studies to demonstrate the efficacy and to understand the underlying mechanisms of the preventive and curative treatments. In this report, we highlight the novel findings and the perspectives in Traditional and Complementary Medicine (TCM; 傳統暨互補醫學 chuán tǒng jì hù bǔ yī xué) that emerged during the conference.

1. The ICTCMH 2015 at a glance

The second International Conference of Traditional and Complementary Medicine on Health (ICTCMH 2015) took place from October 24th through 27th at the GIS National Taiwan University Convention Center in Taipei (Taiwan). The event was hosted by the Journal of Traditional and Complementary Medicine (JTCM) and sponsored by several medical and research institutions worldwide (see the website "http://ictcmh2015.org.tw/" for more information). The conference started on the 24th with a dinner-buffet reception to welcome the delegates. The conference was officially opened the 25th morning by the President of the Congress Prof. Lee-Yan Sheen, who illustrated the scope of the Conference and presented the newly founded International Association of Traditional and Complementary Medicine (www.iatcm.org/). A welcome address was delivered by Dr. Yun-Tson Tsao (President of Taipei Chinese Medical Association), by Prof. Been-Huang Chiang (Minister, Taiwanese Ministry of Health and Welfare), and by Prof. Pan-Chyr Yang (Office of the President, National Taiwan University). The opening ceremony ended with the Tai chi performance of the famous dancers "Pei-Yi Li" and "Chia-Hong Sun". Then, the two-days scientific conference started. Twenty-seven invited speakers (see Fig. 1), representative of fourteen Countries, presented their work on traditional medicine and complementary medicine. A poster exhibition with seventy-two presenters completed the scientific sessions.

The conference ended the 26th evening with a gala dinner washed down with champagne and red wine. The evening was enlivened by the performances of the violinist of the "Bachnalina Club", who played Taiwanese classical music [Bang Chhun Hong (望春風 wàng chūn fēng; bāng tshun-hong)/Rainy Night Flower (雨夜花 yǔ yè huā; hōo iā hue)/All Seasons Red (四季紅 sì jì hóng; sù-kuì âng)], and of the "NTU Belly Dance Club" Belly dancers.

2. The scientific program

The scientific program listing the invited speakers and the title of their lectures is reported in Appendix I (more info can be found on the website "http://ictcmh2015.org.tw/Speakers.php"). The lectures focused on the following main topics: a) Traditional medicine; b) Herbal medicine; c) authentication, standardization and quality control; d) Pathophysiological mechanisms of action; e) translational studies.

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Fig. 1. The group photo of the Second International Conference of Traditional and Complementary Medicine on Health 2015.

Following, we summarize the novelties presented in the lectures and the perspectives emerged from the discussion.

3. Traditional medicine: the past, the present and the future

Dr. Edwin L. Cooper (Department of Neurobiology, David Geffen School of Medicine at UCLA, USA) has traced the history of Complementary and Alternative Medicine (CAM; 補充與替代醫學 bǔ chōng yǔ tì dài yī xué), highlighting the efforts made in the recent decades to establish the efficacy and validity of a diverse range of traditional therapies through rigorous, evidence-based research. He pointed to the inclusive and holistic approaches of traditional medicine as opposed to the reductionist approach of the orthodox medicine, which reflect on the therapeutic options offered to the patients.[1,2] In his lecture, Dr. Saikat Sen (Institute of Pharmacy, Assam down town University, India) provided an interesting overview of the history of Indian Ayurvedic and Siddha traditional medicine, and how this knowledge is now officially integrated with the orthodoxic medicine in the health care system in India. The combination of traditional and modern approaches to cure diseases is expected to improve the efficacy of the public health system, granting access to safe and controlled treatments of chronic diseases to large section of the population.

4. Herbal medicine and dietary supplements as complementary healing remedies

Dr. Fu-Ton Liu (Institute of Biomedical Sciences, Academia Sinica, Taiwan) presented an overview of the biological functions of lectins, carbohydrate-binding proteins that may contribute to the therapeutic effects of herbal medicine. In fact, lectins play a role in several processes including inflammation, immune reaction, and cell-to-cell adhesion. Of note, some galectins (β-galactoside-binding lectins) serve as biomarkers of certain types of tumors. Wolfberry (枸杞 gǒu qǐ), the fruit of *Licyum barbarum* and *Licyum chinense*, is used in traditional Chinese medicine (TCM; 中醫 zhōng yī) to cure affections of liver, eyes and kidneys. Dr. Kwok-Fai So (Department of Ophthalmology, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong) found that the Lycium barbarum polysaccharide (LBM) fraction has multiple beneficial effects on a variety of pathophysiological conditions including aging, liver steatosis, glaucoma, secondary neuronal degeneration and sexual ability.[3,4] Dr. Yee Shin Tan (Mushroom Research Centre, University of Malaya, Malaysia) presented a study showing the potential improvement in cognitive abilities of elderly by the regular consumption of the edible mushroom *Hericium erinaceus* (猴頭菌 hóu tóu jùn). Dr. Viduranga Waisundara (National Institute of Fundamental Studies, Sri Lanka) presented the evidence of the beneficial effects of ten edible plants traditionally used in Ayurveda medicine for the prevention and the treatment of diabetes. It is now becoming evident the importance of the microbiota for intestinal health. As a matter of facts, humans are made up of approximately ten trillions of cells and of 30.000 genes, yet a man bears approximately hundred trillions bacteria (i.e., ten times more of cells) for a total of three millions of genes. Dr. Wen Luan Hsiao (Macau University of Science and Technology, Macau) showed that administration of saponins derived from herbal tea [*Ginseng* (人參 rén shēn), *red Ginseng* (紅參 hóng shēn), *Notoginseng* (三七 sān qī) and *Gynostemma pentaphyllum* (七葉膽qī yè dǎn)] increased the intestinal colonization with beneficial microbes, so eliciting protective effects on the mucosa and preventing inflammation and cancer in ApcMin/+ mice.[5] Dr. Tewin Tencomnao (Department of Clinical Chemistry, Faculty of Allied Health Sciences, Chulalongkorn University of Bangkok, Thailand) presented a study on the anti-inflammatory and anti-aging properties of *Strebulus asper* and *Acanthus ebracteatus*, two herbs native to Asia. The extracts of these herbs were shown able to reduce glutamate neurotoxicity in hippocampal HT22 neuronal cells and to prolong by 30% the lifespan of the worm *Caenorhabdtis elegans*.

5. Authentication, standardization and quality control of medicinal natural products

The lecture delivered by Dr. Fereidoon Shahadi (Department of Biochemistry, Memorial University, Canada) focused on the regulatory issues in the use of nutraceuticals and dietary supplements arising from plants and animals. He warned about the possible adulterations, a real risk for the consumer, which can be neglected because of differences in the regulatory laws in the Countries of production and of use. Hence, the need of a common strategy for the authentication of such products. In this context, Dr. Rudolf Bauer (Institute of Pharmaceutical Sciences, University of Graz, Austria) drew the attention to the importance of the authentication of herbal-derived medicine by recalling the tragedy occurred in

Brussels in 1991. It happened that fifty-three women, who had been treated in a private clinic for weight loss with diet pills containing Chinese herbal medicines (中草藥 zhōng cǎo yào), after some time had developed kidney failure and, later, urinary tract cancer. The 'slimming' pills were supposed to contain *Magnolia officinalis* (厚樸 hòu pò) and *Stephania tetrandra* (Han Fang Ji; 漢防己hàn fáng jǐ). Yet, instead of the Han Fang Ji, those pills contained *Aristolochia fangchi* (Guang Fang Ji; 廣防己 guǎng fáng jǐ).[6] The latter contains the poison aristolochic acid, which on long term causes kidney interstitial fibrosis and urothelial cancer, especially in patients bearing a p53 mutation.[7] This fact exemplifies how the superficial management of herbal medicine may turn into a tragedy. Therefore, multiple essays (including chromatography fingerprinting, DNA fingerprinting and DNA sequencing, and others) should be employed to determine the authenticity and identity of the medicinal herb and to test the purity of the active constituents.

6. Pathophysiological mechanisms of action of complementary medical treatments

Dr. Ciro Isidoro (Laboratory of Molecular Pathology, Università del Piemonte Orientale, Italy) has investigated the molecular mechanism of the anti-cancer activity of Resveratrol, a polyphenol extracted from flowers and dietary products such as berries and grape fruits. Resveratrol could inhibit the migration of ovarian cancer cells stimulated by IL-6, a cancer promoting cytokine released by the cancer associated fibroblasts. His studies demonstrate that Resveratrol could up-regulate epigenetically the expression of the Aplasia Ras Homolog I (ARH-I/DIRAS), an imprinted oncosuppressor that controls cancer cell dormancy and migration through the modulation of autophagy.[8] Dr. Yong-Sang Song (Department of Obstetrics and Gynecology, College of Medicine, Seoul National University, South Korea) found that in appropriate conditions, Curcumin (the active ingredient of Turmeric (薑黃 jiāng huáng)) induces apoptosis in cervical cancer cells, but not in normal epithelial cervical cells. The underlying mechanism includes the formation of reactive oxygen species and the endoplasmic reticulum stress associated with the unfolded protein response, that eventually triggers apoptosis in cancer cells.[9]

A Lunch Symposium (offered by Hi-Q Marine Biotech Co., Ltd.) was dedicated to the medical properties of Oligo Fucoidan (a polysaccharide extracted from brown seaweeds). Dr. Hsien-Yeh Hsu (Department of Biotechnology and Laboratory Science in Medicine, National Yang Ming University, Taiwan) reported on the ability of oligo fucoidan to reverse the Epithelial-to-Mesenchymal (EMT) transition induced by TGFbeta in breast and lung cancer cells by inducing the proteasome degradation of the specific receptor. Dr. Ming-De Yan (Taipei Municipal Wanfang Hospital, Taiwan) found that oligo fucoidan can inhibit EMT of hepatocellular carcinoma cells by miR29b-mediated down-regulation of the DNA methyl transferase DNMT3B involved in the silencing of the Metastasis Suppressor I gene. Finally, Dr. Tz-Chong Chou (Institute of Medical Sciences, Tzu Chi University, Taiwan) presented experimental evidence on the beneficial effects of oligo fucoidan in the treatment of diabetes and osteoporosis. Dr. Raymond Cooper (Department of Applied Biology & Chemical Technology, The Hong Kong Polytechnic University, Hong Kong) found that catechins of green tea (綠茶 lǜ chá) induce apoptosis in cancer cells by targeting the membrane protein ENOX2. Dr. Richard L. Eckert (Greenebaum Cancer Center, University of Maryland School of Medicine, USA) illustrated the molecular mechanisms through which the bioactive components of natural products can target cancer stem cells and prevent skin cancer. Epigallocatechin-3-gallate (EGCG), a bioactive constituent of green tea, reduces the level of BMI-1 (a polycomb group protein that acts as epigenetic regulator of chromatin status and negatively affects the expression of oncosuppressors) and prevents cancer stem cells replication.[10] Sulforaphane, a bioactive component derived from cruciferous vegetables (Broccoli) was found able to induce the proteasome-mediated degradation of BMI-1, thus rescuing the expression of oncosuppressors (i.e., p21 and p53) and consequently inhibit skin carcinogenesis.[11] Dr. Kamal Moudgil (Department of Microbiology and Immunology, University of Maryland School of Medicine, Baltimore, USA) illustrated the pathophysiological mechanisms of the anti-rheumatic properties of Celastrus extract, a traditional Chinese herbal medicine known as Zhong Cao Yao. The bioactive tripertenoid Celastrol could suppress the progression of rheumatoid arthitris by reducing the levels of pro-inflammatory cytokines (i.e., IL-6 and IL-17) and of bone erosive proteolytic enxymes (i.e., MMP-9). Dr. John DiGiovanni (Division of Pharmacology & Toxicology, University of Texas at Austin, USA) discussed the role of a fatty diet and obesity in the predisposition to and progression of prostate cancer. It was found that a 30% calorie restriction diet could instead prevent prostate carcinogenesis by reducing the inflammatory cell infiltration of the gland, by limiting the local production of pro-inflammatory cytokines (i.e., IL-1α, IL-6, CCL5, CXCL12, NFkB1, etc.), and by inhibiting the Akt-mTOR pathway in the parenchymal cancer cells.[12] Interestingly, 6-Shogaol (6-SHO), a potent bioactive compound in ginger (*Zingiber officinale* Roscoe; 薑 jiāng), induced apoptosis of cultured prostate cancer cells by reducing constitutive and IL-6-induced STAT3 activation and by inhibiting both constitutive and TNF-α-induced NF-κB activity.[13]

7. Translational studies in traditional and complementary medicine

Dr. Yue-We (David) Lee (Harvard Medical School, McLean Hospital, USA) presented the results of translational studies with multitarget herbal remedies. His experience represented an excellent example of how the holistic approach of Traditional Chinese Medicine be successful in the treatment of chronic diseases by benefiting of the technologies currently applied in orthodoxic conventional medicine, such as genomics, metabolomics, and system biology.[14] Dr. Sue-Joan Chang (Department of Life Sciences, National Cheng-Kung University, Taiwan) pointed to the need for randomized clinical trial to prove the efficacy of food-derived phytochemicals for the treatment of metabolic diseases such as diabetes and obesity.[15,16] Dr. Jun Nishihira (Department of Medical Management and Informaticss, Hokkaido Information University, Japan) illustrated the results of a preliminary clinical trial in which the regular consumption of Gamma-aminobutyric acid-enriched white rice was proven to reduce arterial hypertension.[17] Dr. Kuo-Hsiung Lee (Natural Products Research Laboratories, UNC Eshelman School of Pharmacy, University of North Carolina, USA) presented an overview of the ongoing clinical trials now in Phase II with a variety of Chinese herbal medicine products to be used in complementary medicine. For instance, PG-2, a polysaccharide derived from *Astragalus membranaceus* (Huang Chi; 黃耆 huáng qí) has been approved for the treatment of fatigue in cancer patients; JC-9, derived from *Curcuma longa* (Jiang Huang; 薑黃 jiāng huáng) is a candidate for the treatment of prostate cancer; and PHY906 (a Huang Chin Tang formula (黃耆湯方 huáng qí tang fāng) developed by Dr. YC Cheng) is being used to alleviate diarrhea in colorectal cancer patients treated with irinotecan. Three lectures, delivered respectively by Dr. Thi Dieu Thuong Trinh (Traditional Medicine Faculty, University of Medicine and Pharmacy, Vietnam), Dr. Wei-Zen Sun (Department of Anestesiology, Department of Complementary and Integrative Medicine, NTU Hospital, Taiwan) and by Dr. Jaung-Geng Lin (Graduate Institute of Chinese Medicine, College of Chinese Medicine, China Medical University, Taiwan), were

devoted to clinical and pathophysiological studies on the utilization of acupuncture (針灸 zhēn jiǔ) as complementary treatments in the rehabilitation of motor deficit after stroke (中風 zhòng fēng) and in the relief of pain in chronic diseases. Interestingly, it was found that electro-acupuncture (電針 diàn zhēn) facilitates the release of certain neuropeptides (i.e., enkephalin and β-endorphin) and monoamines (i.e., serotonin and norepinephrine) that in turn produce anti-nociceptive effects.[18,19]_ENREF_17 Dr. Jung-Nien Lai (Institute of Traditional Medicine, National Yang-Ming University, Taiwan) presented the results of a clinical trial aimed at evaluating the efficacy of the Liu-Wei-Di-Huang-Wan formula (六味地黃方 liù wèi dì huáng fāng) as a complementary care in the treatment of diabetes type II. The study showed that the integrated health care protocol could prevent kidney failure in the patient.[20]

8. Concluding remarks and future perspectives

The second ICTCMH 2015 gathered in Taipei experts in Traditional and Complementary Medicine from around the worlds. Particular emphasis was given to the importance of the Quality Control and the authentication of herbal products, the need for controlled clinical trials to prove the efficacy of the treatments, and the importance of in *vitro* and in *vivo* studies to investigate the molecular and pathophysiological mechanisms of action of the preventive and curative treatments.

As indicators of the success of the conference, we can mention the active participation of more than two hundred delegates from nineteen countries (Appendix II), the stimulating discussion, and the creation of interactions between colleagues from different disciplines and different Countries.

The success of ICTCMH 2015 is an incentive to organize another meeting. The third International Conference of Traditional and Complementary Medicine on Health (ICTCMH 2017) will be held in Harvard Medical School in fall, 2017. The Conference will be organized by JTCM Editorial Office and Prof. Yue-We (David) Lee. Proposals for specific sessions in any traditional and complementary medicine-related topic and speakers can be made by email at JTCM Managing Editor (jtcm.me777@gmail.com). We invite you to participate at ICTCMH 2017 to present your next work on traditional and complementary medicine.

Appendix I

Table 1
The scientific program list.

Session I		
Dr. Edwin L. Cooper (USA) Traditional and complementary medicine and Alzheimer's disease	**Dr. Fu-Tong Liu (Taiwan)** Functions of plant lectins: Insights from animal lectins, or Vice Versa	**Dr. Ciro Isidoro (Italy)** Mechanism of Anticancer Activity of Resveratrol: Epigenetic regulation of autophagy
Session II		
Dr. Fereidoon Shahidi (Canada) Natural Health Products and Dietary Supplements: Learning from the Past and Moving to the Future	**Dr. Yong-Sang Song (South Korea)** Anticancer Mechanism of Curcumin in Cervical Cancer Cells: ER Stress-mediated Apoptosis by Reactive Oxygen Species	**Dr. David Y. Lee (USA)** Translational Study of Traditional Chinese Medicine in Treating Human Disease
Lunch symposium (Hi-Q)		
Dr. Hsien-Yeh Hsu Oligo Fucoidan Inhibition of Cancer in Vivo and in Vitro: Role of the Ubiquitin Proteasome Pathway in TGFβ Receptor Degradation	**Dr. Ming-De Yan** Fucoidan Elevates MicroRNA-29b to Regulate DNMT3B-MTSS1 Axis and Inhibit EMT in Human Hepatocellular Carcinoma Cells	**Dr. Tz-Chong Chou** Low Molecular Weight Fucoidan Inhibits Tumor Angiogenesis through Downregulation of HIF-1/VEGF Signaling under Hypoxia
Session III		
Dr. Rudolf Bauer (Austria) Urgent Quality Issues of Chinese Herbal Medicine	**Dr. Sue-Joan Chang (Taiwan)** Phytochemicals Offer Health-promoting Effects: Anti-diabetes, -obesity, and -inflammation	**Dr. Jun Nishihira (Japan)** Anti-hypertensive Function of Gamma-aminobutyric Acid (GABA)-Enriched White Rice
Session IV		
Dr. Kwok-Fai So (Hong Kong) Beneficial Effects of Wolfberry on Human Health	**Dr. Yee Shin Tan (Malaysia)** Can Culinary and Medicinal Mushrooms Help Mitigate Neurodegenerative Diseases	**Dr. Raymond Cooper (Hong Kong)** Chinese and Botanical Medicines: TCM Needs TQM
Session V		
Dr. Kuo-Hsiung Lee (USA) Chinese Herbal Medicine-derived Products for Prevention or Treatment of Diseases Affecting Quality of Life	**Dr. Thi Dieu Thuong Trinh (Vietnam)** Efficiency of the Combination of Modified Acupuncture and Motor Relearning Method in Post-stroke Patients	**Dr. Wei-Zen Sun (Taiwan)** Acupuncture: A Paradigm Shift from Complementary to Integrative Role Model of Holistic Medicine
Session VI		
Dr. Viduranga Waisundara (Sri Lanka) Adding Scientific Evidence to the Plant-based Anti-diabetic Remedies of Ayurveda	**Dr. Richard L. Eckert (USA)** Targeting Polycomb Genes in Skin Cancer Stem Cells with Small Molecular Inhibitors and Diet-derived Cancer Prevention Agent	**Dr. Wen Luan Hsiao (Macau)** Prebiotics, Microbiota and Health: The Modulatory Effects of Cancer Preventive Herbal Saponins on Gut Microbiota and Mucosal Environment in Mouse Models
Session VII		
Dr. Jaung-Geng Lin (Taiwan) Acupuncture Analgesia	**Dr. Kamal Moudgil (USA)** Immunomodulation of Autoimmune Arthritis by Traditional Chinese Herbal Products	**Dr. Jung-Nien Lai (Taiwan)** Integrating Traditional Chinese Medicine Healthcare into Diabetes Care by Reducing the Risk of Developing Kidney Failure among Type 2 Diabetic Patients: A Population-based Case Control Study
Session VIII		
Dr. John DiGiovanni (USA) Obesity, Prostate Cancer Progression and Novel Strategies for Prevention of Prostate Cancer	**Dr. Tewin Tencomnao (Thailand)** A Combinatorial Approach to the Study of Neuroprotective Effects of Streblus Asper and Acanthus Ebracteatus Extracts on Glutama Te-induced Oxidative Cell Death	**Dr. Saikat Sen (India)** Revival, Modernization and Integration of Indian Herbal Traditional Medicine in Clinical Practice – An Approach to Address the Unfulfilled Promise of 'Heath for All'

Appendix II

Table 1
The countries and number of participants.

No.	Country	Number of participants
1	Austria	1
2	Canada	2
3	China	10
4	Hong Kong	7
5	India	2
6	Indonesia	2
7	Italy	1
8	Japan	18
9	Korea	5
10	Macau	1
11	Malaysia	12
12	Mongolia	1
13	South Africa	2
14	South Korea	2
15	Sri Lanka	2
16	Taiwan	141
17	Thailand	3
18	USA	9
19	Vietnam	4
Total		225

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