KING'S CICM
CATALYSING INNOVATION

The King's Centre for Integrative Chinese Medicine

伦敦国王学院整合中医药学中心

KING'S College LONDON

The importance of herbal medicine in a globalised world: Chinese herbal medicine as an example.

全球化背景下传统草药的重要性：以中草药为例

Dr Qihe Xu's PPT for his lecture at the School of Chinese Pharmacy, Beijing University of Chinese Medicine, 30th March 2023.

徐启河博士在北京中医药大学中药学院学术讲座PPT（2023年3月30日 · 中国北京）

© 2023 King's College London. All rights reserved.

© 2023 伦敦国王学院 版权所有。

Welcome back…

The importance of herbal medicine in a globalised world:

Chinese herbal medicine as an example.

Despite any promises, problems kept recurring.

- **Inadequate clinical evidence**, despite promising drug-like activities *in vitro* and *in vivo*.
- **Poor QC & misuse** led to ADR.
- **Lack of scientific tools** to address the diversity and complexity of herbals and the patients.
- **Limited funding and collaborations** prevented agreements on grand issues, e.g., good practices, priorities, challenges and opportunities

This started to change in the post-genomic era.

Good Practice in TCM Research in the Post-genomic Era

FP7-HEALTH-2007-B (2007-2.1.2-7)

- The project: A €1m EU-China collaboration supported by the EU's FP7.
- Focus: Good practices and application of omics and systems biology in research of Chinese herbal medicine and acupuncture.
- Lifespan: Kicked off on 1st May 2009 and completed on 31st October 2012.

Methodology: literature studies, meetings, t/c, surveys



Beijing, China, 2009



Henley, England, 2010





Braga, Portugal, 2011



Kerkrade, Holland, 2012

The FP7 GP-TCM Project

- A network of 200 scientists from 24 countries and 110 institutions → 1 new international society
- 43 papers on good practices, priorities, challenges, opportunities and state of the art of omic studies of TCM;
- TCM a priority for EU-China cooperation under Horizon 2020.





Uzuner H, et al. J Ethnopharmacol 2012

Ten WPs; seven on herbal medicines (HM)

WP No	Work package title	Lead Scientist
1	**Quality control** of Chinese herbal medicines	Prof. Monique Simmonds, UK
2	**Extraction and component analysis** of Chinese herbal medicines	Prof. Peter Proksch, Germany
3	**Toxicology** of Chinese herbal medicines	Prof. Pierre Duez, Belgium
4	***In vitro* studies** of traditional Chinese herb medicine	Prof. Peter Hylands, UK
5	**Animal studies** of Chinese herbal medicines	Prof. Javier Lucio-Cazana, Spain
6	**Clinical studies** of Chinese herbal medicines	Prof. Nicola Robinson, UK
7	**R&D and regulatory science** of Chinese herbal medicines	Dr. Tai-Ping Fan, UK
8	Studies of acupuncture-moxibustion and meridians	Prof. Xiaomin Wang, China
9	Final Conference	Prof. Rob Verpoorte, The Netherlands
10	Management: Sustainable coordination and development of TCM research in EU	**Dr. Qihe Xu, UK**

We asked ourselves -

1. Why do HM and its research matter?

2. How do we define “good practices”?

3. What are the European perspectives on the following “grand issues”?

- past milestones, achievements & pitfalls
- state of arts, priorities, opportunities & challenges
- future directions, principles & organisations

This lecture aims to provide an up-to-date answer to these important questions.

HM/TM research matter because…

1. HM is the **most popular form of traditional medicine (TM) -** 75% of the world's population use herbs for healthcare;
   - long historical records of use in humans;
   - deep cultural roots; and
   - some excellent properties;
2. HM is **a rich resource for new drugs and "new types of drugs"**, and poses **great safety challenges**;
3. **Globalisation** has accelerated HM exchanges worldwide;
4. **Attitudes of regulators**, e.g., EMA and FDA, have changed.

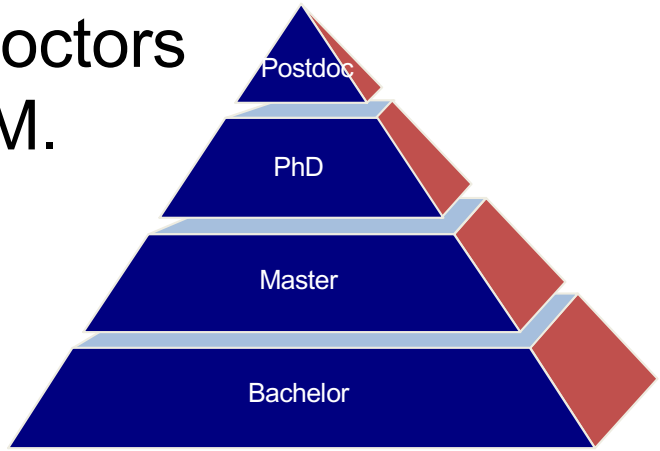
Worldwide view:
WHO Traditional Medicine Strategy (2014–2023)

- **Africa:** Ratio of TM practitioners and medical doctors is 80:1.
- **Laos:** 80% citizens live in villages with 1-2 TM practitioners.
- **China:** Practitioners of TM take on 18% of all medical visits; TM inpatients are 16% of all hospitalised patients.
  - ~90% hospitals provide TM services;
  - TM medical institutions are governed by the same national legislation as conventional medical institutions.
  - TM practitioners are allowed to practice in both public and private clinics and hospitals.
  - The public is free to choose their preferred form of health care services, or follow the advice of their doctors.

Zhang Q, Kelley E. *Science* 2014;346 (6216 Suppl): S5-7.

Worldwide view:
Mainstream or complementary?

- In **China, Korea, India and Vietnam**, TM is an integral part of mainstream medicine.
  - China: 47 TM universities/colleges; TM is taught in all medical schools; 82-90% doctors treat patients, friends and family with TM.



- In **many other countries**, TM is partially integrated into the national health system, while in some countries TM is part of the complementary and alternative medicine (CAM).

Zhang Q, Kelley E. *Science* 2014;346 (6216 Suppl): S5-7.
Xu Q. *BMC Complement Altern Med* 2013;13:132.

CAM use is on the rise in developed economies

Table 1. Usage of Complementary and Alternative Medicine (CAM) in Some Developed Countries

Country	Data Year	Rate of CAM Therapy Usage
United States	2002	33.4% of population[37]
	2007	45.4% of population,[37] cost $34 billion USD[38]
	2009	45% of pregnant women,[39] cost of $42 billion USD[40]
	2010	40%-60% of population[22]
	2011	80% of patients[41]
		82% of patients with skin diseases[42]
Australia	2004	52.2% of population, cost $1.8 billion AUD[43]
	2009	36% of pregnant women[40]
	2011	90.5% of women who used self-prescribed CAM[44]
	2012	74% of people living with diabetes[45]
Germany	1997	32% of population[46]
	2011	91% of older adults[47]
Israel	1993	6% of ages ranging from 45 to 75[48]
	2000	10% of ages ranging from 45 to 75[48]
	2007	12% of ages ranging from 45 to 75[48]
	2009	21% of chronic rhinosinusitis patients[48]
Korea	2006	74.8% of ages ranging from 30 to 69[50]
	2011	85% of cancer patients[51]
Japan	2002	50% of patients[52]
	2004	65% of population[25]
Great Britain	1998	28.3% of population[28]
	2005	44% of population[53]
	2011	26.7% of pregnant women[38]
Canada	2005	12.4% of population[54]
	2010	22% of women[55]
	2011	52% of women[37]

Pan SY, et al.
Altern Ther Health Med 2012;18:20-36

From 1999 to 2012, the number of WHO member states with national policies covering TM has increased significantly

- In Africa, for example, the number of national TM regulatory frameworks increased from 1 to 28 in the decade to 2010.

Zhang Q, Kelley E. *Science* 2014;346 (6216 Suppl): S5-7.

Since the early 2000s, the US FDA has developed a "totality-of-evidence" approach to safeguarding quality, efficacy and safety, and for registering botanical drugs.

- A Botanical Review Team was established in 2003 and they published guidelines in 2004 and 2016;
- By 2018, over 800 botanical clinical trials were approved by, or in discussion with the FDA;
- Many RCTs are ongoing but only 3 botanical drugs are approved (2006; 2012; 2023).

Wu C, et al. *J. Nat. Prod.* 2020, 83, 2, 552–562

Lee SL, et al. *Science* 2015;347 (6219 Suppl): S32-34.

The European “Dual Carriage Way”

- Regulated by the Committee on Herbal Medicinal Products, European Medicines Agency (HMPC/EMA)

- HMPs are registered under two categories.
  - **Traditional use registration:** GMP+30y safety record
  - **Well-established use marketing authorisations** (WEU MA).

Zhang Q, Kelley E. *Science* 2014;346 (6216 Suppl): S5-7.
Fan TP, et al. J Ethnopharmacol 2012; 140: 568-586.

Traditional use registration (TUR)

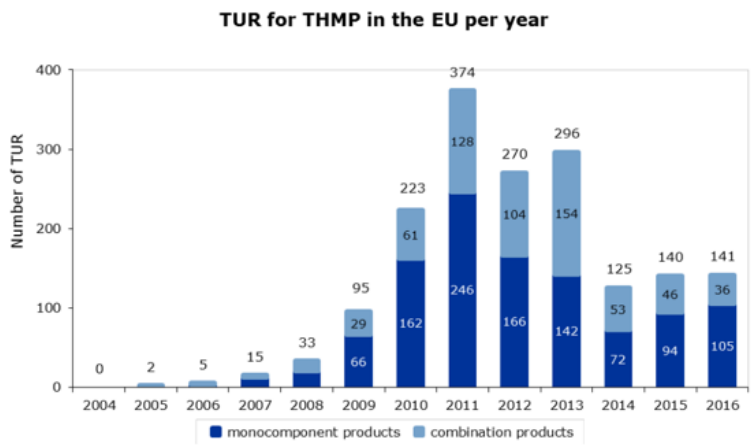


Figure 1

Number of traditional use registrations (TUR) for THMP in the EU grouped by year of registration for monocomponent and combination products (2004 until December 2016; total 1719).

Well-established use marketing authorization (WEU MA)

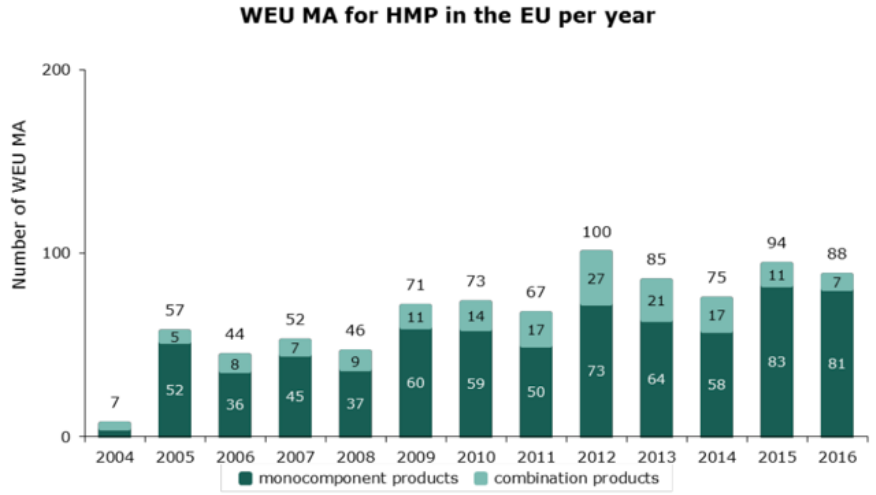


Figure 2

Number of well-established use marketing authorisations (WEU MA) for HMP in the EU grouped by year of authorisation for monocomponent and combination products (2004 until December 2016; total 859).

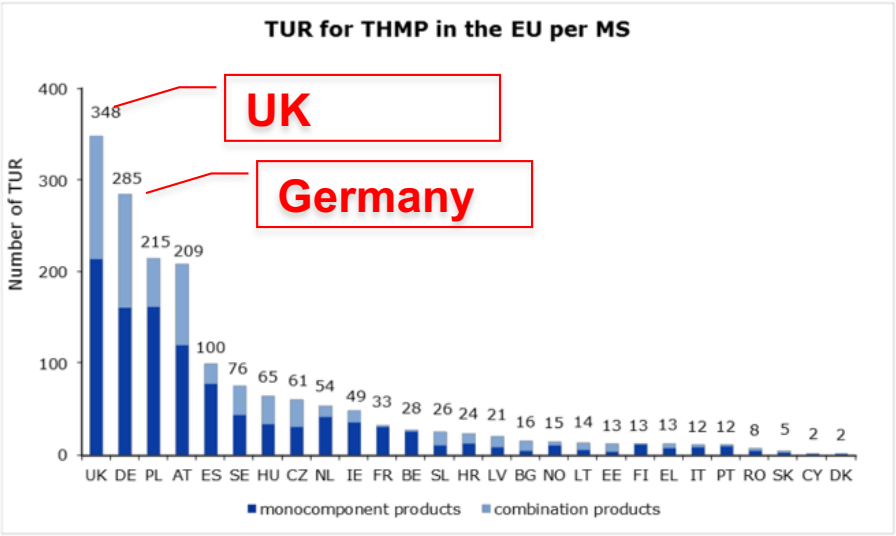


Figure 3

Number of granted TUR for monocomponent and combination THMP in EU Member States (since implementation of Dir. 2004/24/EC until 31 December 2016). Total 1719: 1089 for monocomponent products, 630 for combination products (No TUR granted for IS, LI, LU and MT).

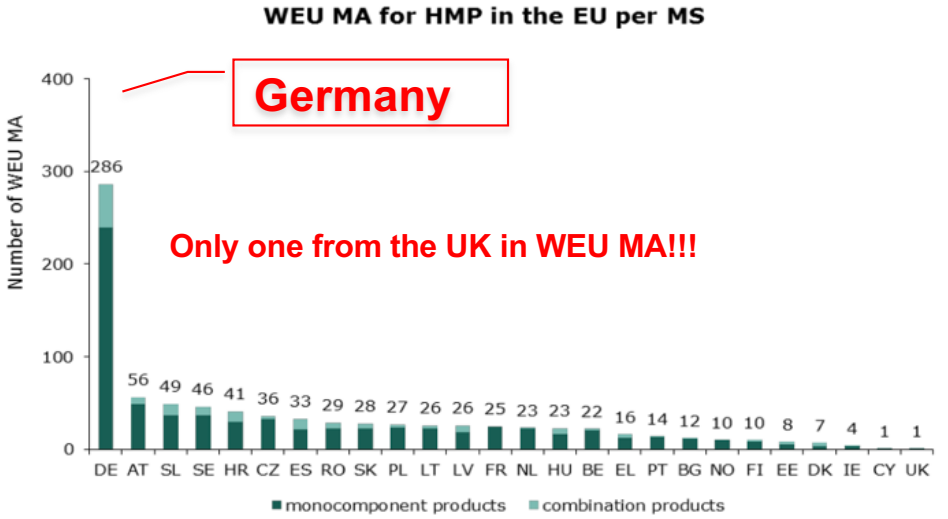


Figure 4

Number of granted WEU MA for monocomponent and combination HMP in EU Member States (since implementation of Dir. 2004/24/EC until 31 December 2016). Total 859: 704 for monocomponent products, 155 for combination products (No WEU MA granted for IS, IT, LI, LU and MT).

http://www.ema.europa.eu/docs/en_GB/document_library/Report/2011/05/WC500106706.

So far, **SEVEN** TCM proprietary products have been registered under TUR

Five mono-component products

- 地奥心血康胶囊
- 丹参胶囊
- 愈风宁心片
- 凡诺华板蓝根颗粒
- 凡诺华关节肌肉止痛片

Two herbal formulae

- 六君子丸
- 逍遥片

Xiong Y, et al. **Market access for Chinese herbal medicinal products in Europe-A ten-year review of relevant products, policies, and challenges**. *Phytomedicine.* 2022;103:154237.

TCM: Human-based medicine characterised by holistic, personalised, function-oriented approaches





The Complete Collection of Traditional Texts on Chinese Materia Medica



410 volumes, more than **800** *ben cao* from ancient times to 1911. (Printed in 2000)

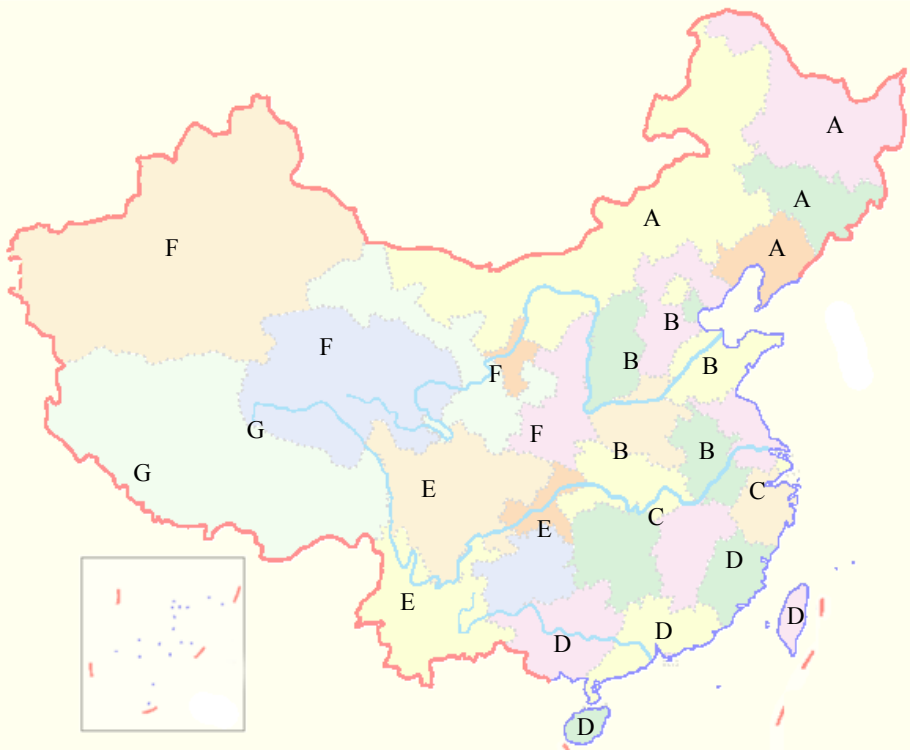




Photo by courtesy of Professor Zhongzhen Zhao

Rich botanical resources

A Geographical Map of Chinese Medicinal Plants



7 distribution areas (A~G) of medicinal plant resources

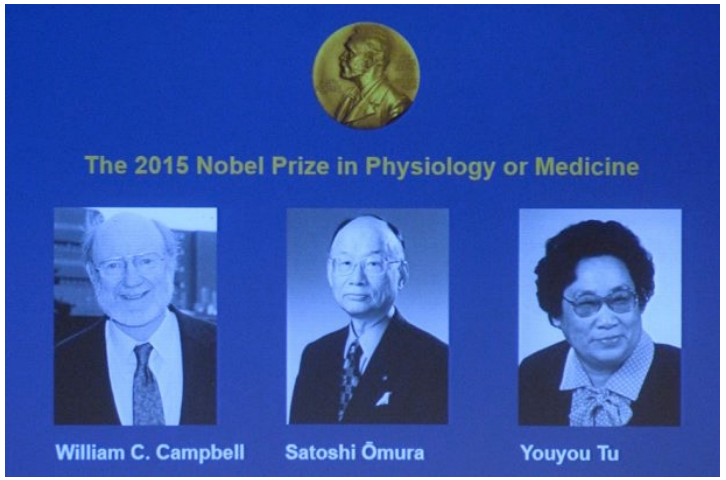
- Vast territory, diverse landforms, mountain ranges, climates, and abundant medicinal resources.
- Over **11,000** botanical species, nearly **1600** zoological species and **80** mineral substances are used medicinally in China.

Map by courtesy of Professor Zhongzhen Zhao

…for new chemical drugs – Chinese HM as an example

By early 2010s, with only <6% (600) species phytochemically investigated, 18,000 natural compounds, including ~5,000 new structures, and >30 new drugs.

Artemisinin for malaria



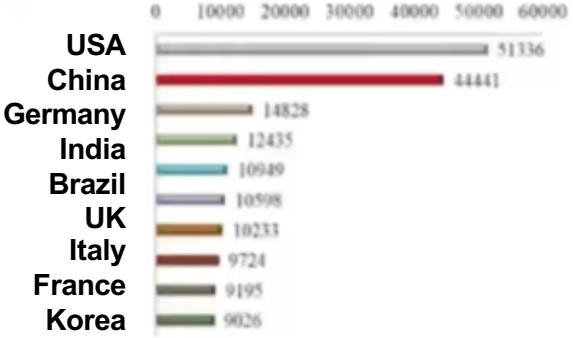
Tu You-you: One of four scientist icons of the 20th century, according to BBC
https://www.bbc.co.uk/programmes/b0c0bv2h



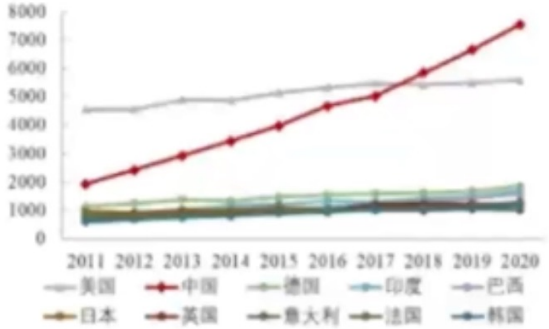
Data from Prof. De-an Guo and Prof. Zhongzhen Zhao, et al

China is leading the world in the R&D of natural drug-like compounds

Total number of publications on natural medicine



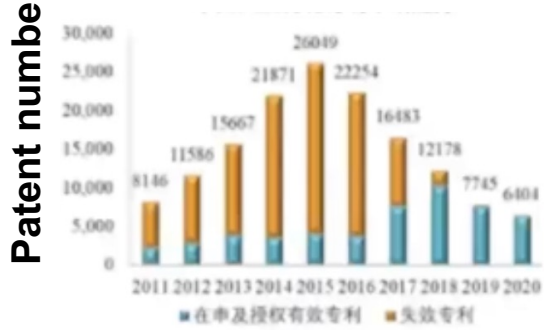
Annual publications of top-10 countries, 2011-2020



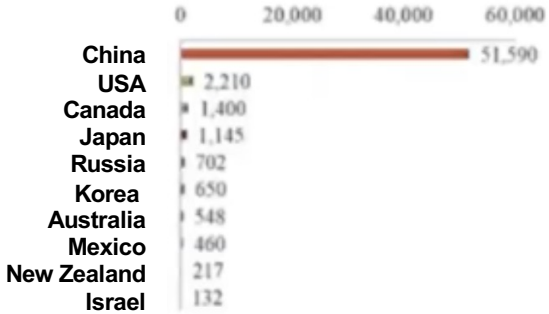
数据来源：Web of Science 数据库，检索日期为2021年4月8日

China has tripled its publications on natural medicine research in the decade up to 2020

China's patents on natural medicine



Top 10 countries in terms of active patents



数据来源：万象云数据库，检索日期为2021年4月12日

China has the largest number of active patents on natural medicines, 25 times higher than the No. 2 in the league table - USA

Prof. Yue Jianmin, SIMM, CAS. The 13th Academic Conference on TCM and Natural Medicine Pharmacology. 19th Nov. 2022. https://www.scimeeting.cn/m/lives/details/12774?video_id=213277&lang=cn

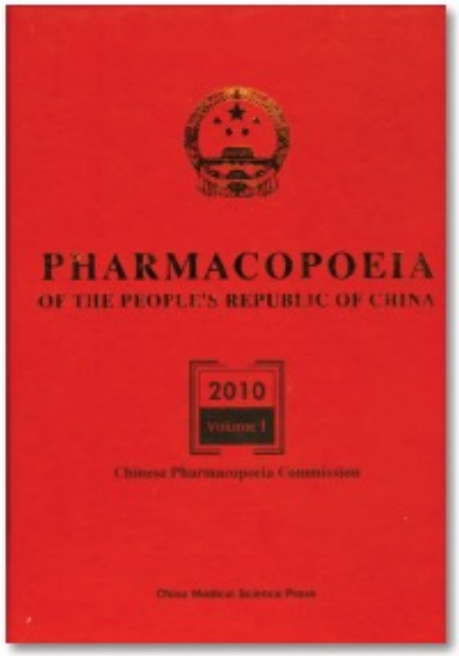
TCM herbal drug monographs



TCM herbal drug monographs

The whole volume I of CPh 2010 is dedicated to TCM products – 2136 monographs





Volume IV of Br Ph contains over 200 HM monographs



Example: Chinese HM enters Eur Ph

- **In 2008, Eur Ph established a TCM Working Party;**
- **By 2022, 84 TCM herbal drug monographs have been adopted by the Eur Ph –more than a third of the total…**

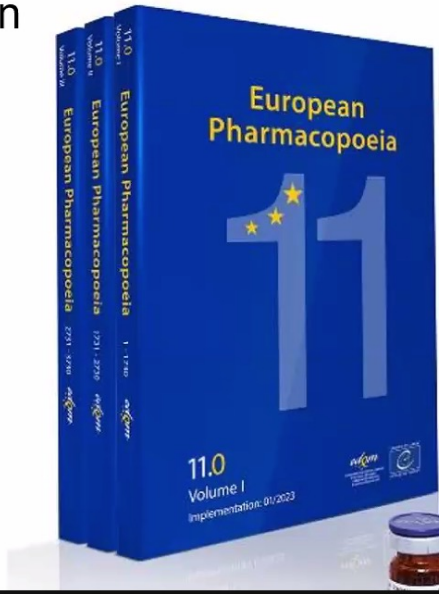
edqm European Directorate for the Quality of Medicines & HealthCare

COUNCIL OF EUROPE CONSEIL DE L'EUROPE

Elaboration of Monographs for TCM herbs for the European Pharmacopoeia
欧洲药典的中草药专著的确立和发展

Current Status of Work

- 84 Monographs adopted by the Eur. Pharmacopoeia Commission
  欧洲药典委员会已接纳 84 篇专著
- Ca. 34 attributed to Specialists
  约34人取得专家资格认证
- Monographs published as drafts in *PHARMEUROPA*
  多篇论文作为草案在欧洲药典官网上发表
- Monographs for *General Methods* *通用方法*论著:
  - Chapter on processing: 加工制作
  - Test for aristolochic acids: 马兜铃酸的检测
  - Test for pyrrolizidine alkaloids 咯烷类生物碱的测试



By courtesy of Prof. Rudolf Bauer

Most frequently used CMs for COVID-19 patients with monographs in European Pharmacopoeia

欧洲药典专著中新冠肺炎患者最常用的中药

No.	Chinese name	Latin name	European Pharmacopoeia
1	Gancao	Glycyrrhizae Radix et Rhizoma	Published in PhEur 发表于欧洲药典7.3
2	Huangqin	Scutellariae Radix	Published in PhEur 发表于欧洲药典10.4
3	Jiegeng	Platycodonis Radix	Published in PhEur发表于欧洲药典9.6
4	Kuxingren	Armeniacae Semen amarum	Monograph in elaboration 专著编写中
5	Jinyinhua	Lonicerae japonicae Flos	Monograph in elaboration 专著编写中
6	Shigao	Gypsum fibrosum	-
7	Lianqiao	Forsythiae Fructus	Published in PhEur 发表于欧洲药典10.4
8	Mahuang	Ephedrae Herba	Published in PhEur 发表于欧洲药典8.8
9	Dahuang	Rhei Radix et Rhizoma	Published in PhEur 发表于欧洲药典6.0
10	Bohe	Menthae haplocalycis Herba	-

By Courtesy of Professor R. Bauer

While TCM is increasingly entering international markets, it is also absorbing resources from the world.

外来中药的发展及在中药学科建设中的地位和作用*

王林元
（北京中医药大学　北京 100029）

摘要：外来中药是中医药发展的历史必然，是新形势下中药学科建设的新领域和新方向，是中医药不可分割的一部分。随着改革开放的深入、“一带一路”倡议的实施和我国经济的发展，外来中药的作用显得更加重要。外来中药的发展是中医药理论传承与创新的实践过程，通过梳理历史发展脉络、赋予外来药物中药药性、使其“中药化”是新外来中药研究的关键。本文明确了外来中药的概念和研究内容，总结了中药药性研究的步骤和方法，阐述了赋予中药药性“四步法”，构建了新外来中药系统研究范式，概括了外来中药的发展现状和当下新外来中药品种目录。从学科发展新方向、创新发展新平台、人才培养新措施、社会发展新动力和国际交流新途径5个方面论述了外来中药在中药学科建设中的地位和作用。外来中药的研究和发展必然成为中药学科发展的新动力和新亮点。

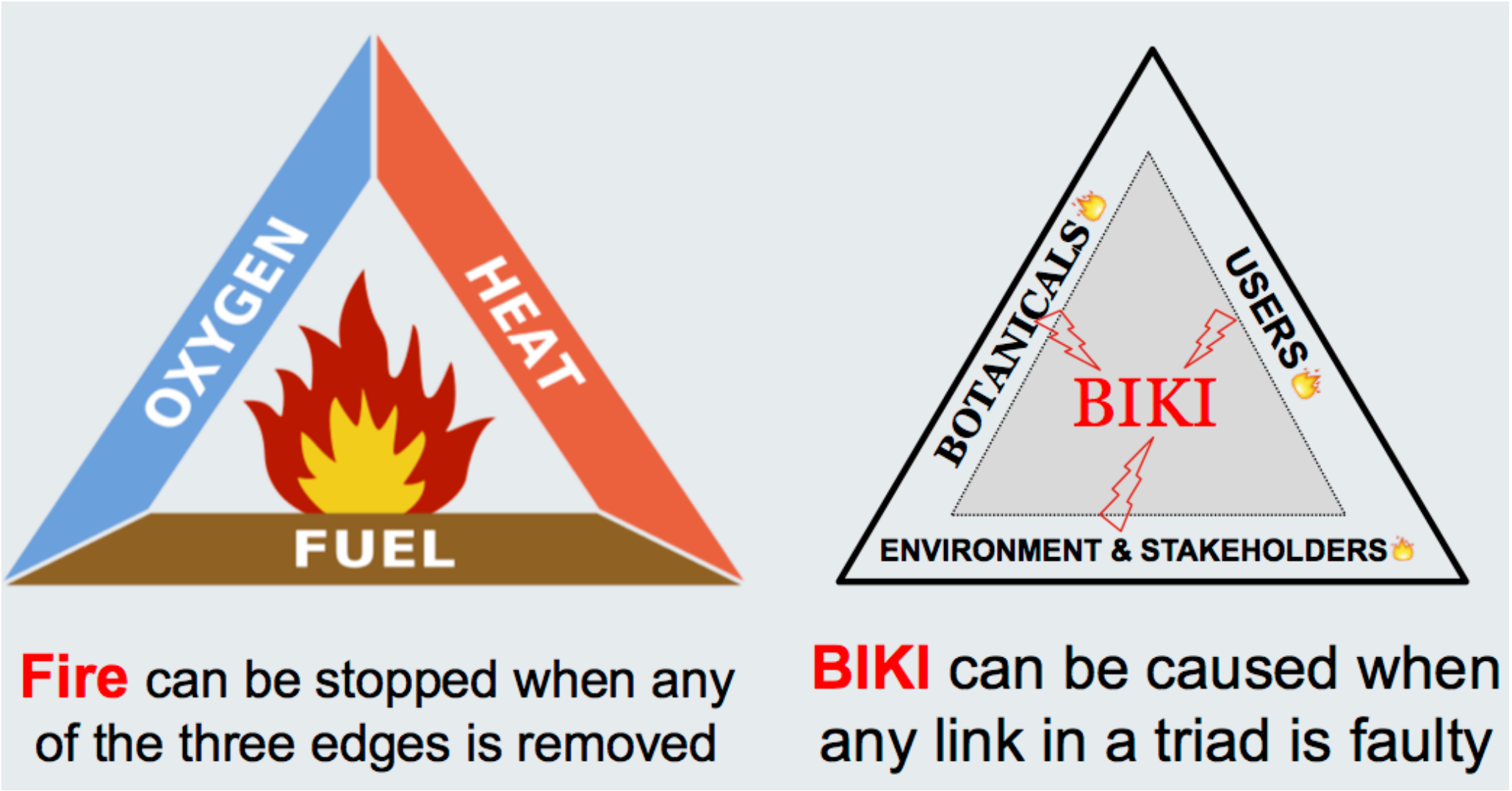
《北京中医药大学学报》
2022 年10 月 第45 卷第10 期



Warnings

- Global exchanges of TM have provided unprecedented opportunities.
- Please be aware of potential hazards and risks!

BIKI as an Example



BIKI: Botanical–induced Kidney Injury

Holden F et al. *WJTCM* 2019;5: 151-163.

Following good practices is the best way to maximise benefits and minimise risks.

The important questions to be answered

1. Why do HM and its research matter?

2. How do we define "good practices"?

3. What are the European perspectives on the following "grand issues"?

- past milestones, achievements & pitfalls
- state of arts, priorities, opportunities & challenges
- future directions, principles & organisations

What do “good practices” mean?

- **Broadly** - compliance with commonly accepted guidelines in research;
- **Technically** - good practice guidelines;
- **Strategically** - collaboration and sharing;
- **Practically** - consensus while respecting differences of opinion.

Uzuner H, et al. J Ethnopharmacol 2012

The important questions to be answered

1. Why do HM and its research matter?

2. How do we define “good practices”?

3. **What are the European perspectives on the following “grand issues”?**

- **past milestones, achievements & pitfalls**
- **state of arts, priorities, opportunities & challenges**
- **future directions, principles & organisations**

Three phases of TCM modernisation

- **1950s-1970s:** National networks for TCM education, research & hospitals in China
- **1980s-2000s:** Economic, legal, scientific foundations, international network;
- **2010s- :** Further consolidating scientific base and clinical practice, a hallmark of the post-genomic era.

Xu Q, et al. BMC CAM 2013

State of art, current priorities, opportunities & challenges?

The GP-TCM *JEP* Special Issue

20 open-access papers on state of art & GxPs

Open access: http://www.sciencedirect.com/science/journal/03788741/140/3



We surveyed for agreement on grand issues

http://project.gp-tcm.org/2011/08/"grand-priorities-challenges-and-opportunities"-survey/

- More priority, challenge than opportunity candidates proposed by members (N=28, N=35 and N=18, respectively);
- Members of GP-TCM and 18 organisations were invited to cast votes on these candidates;
- 187 participants: Internal (41%), external 59%.

Uzuner H, et al. J Ethnopharmacol 2012

Agreed priorities: Efficacy, mechanisms and priority diseases

Ranking				Grand Priorities
By GP-TCM Members (N=77)		By External Participants (N=110)		
Order	Vote	Order	Vote	
Priorities agreed by both GP-TCM members and external participants				
2	71%	3	60%	High-quality **clinical efficacy and effectiveness** studies of CHM and acupuncture
3	59%	5	56%	High-quality research to demonstrate the **mechanisms of action** of CHM and acupuncture
3	59%	2	60%	Identify **priority (disease) areas** where TCM is likely to achieve better outcomes for patients and the society

Uzuner H, et al. J Ethnopharmacol 2012

Members ranked QC & safety, collaboration, pharmaco-vigilance, omics & systems biology, sustainability, TCM database

1	72%	7	49%	**Quality and safety** of CHM
3	59%	18	33%	**Develop EU-China joint centres**, initiatives & adventures
6	58%	11	44%	**Quality control** for those CHM widely used in clinics
7	54%	18	33%	**Omics and systems biology studies of TCM**
8	53%	15	40%	**Pharmacovigilance** of CMMs
9	51%	12	43%	**Stainable use of medicinal plants**
10	50%	10	45%	**High-quality, comprehensive TCM database**

Uzuner H, et al. J Ethnopharmacol 2012

Challenges: members & non-members had no consensus; members pointed to QC, funding, priority diseases, pharmacovigilance

Ranking				Grand Challenges
GP-TCM Members (N=77)		External Participants (N=110)		
Order	Vote	Order	Vote	
Challenges agreed by both GP-TCM members and external participants: None				
Challenges recommended by GP-TCM members only				
1	63%	4	44%	**Quality control** of CMMs and complex herbal products
2	51%	3	46%	Lack of **European funding** for TCM research
3	50%	5	43%	**Focus on TCM research of certain chronic diseases** and conditions to provide scientific evidence for efficacy
3	50%	23	26%	**Pharmacovigilance** of CHP

Uzuner H, et al. J Ethnopharmacol 2012

Agreed opportunities: TCM for chronic disease, TCM adjunct therapy, EU-China collaboration and China's investment in biotech industry and TCM knowledge-based discovery

1	75%	1	82%	**TCM for long-term conditions and chronic diseases**, top challenges for Europe
3	55%	4	57%	**TCM as adjunct therapy**
4	54%	3	60%	**Openness for EU and China to jointly fund clinical studies**
6	53%	6	51%	**Chinese government recently announced a $308 billion biotech industry expansion scheme**
9	50%	2	64%	**Knowledge accumulated through thousands of years of TCM clinical experience**

Uzuner H, et al. J Ethnopharmacol 2012

Members also pointed to omics & systems biology, GP-TCM guidelines, personalised TCM, TCM network pharmacology, China's open policy and funding

2	57%	16	37%	**Maturing omics & improving systems biology methodology** for TCM research
4	54%	18	28%	**GP-TCM good practice guidelines** have started to be developed
6	53%	8	45%	**Common ground exists between modern personalised health and personalised TCM**
8	51%	17	33%	**Network pharmacology** methodology for TCM research
9	50%	14	39%	**China's open policy and increasing funding** to scientists in China create good collaborating opportunities

Uzuner H, et al. J Ethnopharmacol 2012

Principles & organisational mechanisms guiding future developments

For sustainability, the following is needed:

- **The triple "I" principles:**

- integrity (good practice);
- integration (collaboration);
- innovation (new ideas, tools, strategies);

- **An international new association** to

- succeed the legacy, missions and networks of the FP7 GP-TCM project, etc;
- serve as a permanent platform for interdisciplinary, interregional and intersectoral collaboration.

Xu Q, et al. BMC CAM, 2013, revision submitted.

Uzuner H, et al. J Ethnopharmacol 2012

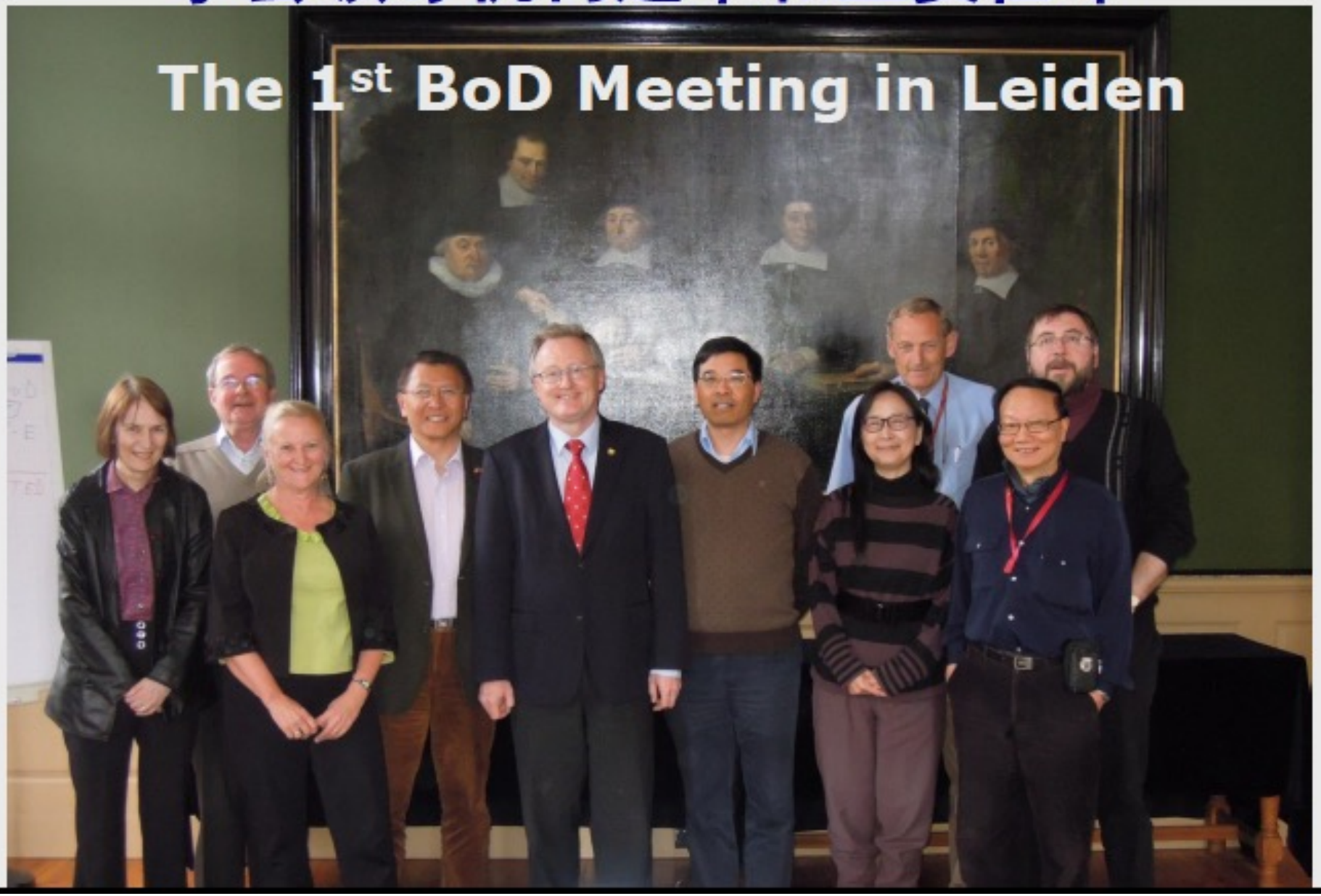


中医药规范研究学会

The Good Practice in Traditional Chinese Medicine Research Association

Founded in Leiden, April 16th, 2012

学会领导机构选举和主要任命



Seven interest groups

1. Quality Control – Min Ye (Chair) and Rudolf Bauer (Co-Chair)



2. Pharmacology and Toxicology – Pierre Duez (Chair) and Hongxi Xu (Co-Chair)



3. Clinical Studies – Zhaoxiang Bian (Chair) and Myeong Soo Lee (Co-Chair)



4. Regulatory Aspects – Mei Wang (Chair) and Gerhard Franz (Co-Chair)



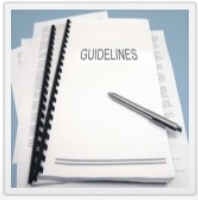
5. Acupuncture – Moxibustion and Meridians – Nicola Robinson (Chair), Lixing Lao (Co-Chair) and Jianping Liu (Co-Chair)



6. Publication – Rob Verpoorte (Chair) and Thomas Efferth (Co-Chair)



7. Good Clinical Practice Guidelines (GCPG) – Vivian Taam Wong (Chair) and Chris Chan (Co-Chair)





主要活动

Activities

Annual meetings

- **1st Annual Meeting**: 2012, 20./21.October, in Shanghai, China
- **2nd Annual Meeting**: 2013, end of August, in Graz, Austria
- **3rd Annual Meeting**: 2014 in Taiwan
- **4th Annual Meeting**: 2015 Meeting in Belgium
- **5th Annual Meeting:** 2017, London, the UK
- **6th Annual Meeting:** 2018, Hong Kong, China
- **7th Annual Meeting:** 2019, Daegu, South Korea
- **8th-10th Annual Meetings:** 2020, 2021, 2023 online…

Open-access lectures: http://www.gp-tcm.org/event/the-9th-good-practice-in-traditional-chinese-medicine-research-association-annual-meeting-virtual-3/

The 9th Good Practice in Traditional Chinese Medicine Research Association (GP-TCM RA) Annual Meeting (virtual)

COVID 19 – the global role of herbal medicines

9 & 10 November 2021



Hosted at

Institute of Chinese Medicine and
State Key Laboratory of Research on Bioactivities and Clinical Applications of Medicinal Plants
The Chinese University of Hong Kong

Chairpersons

Prof. Monique Simmonds
Royal Botanic Gardens, Kew
President of GP-TCM RA



Prof. Clara Bik-San Lau
The Chinese University of Hong Kong
Secretary-General & President-Elect of GP-TCM RA



Dr. Tai-Ping Fan
University of Cambridge
Treasurer of GP-TCM RA



Prof. Rudolf Bauer
University of Graz
BoD member of GP-TCM RA



Prof. Vivian Taam Wong
The University of Hong Kong
BoD member of GP-TCM RA



Dr. Qihe Xu
King's College London, University of London
BoD member of GP-TCM RA



Activities other than meetings

- Public statements/press releases
- Publications
- Role as „Interested Party“ at HMPC/EMA London
- Development of Monographs
  - Drafting monographs on efficacy and safety
  - Comments on EDQM draft monographs
- Involvement in ISO
- Support of grant applications (expert database?)
- Special committees including education
- Fund raising

Free-access GP-TCM RA Newsletters

www.gp-tcm.org/news-list/





Chinese Materia Medica Highlights

Chrysanthemum (*Chrysanthemum × morifolium*, Asteraceae, 菊花 , left)
and wild chrysanthemum (*Chrysanthemum indicum*, Asteraceae, 野菊花 , right)

Having been cultivated in China since ancient times and spread globally, chrysanthemum is now an enormous hybrid complex with many ornamental and medicinal cultivars. Widely distributed in China, India, Japan, Korea and Russia, wild chrysanthemum is the primary parental species of chrysanthemum, yet the other parentage is obscure.

Official in Chinese pharmacopoeia since 1963, the dried flower head (capitulum) of chrysanthemum (chrysanthemi flos) disperses wind-heat, calms the liver and brightens the eyes. Based on different production regions (provinces such as Zhejiang, Henan, Anhui and Shandong) and post-harvest handling methods, at least 8 types of medicinal materials are available at herbal markets. These commercial products can be roughly divided into white chrysanthemum and yellow chrysanthemum. It is believed that the white variety is more suitable in treating dry eyes with blurred vision as in Lycium Fruit-Chrysanthemum and Rehmannia Pill (Qi Ju Di Huang Wan) because of its better functions of calming the liver and brightening the eyes. Because the yellow variety is more bitter than the white variety, it is therefore better for dispersing wind-heat as in Mulberry Leaf and Chrysanthemum Drink (Sang Ju Yin) for the superficial stage of a warm pathogen disease mainly manifested as slight fever and cough.

Official in Chinese pharmacopoeia since 1977, the dried flower head of wild chrysanthemum (chrysanthemi indici flos) is focusing on clearing heat, resolving toxicity and reducing swelling. It is indicated for furuncles, carbuncles, and sore throat.

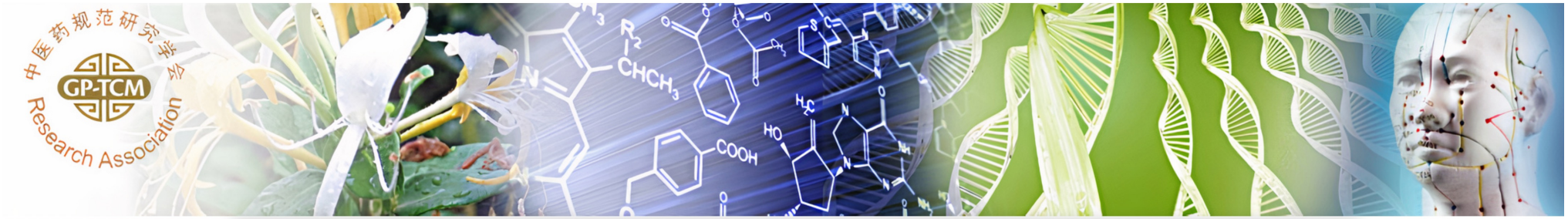
菊花	野菊花
清寒傲雪白黄花	深黄花管类球形
篱下渊明日渐斜	草地田边带笑迎
赏菊重阳常饮酒	已是全身皆入药
吉祥如意惠千家	岂容瘟疫再流行

The above colour photographs, English texts and Chinese poems are contributed by **Prof Hubiao Chen** (Hong Kong), **Dr Ping Guo** (Hong Kong) and **Prof Jiqing Liu** (Shenzhen), respectively. This column is advised by Prof **Zhongzhen Zhao** (Hong Kong).

Just click here to enjoy the video: https://uofmacau-my.sharepoint.com/:v:/g/personal/jesskuok_umac_mo/EVhKCFG5jgVOrFWrlGBmKaoB1C2ITLI7FWoGAgKyfgnnTw?e=widGAk

Free membership benefits, esp. for students

https://www.gp-tcm.org/index.php/membership/



Home News Events Interest Groups WJTCM Project Archive Links Contact Us Student's Corner

Membership

To become a member of the Association, please complete the application form given below and send an email to gptcmrasecretariat@gmail.com **as a word document as well as the signed PDF copy**.

GP-TCM RA membership application form

The GP-TCM RA Secretariat will then be in touch with you to process your application. The membership fees are as follows:

Ordinary Full Member: Free

Ordinary Members are the main category of members and are subject to renewal as required.

Student Member: Free

Upcoming Events

SEP 18 09-18 @ 09:00 - 09-20 @ 14:00
The 11th GP-TCM RA Annual Meeting

View Calendar

中草药研发的国际标准与规范

—纪念欧盟第七框架计划GP-TCM项目结题、中医药规范研究学会成立十周年

International guidelines and standards on herbal medicine

In celebration of the 10th Anniversary of GP-TCM Research Association

徐启河博士

首席科学家，《后基因组时代中医药研究的良好实践》（2009-12）
《中医药规范研究学会》理事（2012-14；2017-22）
伦敦大学国王学院肾脏病学与整合中医药研究室主任
肾脏科学、药理学高级讲师
伦敦大学国王学院
qihe.xu@kcl.ac.uk

Qihe Xu, MD, PhD

Coordinator, the FP7 GP-TCM Consortium （2009-12）
BoD Member, the GP-TCM RA （2012-14；2017-22）
PI, Renal Science & Integrative Chinese Medicine Laboratory
Senior Lecturer, Renal Science and Pharmacology
King's College London, University of London
qihe.xu@kcl.ac.uk

© Copyright 2011 All Rights Reserved, Halil Uzuner, GP-TCM Consortium.

Concluding Remarks

- **HMs are complex double-edged swords** and are getting increasingly important globally.
- **Good practices** are needed for HM research: Much remains to be done in the development, dissemination and implementation of GxP.
- **The GP-TCM findings on "grand issues"** should be important references for focusing, prioritisation and true innovation, given the diversity and complexity of HMs and limited resources.
- **The future of herbal medicine and TCM is yours.**

Concluding Quotes

Marie Curie

(1867 - 1934)

“Nothing in life is to be feared,
it is only to be understood.
Now is the time to understand more,
so that we may fear less.”

路虽远，行则将至，事虽难，做则必成！

（习近平，2023.1.1，引自《荀子·修身》）

Acknowledgements

❑Funders









- **Philanthropist donations from Mr Abraham Chan, Chairman of PuraPharm**
- **Sino-British Fellowship Trust**

❑Co-workers

- **TCM advisers Dr. WU Dunxu and Dr. JIANG Dan**
- **Collaborators in Dalian Institute of Chemical Physics: Xinmiao Liang**
- **Collaborators in Royal Botanical Gardens, Kew: MSJ Simmonds**
- **Colleagues at KCL: Q Hu, YF Wong, S Qu, Q Kong, PJ Hylands and BM Hendry**
- **All colleagues in the FP7 GP-TCM Project and the GP-TCM RA.**

❑Thank YOU for attending these lectures.