

# **The 14<sup>th</sup> Annual Meeting of The GP-TCM RA**

***Bridging East and West: Global Collaboration in Integrative  
Medicine***

 **7<sup>th</sup> – 9<sup>th</sup> July 2026**

 **Nanyang Technological University (NTU), Singapore**  
**School of Biological Sciences**

**Supported By:**



***This event has been approved by TCM Practitioners Board with CPE 10 points (TCM20260331-1B-0006)  
for Singapore Registered TCM Practitioners***

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# About GP-TCM RA



Founded in Leiden in 2012 through the project “Good Practice in Traditional Chinese Medicine Research in the Post-genomic Era”, a pioneering EU-China collaboration funded by the European Union’s Seventh Framework Programme, GP-TCM RA has since developed into a UK-based charity, an EMA/HMPC Interested Party, and a respected international society dedicated to promoting EU-China collaboration and advancing good practices in Traditional Chinese Medicine (TCM) research using modern scientific approaches.

Today, GP-TCM RA comprises **18** members of the Board of Directors, Chairs and Co-Chairs of **7** interest groups, **13** corporate and institutional members, and more than **330** individual members worldwide.

# President's Message



It is my great honour and sincere pleasure to welcome you all to the 14th Annual Conference of the GP-TCM Research Association (GP-TCM RA), which will be held from 7–9 July 2026 at Nanyang Technological University, Singapore. The University is a leading institute for evidence-based TCM, integrating traditional knowledge with modern science, clinical practice, and technology. Its strong academic, clinical, and industry collaborations make it an ideal platform for advancing global research, education, and the integration of TCM into modern healthcare. We are delighted to gather in this vibrant and globally connected hub of innovation and academic excellence, and I would like to extend my heartfelt appreciation to Prof. Linda Zhong and her team members for their generous support and outstanding efforts in hosting this year's conference.

The theme of this year's meeting, "Bridging East and West: Global Collaboration in Integrative Medicine." reflects our shared commitment to

strengthening the scientific foundation of Traditional Chinese Medicine and enhancing its role in modern healthcare systems worldwide. As TCM continues to gain international recognition, it is essential that we advance rigorous research, foster interdisciplinary collaboration, and promote the integration of evidence-based practices into clinical care.

The programme for this two-and-a-half-day conference features keynote lectures by distinguished experts, alongside a diverse range of sessions organized by our interest groups. These will cover key areas including Quality Control, Pharmacology & Toxicology, Regulatory & Industry, Clinical Studies, Good Clinical Practice Guidelines, Acupuncture-Moxibustion and Meridians, and Scientific Publication. In addition, the conference will provide a platform for oral and poster presentations, encouraging the exchange of innovative ideas and the dissemination of cutting-edge research.

Beyond the academic programme, this conference is also an opportunity to strengthen our community. Our association thrives not only on scientific excellence but also on meaningful connections across disciplines, cultures, and generations. I encourage all participants to engage actively, share insights openly, and explore new avenues for collaboration. It is through such interactions that we continue to inspire innovation and drive progress in the field of TCM.

I would like to express my sincere gratitude to all our distinguished speakers, sponsors, organizers, and participants for their invaluable contributions and continued support of GP-TCM RA.

As President, I am honoured to represent the Board of GP-TCM RA and warmly welcome you all to the 14th Annual Meeting of GP-TCM RA in Singapore. I look forward to meeting each of you and sharing a stimulating and inspiring conference experience together.

I look forward to welcoming you all on 7–9 July 2026 at Nanyang Technological University, Singapore!

**Dr. Mei Wang**

*President of GP-TCM RA*

*Chairman of TCM working party at EDQM*

# Host's Message



On behalf of the School of Biological Sciences and the Chinese Medicine programme at Nanyang Technological University (NTU), it is my sincere honour and great pleasure to welcome you to the 14th Annual Conference of the GP-TCM Research Association. Hosting this esteemed gathering at NTU—a university ranked among the world's best for its innovative spirit—is a truly special moment for us in Singapore.

Our theme, **"Bridging East and West: Global Collaboration in Integrative Medicine,"** resonates deeply with the work we do here in Singapore and at NTU. As we face pressing global challenges such as chronic disease management and rapidly ageing populations—where by 2030, one in four Singapore citizens will be aged 65 and above—the role of Traditional Chinese Medicine has never been more critical. Singapore's national "Healthier SG"

initiative is actively reshaping our healthcare system towards preventive health, and TCM is poised to play a vital and complementary role in this transformation.

NTU is committed to being at the forefront of this integration. Our recently launched Bachelor of Chinese Medicine programme, the first of its kind to be independently conferred by a local university, is designed to nurture a new generation of bilingual, clinically competent practitioners. This is complemented by our new Master of Science in Chinese Medicine, which will further deepen specialisation and research capabilities. Our vision is to establish NTU as a regional hub for Chinese Medicine education, research, and clinical excellence, blending ancient wisdom with modern scientific evidence.

This vision is only possible through collaboration. The partnerships we have forged—with institutions like Tan Tock Seng Hospital, the National Cancer Centre Singapore, and Changi General Hospital—are creating new pathways for integrative care, clinical training, and evidence-based research. Our goal is to create a robust ecosystem where TCM is not an alternative, but an integrated part of a comprehensive and holistic healthcare system.

Over the next two and a half days, I hope you will find the scientific programme both stimulating and inspiring. The sessions organised by the GP-TCM RA interest groups, the keynote lectures, and the presentations represent the best of our collective efforts to advance TCM through rigorous research and global collaboration.

I extend my deepest gratitude to the GP-TCM Research Association for the trust placed in us, and to all our speakers, sponsors, and participants for your invaluable contributions. I also want to thank my dedicated team at NTU for their hard work in making this conference possible.

May this conference be a platform for forging new friendships, sparking innovative ideas, and strengthening the global community dedicated to integrative medicine. I wish you all a productive and memorable meeting here in Singapore.

Welcome to NTU!

**Associate Professor Linda Zhong**

*Chairman of Organizing Committee of the 14<sup>th</sup> Annual Meeting of GP-TCM RA  
Director, Biomedical Sciences and Chinese Medicine  
Director, Master of Science in Chinese Medicine  
Nanyang Technological University, Singapore*

## **Organising Committee**

Prof. Lidan Zhong (local host)

Dr. Mei Wang, President of GP-TCM RA

Prof. Clara Bik-San Lau, Past President of GP-TCM RA

Prof. Simon Ming-Yuen Lee, Secretary-General of GP-TCM RA

Mr. George He, Treasurer of GP-TCM RA

## **Scientific Committee**

Prof. Rudolf Bauer

Mr. Abraham Chan

Dr. Chris Kam-Wa Chan

Prof. Yuan Shiun Chang

Prof. Pierre Duez

Prof. Thomas Efferth

Prof. Tai-Ping Fan

Prof. Gerhard Franz

Prof. Myeong Soo Lee

Prof. George Pak-Hang Leung

Prof. De-An Guo

Dr. Xiao-Yang Hu

Prof. Jianping Liu

Dr. Liping Qu

Prof. Nicola Robinson

Prof. Lie-Fen Shyur

Prof. Monique Simmonds

Prof. Xuanbin Wang

Prof. Vivian Taam Wong

Dr. Wendy Wong

Dr. Qihe Xu

## **Conference Secretariat**

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Miss. Wanying Mo [gptcmrasecretariat@gmail.com](mailto:gptcmrasecretariat@gmail.com)

# Guest of Honor



**Dr Teo Ho Pin**  
Chairman of TCM Practitioners Board

# Keynote Speakers



**Dr Ting Bao**



**Prof Alberto Carlos Pires Dias**



**Prof Chin Jing Jih**



**Prof Ghassan Karam**

# The 14<sup>th</sup> Annual Meeting of The Good Practice in Traditional Chinese Medicine Research Association (GP-TCM RA)

## Bridging East and West: Global Collaboration in Integrative Medicine

Date: 7-9 July 2026

Venue: Nanyang Technological University, Singapore

| 6 July (Monday)                    |                                                                                                                                                       |                                                                                                                                                                                                                                                                         |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.30pm – 6.30pm<br>7.00pm – 9.30pm | The 111 <sup>st</sup> GP-TCM RA BoD meeting<br>Dinner                                                                                                 | All BoD members, chairs and co-chairs of 7 IGs only                                                                                                                                                                                                                     |
| Day 1: 7 July (Tuesday)            |                                                                                                                                                       |                                                                                                                                                                                                                                                                         |
| 8.30am – 9.15am                    | <b>Registration</b>                                                                                                                                   |                                                                                                                                                                                                                                                                         |
| 9:15am – 10:00am                   | <b>Opening ceremony</b> <ul style="list-style-type: none"> <li>Welcome speech</li> <li>Welcome remarks</li> <li>Group photo</li> </ul>                | <b>Dr. Mei WANG</b><br>President of GP-TCM RA<br><b>Prof. Lidan ZHONG</b><br>Host of the meeting<br><b>Prof. Kanaga SABAPATHY</b><br>Chair, School of Biological Sciences<br><b>Dr. Ho Pin TEO</b><br>Guest of Honour<br>Chairman of TCM Practitioners Board, Singapore |
| 10:00am – 10:30am                  | <b>Keynote speech 1</b><br><b>Chairperson: Prof. Simon Ming-Yuen LEE</b><br>Title: Relevance of edible and medicinal plants as neuroprotective agents | <b>Prof. Alberto Carlos PIRES DIAS</b><br>University of Minho, Portugal                                                                                                                                                                                                 |
| 10:30am – 11:00am                  | Tea/coffee break & poster/exhibition viewing session                                                                                                  |                                                                                                                                                                                                                                                                         |
| 11:00am – 11:30am                  | <b>Keynote speech 2</b><br><b>Chairperson: Dr. Chris Kam Wa CHAN</b><br>Title: Past, present, and future of integrative oncology                      | <b>Dr. Ting BAO</b><br>Leonard P. Zakim Center for Integrative Therapies and Healthy Living, USA                                                                                                                                                                        |
| 11:30am – 12:30pm                  | <b>Interest Group 1 – Publication</b><br><b>Chairpersons: Dr. Myeong Soo LEE and Prof. De-An GUO</b>                                                  |                                                                                                                                                                                                                                                                         |
|                                    | Title: International standards and good practice guidelines in traditional, complementary and integrative medicine: a scoping review (15 min.)        | <b>Prof. Xuanbin WANG</b><br>Hubei University of Medicine, China                                                                                                                                                                                                        |
|                                    | Title: Integrity at the interface: Open science practices and predatory publishing risk (15 min.)                                                     | <b>Dr. Jeremy NG</b><br>University of Tübingen, Germany                                                                                                                                                                                                                 |
|                                    | Title: The journal <i>Evidence-Based Chinese Medicine and Technology Assessment</i> (10 min.)                                                         | <b>Prof. Jianping LIU</b>                                                                                                                                                                                                                                               |

|                  |                                                                                                                                                                      |                                                                                                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
|                  |                                                                                                                                                                      | Hospital of Chengdu University of Traditional Chinese Medicine, China                                                          |
|                  | Title: <i>World Journal of Traditional Chinese Medicine</i> – the official journal of GP-TCM RA (10 min.)                                                            | <b>Prof. De-An GUO</b><br>Shanghai University of Traditional Chinese Medicine, China                                           |
|                  | Title: The journals <i>Perspectives on Integrative Medicine</i> and <i>Integrative Medicine Research</i> (10 min.)                                                   | <b>Prof. Myeong Soo LEE</b><br>Korea Institute of Oriental Medicine, Korea                                                     |
| 12:30pm – 1:30pm | <b>Lunch – Lunchtime talk by Purapharm</b>                                                                                                                           |                                                                                                                                |
| 1:30pm – 3:00pm  | <b>Interest Group 2 – Pharmacology &amp; Toxicology</b><br><b>Chairpersons: Prof. Clara Bik-San LAU and Prof. Lie-Fen SHYUR</b>                                      |                                                                                                                                |
|                  | Title: Pharmacological target identification and chemical biology research of bioactive components from traditional Chinese medicine (20 min.)                       | <b>Prof. Zhe WANG</b><br>China Pharmaceutical University, China                                                                |
|                  | Title: Natural products and neuroprotection (20 min.)                                                                                                                | <b>Prof. Simon LEE</b><br>The Hong Kong Polytechnic University, Hong Kong SAR, China                                           |
|                  | Title: From 'Agonizing Itch' to 'Sweet Relief': The quest for antipruritic TCM R&D (20 min.)                                                                         | <b>Prof. Hong NIE</b><br>Jinan University, China                                                                               |
|                  | Panel discussion on Integrative Pharmacology and Toxicology (30 min.)                                                                                                | <b>Prof. Clara Bik-San LAU, Prof. Lie-Fen SHYUR, Prof. Zhe WANG, Prof. Simon LEE, Prof. Hong NIE, Prof. Pierre DUEZ</b>        |
| 3:00pm – 3:30pm  | <b>Tea/coffee break &amp; poster/exhibition viewing session</b>                                                                                                      |                                                                                                                                |
| 3:30pm – 5:00pm  | <b>Interest Group 3 – Regulatory Aspects &amp; Industry</b><br><b>Chairpersons: Dr. Liping QU and Mr. Abraham CHAN</b>                                               |                                                                                                                                |
|                  | Title: Resilience, reconfiguration and adaptive innovation: Multi-dimensional governance of sustainable Chinese medicine supply chains in the UK under VUCA contexts | <b>Prof. George HE</b><br>UK Centre of Chinese Medicine, UK                                                                    |
|                  | Title: Analytical method validation for TCM industrial applications                                                                                                  | <b>Dr. Stephan HORSTEN</b><br>European Scientific Cooperative on Phytotherapy, The Netherlands                                 |
|                  | Title: Regulatory application of human-use experience in TCM product R&D                                                                                             | <b>Prof. Zhongqi YANG</b><br>The First Affiliated Hospital of Guangzhou University of Chinese Medicine, China                  |
|                  | Title: The first B2B international trading platform for Chinese Materia Medica                                                                                       | <b>Mr. Abraham CHAN</b><br>Board of Director of Shouchuang Traditional Chinese Medicine Trading Platform, Hong Kong SAR, China |
| 6:30pm – 8:30pm  | <b>Conference Dinner</b>                                                                                                                                             |                                                                                                                                |

|                           |                                                                                                                                       |                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| End of Day 1 Session      |                                                                                                                                       |                                                                                               |
| Day 2: 8 July (Wednesday) |                                                                                                                                       |                                                                                               |
| 9:00am – 10:30am          | <b>Interest Group 4 – Clinical Studies</b><br><b>Chairperson: Prof. Lidan ZHONG</b>                                                   |                                                                                               |
|                           | Title: Clinical efficacy evaluation study of Tuina combined with medicated oil massage in the treatment of non-specific low back pain | <b>Dr. Man YUAN</b><br>Shanghai University of Traditional Chinese Medicine, China             |
|                           | Title: Reporting, risk of bias, and trustworthy in clinical trials                                                                    | <b>Prof. Yao LIANG</b><br>Nanyang Technological University, Singapore                         |
|                           | Title: A gut-to-lung axis to treat obesity using Panax Notoginseng: from clinical evidence to translational mechanistic study         | <b>Prof. Ning WANG</b><br>The University of Hong Kong, Hong Kong SAR, China                   |
| 10:30am – 11:00am         | <b>Tea/coffee break &amp; poster/exhibition viewing session</b>                                                                       |                                                                                               |
| 11:00am – 12:30pm         | <b>Interest Group 5 – Clinical Practice Guidelines</b><br><b>Chairpersons: Dr. Chris Kam Wa CHAN and Dr. Wendy WONG</b>               |                                                                                               |
|                           | Title: Major interventions in CPGs of major depressive disorder                                                                       | <b>Dr. Jerry Wing Fai YEUNG</b><br>The Hong Kong Polytechnic University, Hong Kong SAR, China |
|                           | Title: Development and application of integrated traditional Chinese medicine in the intervention for insomnia disorders              | <b>Dr. Binbin LEI</b><br>Guangzhou University of Chinese Medicine, China                      |
|                           | Title: Developing Clinical Practice Guidelines for Acupuncture in Cancer-Related Insomnia: Methods and Framework                      | <b>Prof. Mingxiao YANG</b><br>Nanyang Technological University, Singapore                     |
| 12:30pm – 2:00pm          | <b>Lunch</b><br>(Early career participants lunch gathering with President and President-Elect of GP-TCM RA)                           |                                                                                               |
| 2:00pm – 3:15pm           | <b>GP-TCM RA AGM 2026</b>                                                                                                             |                                                                                               |
| 3:15pm – 3:45pm           | <b>Tea/coffee break &amp; poster/exhibition viewing session</b>                                                                       |                                                                                               |
| 3:45pm – 4:15pm           | <b>Keynote speech 3</b><br><b>Chairperson: Prof. Yuan Shiun CHANG</b><br>Title: Improving global transparency in clinical trials      | <b>Prof. Ghassan KARAM</b><br>World Health Organization, Switzerland                          |
| 4:15pm – 5:45pm           | <b>Interest Group 6 – Acupuncture-Moxibustion and Meridians</b><br><b>Chairperson: Prof. Jianping LIU</b>                             |                                                                                               |
|                           | Title: The TCM community model: A cross-cultural framework through global scientific exchange                                         | <b>Ms. Angie CALOR-MAN</b><br>The TCM Community, The Netherlands                              |

|                          |                                                                                                                                                        |                                                                                           |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                          | Title: Methodological challenges in the design of acupuncture trials                                                                                   | <b>Prof. Jianping LIU</b><br>Beijing University of Chinese Medicine, China                |
|                          | Title: Current evidence level in acupuncture research: an overview                                                                                     | <b>Prof. Myeong Soo LEE</b><br>Korea Institute of Oriental Medicine, Korea                |
|                          | Title: Effects and mechanism of acupuncture on circadian rhythm                                                                                        | <b>Prof. Chengshun ZHANG</b><br>Chengdu University of Traditional Chinese Medicine, China |
| End of Day 2 Session     |                                                                                                                                                        |                                                                                           |
| Day 3: 9 July (Thursday) |                                                                                                                                                        |                                                                                           |
| 9:00am – 10:30am         | <b>Interest Group 7 – Quality Control</b><br><b>Chairpersons: Prof. Rudolf BAUER and Prof. Monique SIMMONDS</b>                                        |                                                                                           |
|                          | Title: Machine learning and chemometric methods for high-throughput authentication of Chinese herbs using ATR-FTIR fingerprints                        | <b>Prof. De-An GUO</b><br>Shanghai University of Traditional Chinese Medicine, China      |
|                          | Title: Advancing herbal medicine: Extent similarity assessment for a quantitative fingerprinting approach of herbal medicinal products                 | <b>Dr. Xiao WU</b><br>Bayer Consumer Health, Germany                                      |
|                          | Title: Development and application of artificial intelligence in quality control of traditional Chinese medicine                                       | <b>Prof. Yuanjia HU</b><br>University of Macau, Macau SAR, China                          |
| 10:30am – 11:00am        | <b>Tea/Coffee break &amp; poster/exhibition viewing session</b>                                                                                        |                                                                                           |
| 11:00am – 11:30am        | <b>2-minute flash poster presentations from selected abstracts</b><br><b>Chairpersons: Prof. Pierre DUEZ and Prof. Tai-Ping FAN</b>                    |                                                                                           |
| 11:30am – 12:00pm        | <b>Keynote speech 4</b><br><b>Chairperson: Prof. Lidan ZHONG</b><br>Title: Combining the best of traditional Chinese & Western medicine: Are we ready? | <b>Prof. Jing Jih CHIN</b><br>National Healthcare Group, Singapore                        |
| 12:00pm – 12:15pm        | <b>Awards presentation</b><br><b>Chairpersons: Dr. Mei WANG and Mr. George HE</b>                                                                      |                                                                                           |
| 12:15pm – 12:30pm        | <b>Closing ceremony</b>                                                                                                                                | <b>Dr. Mei WANG</b><br>President of GP-TCM RA                                             |
| 12:30pm – 2:00pm         | <b>Lunch</b>                                                                                                                                           |                                                                                           |
| End of Day 3 Session     |                                                                                                                                                        |                                                                                           |

# **NTU**

**Ranked Among the Best  
in the World**



**5<sup>th</sup>**

Times Higher Education  
Interdisciplinary Science Rankings



**1<sup>st</sup>**

Times Higher Education  
Young University Rankings



**4<sup>th</sup>**

US News and World Report  
Best Global Universities in Asia



**4<sup>th</sup>**

Times Higher Education  
Asia University Rankings



**12<sup>th</sup>**

QS World University Rankings



**3<sup>rd</sup>**

QS Asia University Rankings



**28<sup>th</sup>**

US News and World Report  
Best Global University Ranking



**31<sup>st</sup>**

Times Higher Education  
World University Rankings



**10<sup>th</sup>**

Times Higher Education  
World's Most International Universities



## **◀ Venue**

**School of Biological Sciences  
Lecture Theatre  
Capacity: 288**

# Accommodation Info

## GENTING HOTEL JURONG



Nearest Train Station: Jurong East NS 1 EW 24

Take Exit A or B to Genting Hotel Jurong (8 minutes walk)

Take the **Red Line** to get to Orchard Road

Take the **Green Line** to get to Bugis and Changi Airport



Shuttle Bus: Genting Hotel Jurong => NTU event venue  
will be provided during event period

## Nearby Shopping Mall





Gardens by the Bay



National Museum



Universal Studios Singapore



Sentosa Island



Mandai Wildlife Reserve



Merlion Park

# **All Speakers' Biographies and Abstracts**

## **Ms. Angie Calor-Man**



Angie Calor-Man 文詠欣 is a licensed acupuncturist and herbalist practicing at I-Lotus Chinese Medical Center in the Netherlands. She is Co-Founder of The TCM Community, a global platform dedicated to knowledge exchange, awareness, and education in East Asian Medicine and natural therapies.

Angie serves as Secretary General of the largest Dutch professional association for Traditional Chinese Medicine, Managing Director of the Dutch TCM Congress, and Secretary General of the European TCM University. As a conference organiser, association leader, and international collaborator, she connects clinical practice with cross-cultural exchange, contributing to the growing role of acupuncture and traditional medicine in modern healthcare.

## The TCM Community Model

### *A cross cultural framework through global scientific exchange*

The integration of Traditional Chinese Medicine (TCM) into global healthcare systems requires more than the accumulation of scientific evidence; it depends on effective structures for cross-cultural exchange that connect practitioners, researchers, educators, and policymakers. This talk introduces The TCM Community Model as a practitioner-led, globally oriented framework designed to support the development and dissemination of evidence in East Asian Medicine through coordinated knowledge sharing, education, and international collaboration.

Grounded in clinical practice, the model demonstrates how scalable and sustainable exchange can be achieved across cultural and institutional boundaries. Through international conferences, multilingual educational media, peer-informed publications, practitioner interviews, and strategic partnerships, including community acupuncture initiatives in Brazil and academic collaborations with institutions such as Five Branches University in California, the platform illustrates how diverse stakeholders can be meaningfully connected.

Addressing key challenges in acupuncture and moxibustion research, including fragmented evidence, limited practitioner involvement in research design, and the difficulty of translating findings across cultural contexts, this lecture presents a structured approach that embeds practitioners throughout the research process. By aligning research priorities with clinical realities and supporting dissemination across different healthcare environments, the model strengthens both relevance and applicability.

The presentation further positions the model as a scalable and transferable framework for application within the Good Practice in Traditional Chinese Medicine Research Association Acupuncture, Moxibustion and Meridians Interest Group. It offers a practical infrastructure for fostering international collaboration, enhancing practitioner engagement, and supporting the co-creation of high-quality, culturally responsive research.

**Keywords:** *TCM Community Model, acupuncture, moxibustion, cross-cultural exchange, International. collaboration, practitioner-led frameworks, evidence.development, knowledge dissemination, collaborative.networks?integrated care, traditional Chinese medicine*

## **Dr. Bao Ting**



Dr. Bao is the past president of the Society for Integrative Oncology (SIO) and current co-chair of SIO Education Committee. She is the Co-Director of the Zakim Center for Integrative Therapies and Healthy Living at the Dana-Farber Cancer Institute. She was a joint faculty member at Memorial Sloan Kettering Cancer Center (MSK) Integrative Medicine and Breast Medicine services and the director of Integrative Breast Oncology program at MSK from 4/2014 to 7/2023. She is a board-certified breast medical oncologist and medical acupuncturist, and integrative medicine physician. She has conducted a number of clinical trials that examine the safety, effectiveness, and underlying mechanisms of acupuncture and yoga to improve cancer patients' quality of life and to address treatment- and disease-related symptoms. Because of her clinical and research expertise, she is a member of the National Cancer Institute (NCI) Physician Data Query Complementary and Alternative Medicine (CAM) Editorial Board. She is also a member of the Alliance for Clinical Trials in Oncology Symptom Intervention Committee and she is a speaker and panelist for NCI conducted workshops on oncology acupuncture and cancer CAM.

Born and raised in Beijing, China, she received her medical education at Johns Hopkins School of Medicine, with residency at Johns Hopkins Bayview Medical Center and medical oncology fellow at the Kimmel Comprehensive Cancer Center. Her Masters of Science in clinical research is from the University of Maryland. Prior to her position at Memorial Sloan Kettering, she was a joint faculty member at the University of Maryland Greenebaum Cancer Center and Center for Integrative Medicine. She is board-certified in medical oncology, internal medicine and acupuncture.

## **Dr. Binbin Lei**



Dr. Binbin Lei is an Associate Researcher and Xinglin Young Scholar at Guangzhou University of Chinese Medicine. Her research areas include the health effects of sleep and circadian rhythm, mood disorders, and suicide. She holds roles in several academic committees, including Youth Committee Member of the Chinese Sleep Research Society and Standing Committee Member of the Smart Psycho-cardiology Branch at Guangdong Health Information Network Association. Dr. Lei has led two national-level research projects, including the National Natural Science Foundation of China (NSFC) and co-construction project of the National Administration of Traditional Chinese Medicine, and contributed to three others. She has published 7 papers as first or corresponding author in journals such as SLEEP. Her work has been recognized with awards including the AASM 2021 Youth Travel Award. Dr. Lei also serves as a Youth Editorial Board Member for Heart and Mind and a peer reviewer for several international journals.

## **Development and Application of Integrated Traditional Chinese Medicine in the Intervention for Insomnia Disorders**

Insomnia disorder represents a major public health burden globally, frequently leading to impaired daytime function, reduced quality of life, and increased risk of mental disorders and somatic illnesses. Although Cognitive Behavioral Therapy for Insomnia (CBT-I) is recognized as the first-line treatment, its real-world implementation remains challenging. In mainland China, for example, real-world studies report a completion rate as low as 20%, largely due to high demands on patient self-discipline, insufficient trained therapists, and low cultural familiarity with psychological terminology. Traditional Chinese Medicine (TCM), by contrast, has been widely accepted across Chinese populations for centuries, offering a culturally resonant and accessible framework for managing sleep disorders. The recent work of our research team focuses on development process and clinical application of an integrated intervention that strategically combines the simple, evidence-informed TCM techniques with the two core behavioral components of CBT-I. This therapy is a self-administration after brief training. In terms of application, our integrated approach aims to lower patient burden, improve adherence through familiar TCM practices, and synergistically enhance sleep regulation via both behavioral and meridian-based mechanisms. Randomized controlled trials are planned to evaluate the adherence and improvement of insomnia outcomes. This work offers a new, culturally adaptive, and resource-efficient direction for the prevention and intervention of insomnia disorders, bridging traditional wisdom with contemporary behavioral medicine.

## **Mr. Chan Yu Ling, Abraham**



Mr. Chan Yu Ling, Abraham (陳宇齡), is the Founder, Chairman, and CEO of PuraPharm Corporation Limited, overseeing strategic planning, operations, and research development. With over 30 years of experience in Chinese medicine and healthcare products, he has significantly impacted the industry.

Since 2018, Mr. Chan has served on the Guizhou Provincial Committee of the Chinese People's Political Consultative Conference and became a member of the Guizhou Provincial Standing Committee in January 2023. He holds multiple advisory roles, including Director of the TCM All-Sectors Hong Kong Centre, Chair of the Chinese Medicine Centre Governing Council External Advisory Board, and Council and Court Member of Hong Kong Baptist University. Additionally, he is on the School of Pharmacy Advisory Board at the Chinese University of Hong Kong, Hong Kong University Advisory board for Pharmacy Education and serves on the Hong Kong Baptist School of Chinese Medicine Advisory Committee.

A fellow of the Hong Kong Institute of Directors since 2001, Mr. Chan was a part-time member of the Central Policy Unit of the Hong Kong Government in 2005, 2008, and 2009, and a non-official member of the Commission on Strategic Development from 2005 to 2007. He was a member of the Chinese Medicine Development Committee from 2013 to 2019, a Committee Member of the Chinese Medicine Board from 2017 to 2020, Committee Member of the Chinese Medicine Board under Chinese Medicine Council of Hong Kong and part of the Expert Group for Chinese Medicine Hospital from 2018 to 2021.

Mr. Chan graduated from the University of Toronto with a bachelor's degree in applied sciences in June 1982. He was accredited as a chartered engineer in the UK in October 1989 and as a professional engineer in Ontario, Canada, in January 1989.

## **Prof. Chengshun Zhang**



Chengshun Zhang is an Associate Professor at the Acupuncture and Tuina School, Chengdu University of Traditional Chinese Medicine. He serves as a member of the Experimental Acupuncture Branch of China Association of Acupuncture-Moxibustion, a young committee member of the Chronobiology Professional Committee of Chinese Society of Integrated Traditional Chinese and Western Medicine, and Vice Chairman of the Experimental Acupuncture Branch of Chengdu Acupuncture Society.

He has presided over 1 Youth Project of the National Natural Science Foundation of China and 2 Sichuan Provincial Science and Technology Planning Projects. He has published more than 20 SCI journal papers in journals such as Life Sciences, Frontiers in Aging Neuroscience, obtained 6 authorized utility model patents, and won 1 First Prize of Sichuan Provincial Science and Technology Progress Award, as well as 1 First Prize and 1 Third Prize of the Science and Technology Award of China Association of Acupuncture-Moxibustion. He has also participated in compiling 4 textbooks and monographs.

# Effects and mechanism of acupuncture on circadian rhythm

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## Introduction:

Circadian rhythm is an endogenous approximately 24-hour rhythm that maintains physiological homeostasis. Its disruption contributes to obesity, depression, cardiovascular diseases and other disorders. Acupuncture shows time-dependent therapeutic effects, but its identity and mechanism as a zeitgeber are still unclear. This study aimed to investigate the zeitgeber properties of acupuncture, its central and peripheral timing mechanisms in regulating circadian rhythm, and the clock-controlled pathway of acupuncture for ischemic heart disease.

## Materials and Methods:

Golden hamsters and mice were used to establish circadian rhythm disturbance and myocardial ischemia models. Acupuncture or electroacupuncture was performed at different time phases on Baihui, Changqiang, Neiguan and Zusanli. Behavioral tests, phosphoproteomics, Western blot, IP-MS, transcriptomics, echocardiography and myocardial marker detection were applied. KLF15 silencing was used to verify its key role.

## Results:

Acupuncture functions as a **non-photic zeitgeber** with phase-specific rhythm-resetting effects. It regulates circadian rhythm by modulating protein phosphorylation in the suprachiasmatic nucleus (SCN) and remodeling fibroblast cytoskeleton in a time-dependent manner. In ischemic heart disease, acupuncture upregulates the clock-controlled gene **KLF15**, activates the Rictor/mTORC2–Akt–ULK1 pathway, restores autophagic flux, improves cardiac function and reduces myocardial injury. These beneficial effects are abolished after KLF15 silencing.

## Conclusions:

Acupuncture is a non-photic zeitgeber that adjusts circadian rhythm through SCN synaptic plasticity and peripheral fibroblast remodeling. For ischemic heart disease, acupuncture produces cardioprotection via a **KLF15-dependent clock-controlled mechanism** that restores autophagic homeostasis.

## Acknowledgements:

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## Mr. George He



George is a qualified practitioner, educator, researcher, and organisational leader working in Chinese medicine in the UK and Europe. Over more than 25 years, his work has included clinical practice, practitioner education, collaborative research, and the development of organisations and services related to Chinese medicine. He currently serves as the Executive Director of the UK Centre of Chinese Medicine, the Managing Director of Phoenix Medical Group, the Principal of Phoenix

Academy of Acupuncture and Herbal Medicine, and the Principal of the International JingFang Institute UK Branch of Nanjing University of Chinese Medicine.

He is a Fellow of the Royal Society of Medicine (UK) and holds guest professorships at Shanghai University of Traditional Chinese Medicine and the International JingFang Institute of Nanjing University of Chinese Medicine. His professional appointments also include Treasurer of the Good Practice of Traditional Chinese Medicine Research Association, UK Co-Chair of the Consortium for Globalisation of Chinese Medicine, and Honorary Advisor to the King's Centre for Integrative Chinese Medicine at King's College London. He is also a council member of the Pan-European Federation of Consultants in Traditional Chinese Medicine and a full member of both the Register of Chinese Herbal Medicine and the Association of Traditional Chinese Medicine and Acupuncture (UK).

His work has included founding the UK Centre of Chinese Medicine and establishing the European Journal of Chinese Medicine to support communication between research, clinical practice, and policy. Through Phoenix Academy, he has contributed to practitioner training, curriculum development, and educational collaboration in the UK and Europe. Through Phoenix Medical Group, he has also worked on product quality, regulatory compliance, supply chain documentation, and strategic development in the Chinese medicine sector.

Since 2007, he has participated in NHS-approved Chinese herbal medicine clinical trials in collaboration with the University of Westminster and the University of Southampton and, from 2019 to 2023, served as UK Project Lead for a UK–China government-funded multi-centre clinical trial in Chinese medicine.

Taken together, his work is situated at the intersection of **clinical practice, education, research collaboration, professional organisation, and industry development** within the field of Chinese medicine.

## **Resilience, Reconfiguration and Adaptive Innovation:**

### **Multi-dimensional Governance of Sustainable Chinese Medicine Supply Chains in the UK under VUCA Contexts**

This study examines how UK-facing Chinese medicine supply chains are being reconfigured amid volatility, uncertainty, complexity, and ambiguity (VUCA). Positioned at the intersection of divergent regulatory regimes, epistemic traditions, and commercial practices, these supply chains face mounting pressures from regulatory fragmentation, climate variability, supply disruption, and persistent traceability deficits. Despite their continued expansion through transnational practitioner–importer networks, their underlying resilience remains insufficiently theorised and empirically grounded.

Adopting a sequential exploratory mixed-methods design, the study integrates a scoping survey of UK stakeholders with in-depth semi-structured interviews to investigate both structural vulnerabilities and lived governance practices. While survey findings map sector-wide risk perceptions, qualitative data provide critical insight into the socio-material mechanisms underpinning supply continuity. Planned ethnographic fieldwork in China, focusing on *Angelica sinensis*, *Ziziphus jujuba* subsp. *spinosa* and *Lonicera japonica*, will extend this analysis across upstream resource, production and processing contexts.

Preliminary findings indicate that resilience is not systematically measured but rather enacted through hybrid governance arrangements that combine formal regulatory compliance with informal, trust-based networks. Supply continuity frequently depends on tacit knowledge, relational contracting, and culturally embedded notions of provenance (e.g., *Daodi*), rather than standardised documentation or validated authentication systems. This reveals a fundamental tension between traditional epistemologies and contemporary demands for traceability, standardisation, and regulatory accountability.

The study argues that supply chain resilience in this sector must be understood as a multi-dimensional governance problem, encompassing operational, cultural, and epistemic dimensions. In response, it proposes a novel Supply Chain Resilience Index (SCRI) and a governance framework designed to support proportionate, context-sensitive regulation, particularly for small and medium-sized enterprises. The research contributes to debates in supply chain resilience, ethnopharmacology, and hybrid governance by advancing a culturally grounded, empirically informed model of adaptive supply systems.

**Keywords:** Chinese medicine, supply chain resilience, VUCA, hybrid governance, ethnopharmacology, traceability, *daodi*, sustainability, SCRI, UK regulation.

## **Prof. Ghassan Karam**



Ghassan has many years of professional experience in the private sector then within different departments in the World Health Organization. He has been managing the ICTRP project (International Clinical Trials Registry Platform) and its Registry Network of 20 countries in the World Health Organization since 2011. He is an expert in the registration and legislation of clinical trials and ethics committees and their information systems . He is an advocate of research transparency and social responsibility. He

is Fluent in English, French and Arabic. He holds a BS in Computer Science, an MSc in International Management with the University of London and he is a PhD student at Utrecht University in the Netherlands.

## **Advancing Global Research Transparency Through the WHO International Clinical Trials Registry Platform**

Following the Ministerial Summit on Health Research that took place in Mexico City, Mexico, in November 2004, participants called for the WHO to facilitate the establishment of: "a network of international clinical trials registers to ensure a single point of access and the unambiguous identification of trials".

This was further expanded on during the 58th World Health Assembly in Resolution WHA58.22 that called on the global scientific community, international partners, the private sector, civil society, and other relevant stakeholders to: "establish a voluntary platform to link clinical trials registers in order to ensure a single point of access and the unambiguous identification of trials with a view to enhancing access to information by patients, families, patient groups and others".

The mission of the WHO International Clinical Trials Registry Platform (ICTRP) is to ensure that a complete view of research is accessible to all those involved in health care decision making. This will improve research transparency and will ultimately strengthen the validity and value of the scientific evidence base.

The ICTRP Search Portal aims to provide a single point of access to information about ongoing and completed clinical trials. It provides a searchable database containing the trial registration data sets made available by data providers around the world meeting criteria for content and quality control.

## **Prof. Hong Nie**

### **From 'Agonizing Itch' to 'Sweet Relief': The Quest for Antipruritic TCM R&D** Hong Nie<sup>a</sup>

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#### **Main text**

**Introduction:** Chronic pruritus is a prevalent and debilitating cutaneous symptom associated with various dermatological diseases, seriously impairing patients' quality of life and mental health. Current conventional Western medicine adopts single-target intervention strategies, often yielding in transient relief with poor durability and frequent side effects, limiting their long-term clinical use. Traditional Chinese Medicine (TCM) has been historically used for pruritus management, featuring holistic regulation, a favorable safety effect and multi-target, multi-pathway pharmacological actions. This study aimed to summarize the latest research progress of TCM antipruritic regimens, analyze existing limitations, and explore developmental strategies for modern standardized products, so as to achieve stable and comfortable clinical relief of chronic pruritus, and promote the translational application of TCM dermatological preparations.

**Materials and Methods:** Relevant published literature, clinical trial data and industrial research reports focusing on TCM formulas, active compounds and topical preparations for chronic pruritus were systematically retrieved and reviewed. This study summarized pathological characteristics of chronic pruritus, catalogued effective antipruritic substances and core therapeutic mechanisms of TCM, and further analyzed current bottlenecks in mechanistic verification, standardization and clinical translation.

**Results:** TCM empirical prescriptions and bioactive compounds demonstrate reliable antipruritic effects through multi-target and multi-pathway modulation, providing comprehensive symptom relief rather than merely suppressing symptoms. Preclinical studies, including investigations of sophocarpine, show that specific TCM compounds can inhibit TRP channels to reduce itch and pain in animal models. Additionally, evidence from genetic studies indicates that systemic immune factors contribute to pruritic conditions, supporting the potential of TCM interventions in modulating immune-related pathways. Despite these findings, incomplete understanding of the pharmacological mechanisms, variability in preparation standards, and limited high-quality clinical trials continue to restrict the clinical application and industrial development of TCM antipruritic products.

**Conclusions:** TCM possesses unique advantages and broad potential in treating chronic pruritus. Targeted efforts to standardize formulations, explore mechanisms and facilitate clinical translation can effectively address current research gaps. This study offers sound theoretical support and practical guidance for translating research into modern antipruritic TCM preparations and promoting their clinical application.

## **Dr Jeremy Y. Ng**



Dr. Jeremy Y. Ng, MSc, PhD, is a Scientist at the Institute of General Practice and Interprofessional Care, University Hospital Tübingen & Robert Bosch Center for Integrative Medicine and Health in Stuttgart, Germany, as well as an Assistant Professor at the Department of Health Research Methods, Evidence, and Impact, Faculty of Health Sciences, McMaster University in Hamilton, Canada, and an Associate Professor (Adjunct) at the School of Public Health, Faculty of Health, University of Technology Sydney in Sydney, Australia. He presently serves as the Editor-in-Chief of the Journal of Complementary and Integrative Medicine. Outside of traditional, complementary, and integrative medicine, his other research interests include open science, meta-research, publication science, research ethics, integrity, and misconduct, and bibliometrics, and he has published 100+ peer-reviewed articles on these topics collectively. Dr. Ng has been an invited expert at World Health Organization (WHO) meetings on traditional medicine, and currently serves as a member of the WHO Topic Group on Traditional Medicine under the Global Initiative on Artificial Intelligence for Health. Prior to his current role, he was a three-time, Canadian government-funded Postdoctoral Fellow at the Centre for Journalology at the Ottawa Hospital Research Institute in Ottawa, Canada. He holds a Doctor of Philosophy in Health Research Methodology from McMaster University, and a Master of Pharmaceutical Sciences (MSc) from the University of Toronto. His research has been featured in Nature, Scientific American, Discover Magazine, Psychology Today, and PsychCentral, among other prominent media outlets.

## **Integrity at the interface: Open science practices and predatory publishing risk**

The rapid growth of integrative medicine research has created new opportunities for global collaboration, innovation, and evidence-informed practice. At the same time, this expanding scholarly landscape faces persistent challenges related to research transparency, reproducibility, and the proliferation of predatory journals that target authors seeking rapid publication. These issues are particularly important in interdisciplinary fields where diverse methodologies, variable regulatory environments, and uneven publishing literacy may increase vulnerability to questionable publishing practices. This presentation, “Integrity at the Interface: Open Science Practices and Predatory Publishing Risk”, will examine how open science principles can strengthen research integrity while reducing exposure to predatory publishing threats. Key open science practices to be discussed include prospective study registration, protocol sharing, use of reporting guidelines, data and code sharing where appropriate, preprints, open peer review, conflict of interest disclosure, and transparent authorship practices. Collectively, these approaches can improve the credibility, discoverability, and reproducibility of integrative medicine research. The talk will also explore common characteristics of predatory journals, including deceptive indexing claims, inadequate peer review, aggressive solicitation, unclear editorial governance, and excessive publication promises. Practical strategies will be provided to help researchers, clinicians, and trainees critically evaluate journals before submission, using evidence-based checklists and trusted indexing resources. Finally, the presentation will highlight how institutions, funders, scholarly societies, and senior researchers can foster a culture of responsible publishing through mentorship, policy development, and researcher education. By aligning open science practices with careful journal selection, the integrative medicine community can enhance trust in its evidence base, protect researchers from exploitative publishers, and promote higher standards of scholarship across disciplines.

## **Dr. Jerry Wing-Fai Yeung**



Dr. Jerry Wing-Fai Yeung is a registered Chinese medicine practitioner. He is a Professor at the School of Nursing, the Hong Kong Polytechnic University and Associate Director of the Research Centre for Chinese Medicine Innovation of Hong Kong Polytechnic University. Dr. Yeung obtained his Bachelor Degree in Chinese Medicine and Bachelor Degree of Biomedical Science (Hons) at the Hong Kong Baptist University and registered as a Chinese Medicine Practitioner in 2004. He left the Chinese Medicine Clinics of Hong Kong Baptist University and pursued research training in the Department of Psychiatry at the University of Hong Kong in 2005. He was conferred a PhD degree in 2010. Dr. Yeung's research interests focus on the evaluation of traditional Chinese medicine interventions for sleep and mood disorders.

杨颖辉博士及医师。是香港理工大学护理学院的教授，及香港理工大学中医药创新研究中心副主任。杨博士于香港浸会大学获得中医学学士及生物医学科学（荣誉）学士学位，并于 2004 年注册成为中医师。2005 年，他赴香港大学精神医学系接受科研培训。2010 年获授予博士学位。杨博士主要从事研究以中医方法帮助睡眠和改变情绪障碍的应用。

## **Major Interventions in Clinical Practice Guidelines of Major Depressive Disorder**

**Background:** Major Depressive Disorder is a leading cause of global disability. Although various regional and international organizations publish Clinical Practice Guidelines (CPGs), clinicians often struggle to synthesize the diverse recommendations into personalized care.

**Objective:** to review the major CPGs in conventional medicine, Chinese herbal medicine, and acupuncture.

**Methods:** The review focused on the guidelines from the National Institute for Health and Care Excellence (NICE, UK, 2022), the Canadian Network for Mood and Anxiety Treatments (CANMAT, Canada, 2016/2023), the World Federations of Chinese Medicine Societies and China Association of Chinese Medicine (China, 2019), and the Western Pacific Region, World Health Organization (2015). The treatment hierarchy for mild-to-severe depression and recommendations for treatment were summarized.

**Results:** In conventional medicine, SSRIs, SNRIs, and high-intensity psychotherapy are recognized as first-line treatments. The NICE guideline emphasizes shared decision-making and non-pharmacological options for milder cases, while the CANMAT guideline advocates a structured pharmacological hierarchy and recommends early use of neurostimulation and rapid-acting antidepressants, such as esketamine, for treatment-resistant cases. The International Clinical Practice Guideline for First-Episode Depression in Chinese Medicine recommended acupuncture and auricular acupuncture, dietary therapy, psychological therapies, meditation, and classic herbal formulas. Excessive patterns (e.g., Liver Qi Stagnation) tend to have a shorter course, whereas deficiency patterns last longer. The 2015 WHO/WPRO guideline provides specific acupuncture protocols based on the severity of depression.

**Conclusion:** A synthesis of these guidelines indicates a global shift toward a bio-psycho-social-lifestyle model, advancing beyond simple medication algorithms to a more personalized "stepped-care" approach.

## **Prof. Jianping Liu**



Dr Liu is a professor and the Director of the Centre for Evidence-Based Medicine at Hospital of Chengdu University of Traditional Chinese Medicine. He is a Chang Jiang Scholar Professor (awarded by the Ministry of Education, China). He is the past president of the International Society for Complementary Medicine Research (ISCMR). He is a member of the WHO Traditional Medicine Strategic and Technical Group, advisor of the Cochrane Complementary Medicine, co-chair of Cochrane China Network, and Past Chair of Evidence-based Medicine Committee under Chinese Association of Integrative Medicine. Dr Liu was awarded more than 30 grants from international and national bodies for research in TCM and integrative medicine. He has authored 17 books, co-authored 8, and published 840 papers in both international and Chinese peer review journals.

# Methodological challenges in acupuncture trials

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Main text (not exceeding 300 words):

Introduction: Acupuncture therapy has been considered as complex intervention with multiple approaches to treat the patients. The approaches include patient-acupuncturist communication, establishing trust, making diagnostic judgement to construct treatment protocol. During the treatment, acupuncturist would initiate the process evaluation and adjust the treatment protocol, and collecting outcome changes. However, current randomized trials of acupuncture may not reflect the multiple components, but mainly focus on the acupoint stimulation. In order to promote sufficient reporting of acupuncture trials, this analysis aims to identify the different components of acupuncture therapy and to provide references for future acupuncture trials to reflect the real world clinical practice.

Materials and Methods: PubMed was searched for randomized clinical trials on acupuncture between 2017 and 2021, and data were extracted including publication citations, countries, authors, participants, acupuncture regimens, comparisons, and outcomes as well as methodological characteristics.

Results: Authors identified acupuncture therapies as complex intervention because of their multifaceted techniques, dependence on expertise, often combined therapies, and highly personalised treatment regimen; Contextual effects, especially patient-practitioner interaction and participants' expectations, may impact the treatment effect and a trial's feasibility; Sham acupuncture is difficult to implement and has a specific effect that might result in underestimation of the real acupuncture treatment effect; When acupuncture is tested in trials, it is often oversimplified and poorly documented.

Conclusions: Randomised controlled trials of acupuncture face several challenges including treatment protocols often simplified and poorly documented with various techniques and the methods to locate acupoints, treatment dosage and needle manipulation, expertise of delivering the acupuncture treatment, combination therapies, and individualised treatment regimens. In addition, contextual effects of treatment, including therapeutic patient-practitioner interaction and participants' expectations, are often overlooked. Finally, in view of the complex intervention, sham acupuncture is both difficult to implement and might have specific effects, therefore underestimating the optimal treatment effect of acupuncture.

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## **Prof. Jing Jih Chin**



Adjunct Professor Chin Jing Jih is the Deputy Group Chief Executive Officer (Clinical and Academic Development) of the National Healthcare Group (NHG Health), where he leads strategic efforts to develop and advance clinical care, research, and education. In his leadership role, Professor Chin steers NHG's strategic initiatives to enhance delivery of appropriate and value-based care, ensuring sustainable models of care, including improving patient access to care across NHG's care ecosystem. He also oversees professional development for the clinical groups including medical, nursing, allied health, and pharmacy. He plays a key role in building the Group's research and education infrastructure and shaping its academic culture and he has been tasked to oversee the execution of NHG

Health's strategy in developing Integrative Medicine.

An educator and thought leader in medicine, healthcare delivery systems and clinical ethics, Professor Chin holds faculty appointments at the Lee Kong Chian School of Medicine at Nanyang Technological University (NTU), the Yong Loo Lin School of Medicine at the National University of Singapore (NUS), and the NUS Centre for Biomedical Ethics. He chairs Health Sciences Authority's Complementary Health Products Advisory Committee (CHPAC), which advise the HSA on regulatory policies, quality and safety of complementary health products, and the use of complementary investigational products in clinical trials. Alongside his leadership responsibilities, he continues to practise as a Senior Consultant in the Department of Geriatric Medicine at Tan Tock Seng Hospital (TTSH).

## **Prof. Mingxiao Yang**



Dr. Mingxiao Yang is a clinician-scientist with a cross-disciplinary background in clinical medicine, integrative health, and translational biomedical research. He currently serves as Assistant Professor at the School of Biological Sciences and Chinese Medicine Clinic, Nanyang Technological University, Singapore, where he directs the Integrative Health (iHEALTH) Lab. His research focuses on developing and evaluating evidence-based complementary and integrative medicine interventions—ranging from

acupuncture and herbal medicine to digital and mind-body therapies—for improving outcomes across cancer care and chronic disease management. Dr. Yang's work spans multiple domains, including symptom science (e.g., pain, sleep, neuropathy, balance), systems biology (e.g., multi-omics and neuroimaging), and digital health innovation (e.g., AI-driven diagnostics, mobile interventions). He has held appointments at Harvard Medical School, Dana-Farber Cancer Institute, Memorial Sloan Kettering Cancer Center, and the University of Hong Kong, and his work is supported by agencies such as the U.S. NIH, Singapore MOE, and the Hong Kong Health Bureau. A core aim of his lab is to translate complex traditional medicine knowledge into scalable, precision health solutions that align with modern clinical standards—particularly in areas like supportive oncology, enhanced recovery, and public health integration. He has published over 70 peer-reviewed articles and contributes actively to global initiatives in integrative medicine education, policy, and implementation science.

## **Developing Clinical Practice Guidelines for Acupuncture in Cancer-Related Insomnia: Methods and Framework**

Insomnia is one of the most prevalent and distressing symptoms among people living with cancer. Although acupuncture is widely used to improve sleep in cancer populations, no evidence-based clinical practice guidelines (CPGs) currently exist to guide clinical practice, practitioner training, or implementation, limiting treatment consistency, safety, and patient benefit. We initiated a Cochrane GRADE Evidence-to-Decision-compliant, ASCO methods-aligned project to develop evidence-based CPGs for acupuncture in cancer-related insomnia. The guidelines aim to provide recommendations for different cancer types and stages of care, including acupuncture modality, stimulation technique, acupoint selection, treatment frequency and duration, and safety considerations. Guideline development involves three groups: (1) an international multidisciplinary Expert Panel ( $n \leq 20$ ) comprising specialists in medical oncology, acupuncture, sleep medicine, evidence-based medicine, integrative oncology, and public health; (2) a Patient Advocate Group ( $n \leq 10$ ) representing local and international cancer advocates; and (3) a Guideline Development Panel (GDP;  $n \leq 10$ ) consisting of methodologists and clinical researchers with expertise in acupuncture, sleep medicine, and evidence synthesis. Following protocol finalization, the GDP will conduct a systematic review and meta-analysis of randomized controlled trials evaluating acupuncture versus placebo, sham acupuncture, waitlist, usual care, or other controls for cancer-related insomnia. Outcomes will include insomnia severity, subjective and objective sleep quality, co-occurring symptoms, quality of life, and adverse events. Detailed acupuncture intervention characteristics will also be extracted to inform treatment recommendations. Evidence profiles and GRADE Evidence-to-Decision frameworks will be reviewed by the Expert Panel to formulate consensus recommendations through a two-round Delphi process. Draft recommendations will subsequently undergo review by the Patient Advocate Group and public consultation before finalization. Guideline reporting will follow the AGREE and RIGHT statements. The project is currently in the Expert Panel assembly phase and will provide the first international evidence-based CPGs for acupuncture in cancer-related insomnia.

## **Prof. Ning Wang**



Professor Wang Ning is currently the Associate Professor of the School of Chinese Medicine of the University of Hong Kong (HKUSCM) and a National Youth Qihuang Scholar. He is the Assistant Director (Research) of HKUSCM. He majorly is interested in translational researches related to novel targets, mechanisms of action and bioactive components from Chinese Medicines for the treatment of human cancers and metabolic diseases. He has published 160 papers in renowned international peer-reviewed journals such as Hepatology, Signal Transduction and Targeted Therapies, Science Advances, Molecular Cancer etc.. The total number of citations reached 10,000, the H-index was 54. He has published more than 60 international conference papers or abstracts, edited 20 books and book chapters, and applied 10 international and national patents. He has been continuously listed as Top 1% Global Scholars by Clarivates and Top 2% Scientists by Stanford University since 2022.

## **A gut-to-lung axis to treat obesity using *Panax Notoginseng*: from clinical evidence to translational mechanistic study**

Obesity is characterized by adipose tissue expansion driven by adipogenesis and influenced by genetic, dietary, and lifestyle factors. This enlargement disrupts key metabolic processes, including adipokine secretion and insulin sensitivity, ultimately contributing to comorbidities such as diabetes and cardiovascular disease. Our previous work showed that *Panax notoginseng* (PN; Sanqi) counteracts obesity by remodeling the gut microbiota to enhance lipolysis in adipose tissue. Building on these insights, we conducted a pilot, open-label clinical study to evaluate PN's anti-obesity effects in human subjects. After 12 weeks of PN treatment, obese participants exhibited significant reductions in BMI, waist-to-hip ratio, and visceral fat. Fecal microbiota transplantation experiments in mice confirmed that PN's anti-obesity action depends on its modulation of live gut microbiota. Serum analysis revealed that PN increased circulating levels of SCGB3A2, a protein specifically secreted by pulmonary club-like cells. Mechanistically, PN reduced gut-microbiota-derived ceramide production, which otherwise suppresses SCGB3A2 transcriptional activation in pulmonary club cells. The PN-induced rise in SCGB3A2 then binds to the MACRO receptor on adipose tissue macrophages, promoting macrophage repolarization and subsequent adipose tissue lipolysis. Collectively, these findings uncover a clinically relevant mechanism underlying PN's anti-obesity effects and provide scientific support for the Traditional Chinese Medicine concept of gut–lung harmony.

## **Dr. YUAN Man**



Dr. YUAN Man is an Associate Professor at the School of Pharmacy, Shanghai University of Traditional Chinese Medicine. Her research focuses on pharmacology, clinical pharmacology, and the development of TCM-based health products. She has published 28 SCI-indexed papers, serves as the principal investigator of 1 NNSFC project, and has participated in two Major New Drug Innovation projects and two research translation projects. She holds three patents, has served as Associate Editor of one academic monograph, and as an editorial board member for one textbook and two academic monographs.

Dr. Yuan currently serves as a Board Member of the International Association of Materia Medica, a Young Committee Member of the Experimental Pharmacology Branch of the China Association of Chinese Medicine, Deputy Secretary-General of the Cultural and Creative Industry Branch of the World Federation of Chinese Medicine Societies, a Council Member of its Anti-Viral Medicine Branch, and Assistant Editor-in-Chief of Acta Materia Medica (AMM).

# Evaluation of Tuina Combined with Medicated Oil in Non-Specific Low Back Pain Treatment: A Randomized Clinical Trial

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## Abstract

**Background:** Non-specific low back pain (NSLBP) is associated with functional impairment and reduced quality of life. Evidence for Tuina combined with medicated oil remains limited.

**Objective:** To evaluate the efficacy of Tuina combined with Flying Eagle Wood Lok medicated oil (TNO) in NSLBP.

**Methods:** In this single-center, open-label, evaluator-blinded randomized controlled trial, 100 patients (20–59 years) were assigned to receive TNO or Tuina with water (TNW), three times weekly for 4 weeks. The primary outcome was the Visual Analog Scale (VAS), with secondary outcomes including JOA scores, infrared thermography, muscle tension, and tenderness.

**Results:** All participants completed the study. At week 8, the TNO group showed a greater reduction in VAS scores (−4.48, 95% CI −4.89 to −4.07) and a significant improvement in JOA scores (10.8, 95% CI 10.12–11.48;  $P < 0.001$ ), with sustained effects at follow-up. LC-MS analysis identified 621 compounds in the medicated oil.

**Conclusion:** TNO demonstrated superior efficacy compared with Tuina alone in reducing pain and improving functional outcomes in NSLBP. Limitations include the single-center design and short follow-up.

**Keywords:** non-specific low back pain, Tuina, medicated oil, clinical trial

## **Prof. Simon Ming-Yuen Lee**



Professor Simon Ming-Yuen LEE is currently the Chair Professor of Biomedical Sciences of Department of Food Science and Nutrition, the Director of the PolyU-BGI Joint Research Centre for Genomics and Synthetic Biology in Global Ocean Resources, and the Associate Director of the PolyU-Wuxi Technology and Innovation Research Institute. His research interests span a diverse array of vital areas, including brain disorders, neuroscience and drug discovery. Professor Lee is listed among Stanford University's top 2% of most-cited scientists in Pharmaceutical Science and Biology. His dedication to education and research in Pharmaceutical Science has led to the publication of over 400 scholarly articles in international journals such as *Nature*, *Cell*, *Nature Communications*, and

*Science Advances*. Professor Lee is a life member of Clare Hall, University of Cambridge. He has served as a member for various professional association's and government community ,including President-elect of the Good Practice in Traditional Chinese Medicine Research Association (GP-TCM RA), the Chinese Medicine Development Blueprint Subcommittee (CMDDBSC) under the Chinese Medicine Development Committee (CMDC), and Technical Expert and Assessor of an ISO/IEC 17025 Accreditation Assessment in Innovation and Technology Commission (ITC), of the Hong Kong SAR government, as well as the Chinese Medicine Regulatory Advisory Board in the Pharmaceutical Administration Bureau of the Macao SAR government.

## **Decoding Nature's Pharmacopoeia: Novel Molecular Approaches to Identifying Neuroprotective Molecules for Neurological Disorders**

### **Abstract:**

Neurological disorders arise from disruptions in fundamental biological processes of the central nervous system, including oxidative stress, neuroinflammation, mitochondrial dysfunction, protein misfolding, and impaired synaptic signaling. These convergent mechanisms damage neurons, glial cells, and neural circuits, ultimately driving both developmental conditions such as autism and degenerative diseases such as Parkinson's. Natural products, particularly those derived from traditional Chinese medicine, have long been employed to prevent and treat these multifaceted disorders and the rich body of traditional medical knowledge continues to inspire novel therapeutic approaches, offering insights into previously unrecognized mechanisms of action. Despite landmark discoveries of natural products such as artemisinin, morphine, and paclitaxel, these represent only a fraction of the vast, largely untapped reservoir of bioactive compounds in nature. To address this gap, we have developed innovative strategies that integrate triple-level-five-dimensional (3L5D) analytics, genomics, bioinformatics, and life-chip in vivo screen, harnessing recent technological advances to accelerate drug discovery. Our recent identification of new neuroprotective agents, including Oxyphylla A and NPY peptides from medicinal plants and marine organisms, exemplifies the potential of these approaches to expand the therapeutic treasury of natural resources and maximize their clinical benefits.

## **Dr. Stephan ( Steven ) F.A.J. Horsten**



The author studied pharmacy at Utrecht University, The Netherlands in the 80's of the last century. Subsequently he obtained his PhD degree in pharmacognosy (the pharmacy of natural products) from the same university, with emphasis analytics and quality control. After having worked in a variety of national and international positions in the pharmaceutical industry (manufacturing, quality control, qualified person), R&D positions and clinical laboratories, he founded the consultancy company ENDC together with a colleague in 2014. As a center of expertise, ENDC specializes in auditing, quality- and registration projects at the borderline where food- and pharma meet. To support their projects, they also have a well-equipped laboratory available. He is also an active member of several interest groups in the field of phytotherapy, traditional medicine and international standardization, including the field of TCM.

## **Analytical method validation for TCM industrial applications**

The cornerstone of any reliable laboratory result is the condition that the method by which it was obtained is validated. Validation is therefore the documented proof that an analytical method is capable of producing reliable data under defined conditions.

However, before method validation can begin, the working conditions for this must not be overlooked. In practice, this means that analysts and equipment must be thoroughly qualified before practical data generation can begin.

In general, validation experiments include the following parameters: specificity / selectivity, precision, linearity, detection- and quantification limits, range, accuracy, and robustness. In Europe, the current standard guideline for method validation is described in the document ICH Q2 (release 2), which also specifies under which conditions and for which type of determination which parameters should be evaluated. This approach has therefore found its way into the European- and many other harmonized Pharmacopoeias.

Many of the mentioned parameters follow a standard experimental design based on a proven methodology, but some, such as intermediate precision, linearity, and especially robustness, require more attention than before in the modern views of release 2.

## **Dr. Xiao Wu**



Dr. Xiao Wu is a Data Scientist and Project Lead at Bayer Phytomedicines Supply and Development Center in Darmstadt, Germany, where he works in R&D development for herbal medicinal products in EU. His scientific focus lies in bridging advanced analytical chemistry with data-driven methodologies to address the inherent complexity of herbal medicinal products and to strengthen their quality, consistency, and evidence base.

With a PhD in Analytical Chemistry from Helmholtz Zentrum München and the University of Rostock, Dr. Wu has a strong background in chromatographic and mass-spectrometric techniques applied to complex biological and environmental matrices. Since joining Bayer in 2018, he has increasingly specialized in integrating high-dimensional analytical data with statistical and computational approaches, enabling more holistic quality assessment and improved understanding of multicomponent herbal systems.

Through his work, Dr. Wu aims to translate complex analytical data into actionable scientific insights, supporting robust quality control strategies and innovation in phytomedicine.

# Extent Similarity assessment for a Quantitative Fingerprinting Approach

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**Background:** Analysis of Herbal Medicinal Products (HMPs) presents unique challenges due to their complex nature and the often-unknown identity of their active constituents. The guideline of European Medicines Agency (EMA/HMPC/541422/2017 Corr.) requires a comprehensive and robust analytical method. To go beyond the limited scope of established analytical markers, chemometric methods have been applied to evaluate the quality of HMPs[1,2,3,4]. Extent Similarity has been underestimated while it is a promising method for the comprehensive quantitative evaluation of fingerprinting data of HMP, especially for HMP categorized as “other extracts” as no active constituents are defined and the whole extract is considered as the active principle, but only proxy analytical markers are monitored.

**Objective:** to develop and validate a quantitative fingerprinting method via HPLC-DAD, specifically utilizing the Extent Similarity method in the quality control of HMPs containing Licorice root fluid extract

**Method:** The fingerprinting method was applied to an exemplary herbal extract, with a focus on capturing the quality of the mixture in a holistic way. The method involves HPLC-DAD for fingerprint analysis and Extent Similarity method for a standardized quantitative chemometric analysis.

**Result:** Similarity evaluation of simulated data with extent similarity and common similarity assessment metrics are shown in table 1.

**Conclusion:** The Extent Similarity method can perform a full analysis of an extract like that of licorice root. The fingerprint results assessed by the Extent Similarity method proved to be suitable for the quantitative quality control of HMPs. It demonstrated accuracy, sensitivity, and reliability in capturing the phytochemical constituents holistically.

**Table 1:** Similarity evaluation with different approaches on simulated 6-peak chromatographic data (sample A: 1, 10, 100, 200, 500, 1000 and sample B: 0.7, 7.5, 80, 155, 400, 800)

| Method                   | Theoretical range | Similarity A vs. B |
|--------------------------|-------------------|--------------------|
| Cosine similarity*       | 0 - 1.0           | 0.98               |
| Correlation coefficient* | -1.0 - 1.0        | 0.99               |
| Extent Similarity*       | -∞ - 1.0          | 0.77               |
| Euclidean distance**     | 0 - ∞             | 231                |

\*The closer to 1.0, the more similar between A and B

\*\* The closer to 0, the more similar between A and B

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## Prof. Xuanbin Wang

### International Standards and Good Practice Guidelines in Traditional, Complementary and Integrative Medicine: A Scoping Review

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**[Abstract] Objective** To map the development of international standards (IS) and international good practice guidelines (IGPG) across the field of traditional, complementary and integrative medicine (TCIM) and establish a comprehensive repository. **Findings** 2026 records met inclusion criteria: (a) TCIM-relevant IS/IGPG documents (n=1624); and (b) TCIM- and IS/IGPG-related secondary documents (systematic reviews, perspectives and commentaries, n=402). These IS/IGPG were produced by 33 international organisations and consortia, broadly applicable to TCIM or specific to a particular TCIM modality. Our data showed acceleration in IS/IGPG production over the past two decades. An analysis of the secondary literature provided a broad overview of the disease spectrum and the application of IS/IGPG in TCIM studies. **Conclusion** A comprehensive repository for TCIM-related IS/IGPG has been established. These IS/IGPG can be expected to play important roles for an efficient implementation of the WHO Traditional Medicine Strategy 2025-2034. Future work should focus on disseminating, implementing and harmonising these IS/IGPG, evaluating their effectiveness and refining them, while promoting global parity in access, implementation and coverage. Study registration: The Open Science Framework (<https://doi.org/10.17605/OSF.IO/H8UFM>).

## **Prof. Zhe Wang**

Zhe Wang is a Professor and Deputy Director of the Department of Traditional Chinese Medicine Pharmaceutics, China Pharmaceutical University. He obtained his bachelor's degree in Chinese Materia Medica from China Pharmaceutical University in 2011 and his doctoral degree in Medicinal Chemistry from Kunming Institute of Botany, Chinese Academy of Sciences in 2016. His research focuses on chemical biology of traditional Chinese medicine. His main research interests lie in the discovery of bioactive products from Chinese medicinal plants and their endophytic fungi, target identification and action mechanism. He has published over 60 SCI papers, holds more than 10 invention patents, and has received multiple national research funds and provincial academic honors.

## **Pharmacological Target Identification and Chemical Biology Research of Bioactive Components from Traditional Chinese Medicine**

Bioactive components from traditional Chinese medicine (TCM) represent a rich source for innovative drug discovery. However, the elucidation of their pharmacological targets and mechanisms of action remains a major challenge. This report focuses on bioactive molecules from cyclic peptide-containing TCMs and their endophytic fungi. Combining chemical biology approaches, we conduct research on the discovery, target identification, and mechanism elucidation of these active components. By constructing natural product probes and applying target capture and validation strategies, we have revealed the key targets and regulatory pathways of several bioactive molecules. These findings provide new methods for precise pharmacological mechanism elucidation of TCM active ingredients, and offer candidate molecules and theoretical foundations for natural product-based innovative drug development.

## Submitted abstracts (with poster number)

| Poster No. | Presenter             | Title                                                                                                                                                                                                                               |
|------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P01        | Ce Cao                | Targeting Hsc70-Mediated Mitochondrial-Lipid Droplet Crosstalk via Ginsenoside Rb2 Promotes Post-Infarction Cardiomyocyte Regeneration                                                                                              |
| P02        | Chen Shen             | From fragmented evidence to actionable safety decisions: a pharmacology-informed framework for evaluating herb-drug interactions in traditional Chinese medicine                                                                    |
| P03        | Cheng Wang            | Research on the Mechanism of Traditional Chinese Medicine HZB in the Prevention and Treatment of Acne and Skin Repair                                                                                                               |
| P04        | Chenyao Zhang         | Disclosure of Pregnancy Risk Warnings in Package Inserts of Chinese Patent Medicines                                                                                                                                                |
| P05        | Chester Yan Jie Ng    | A Practitioner-Based Survey Study for AI Adoption Among Chinese Medicine Practitioners in Asia                                                                                                                                      |
| P06        | Chester Yan Jie Ng    | The Role of Chinese Medicine as a Complementary Therapy in the Management of Obesity-Associated Colorectal Cancer.                                                                                                                  |
| P07        | Chester Yan Jie Ng    | Medical Food Therapy as an Emerging Anti-Aging and Regenerative Intervention: Insights from Advances in Medicine-Food Homology                                                                                                      |
| P08        | Chin Ee Ho            | Effectiveness of tuina and physiotherapy to manage pain for patients with chronic low back pain: a pragmatic randomized clinical trial                                                                                              |
| P09        | ChiShun Zhou          | DPEP1 drives M2-type TAMs polarization via glycyglycine hydrolysis in MSS colorectal cancer: a target for luteolin                                                                                                                  |
| P10        | Clara Bik-San Lau     | Will the use of Patrinia villosa extract during FOLFOX treatment in colon cancer affect the efficacy and safety?                                                                                                                    |
| P11        | Claire Chenwen Zhong  | Availability and Completeness of Trial Registration in Acupuncture Randomized Controlled Trials: A large-scale cross-sectional study                                                                                                |
| P12        | Claire Chenwen Zhong  | Assessment of Reporting Quality in Acupuncture Randomized Controlled Trials: A STRICTA-Based Analysis                                                                                                                               |
| P13        | Claire Chenwen Zhong  | Risk of Bias in Acupuncture Randomized Controlled Trials: A Cross-Sectional Study                                                                                                                                                   |
| P14        | Edward James Kennelly | UPLC-qToF-MSE Metabolomics to Investigate Century-old Botanicals: A Case Study of Medicinal Aconite                                                                                                                                 |
| P15        | Grace Gar-Lee Yue     | Investigation on the in vitro and in vivo anti-metastasis and immunomodulatory effects of a polysaccharides-rich herbal extract SOL on triple negative breast cancer                                                                |
| P16        | Grace Gar-Lee Yue     | A preclinical study to investigate whether Coriolus versicolor (Yunzhi) has additional benefits towards 5-fluorouracil chemotherapy in colon cancer                                                                                 |
| P17        | Jeremy Y. Ng          | Cross-Sectional Survey of Traditional, Complementary, and Integrative Medicine Journal Editors' Perceptions of Artificial Intelligence in Editorial and Peer-Review Processes                                                       |
| P18        | Jeremy Y. Ng          | What are the Attitudes and Perceptions of Peer Reviewers Towards Generative Artificial Intelligence Chatbots for Traditional, Complementary, and Integrative Medicine Research? A Large-Scale, International Cross-Sectional Survey |

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| P19 | Jia Jiang                      | Regenerative Medicine Meets Nanomedicine: A Comparative Bibliometric Analysis of Cell- and Plant-Derived Exosome Therapeutics                                    |
| P20 | Jiakang Jiao                   | Albiflorin Ameliorates High-Salt-Induced Hypertension-Associated Cerebral Microvascular Injury via the ECE1/ET-1 and SLC7A11-GPX4 Axes (Not in Abstract)         |
| P21 | Jianzhong Wen                  | A Questionnaire Survey on the Cognition of Hong Kong Citizens Towards Chinese Herbal Tea                                                                         |
| P22 | Jierong Gao                    | Are conflict of interest disclosures in randomized controlled trials of herbal medicine complete and consistent?                                                 |
| P23 | Jinglin Liao                   | Tongue Image– and Microbiota–Based Prediction Models for Gastric Cancer and Gastric Precancerous Lesions: A Systematic Review and Meta-Analysis                  |
| P24 | Jinyao Long                    | Exploring the effects of emotional factors on thyroid in the context of the “constraint causing disease” theory                                                  |
| P25 | Lu Chen                        | Acupuncture RCTs: A Scoping Review of Protocol Design Risk Factors                                                                                               |
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| P30 | Nokoloina Niaina Rahelihasina  | Edible pomegranate seeds as a source of antivirulence agents against Pseudomonas aeruginosa                                                                      |
| P31 | Pengfei Li                     | Identification of obesity-associated molecular features and screening of candidate anti-obesity constituents derived from Citri Grandis Exocarpium               |
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| P34 | Pierre Duez                    | The impact of cultivar on the biological activity and phenolic composition of Algerian olive leaf NADES extracts                                                 |
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| P36 | Ronghui He                     | A cross-sectional survey of the usage of complementary and alternative medicine in Singapore                                                                     |
| P37 | Shaolong Zheng                 | Knowledge Graph-Guided Graph Neural Network Framework for Decoding the Anti-Obesity Potential of Citri Grandis Exocarpium Flavonoids                             |
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| P41 | Si Li               | Intra-articular Puerarin Attenuates Cartilage Degeneration in Knee Osteoarthritis by Modulating LOX-1/mTORC1-Driven Chondrocyte Senescence                                                                                                      |
| P42 | Simon James Jackson | From traditional use to functional application: phytochemical characterisation and formulation relevance of <i>Garcinia mangostana</i> L. (莽吉柿, mǎng jí shì) extracts for cosmetic systems                                                      |
| P43 | Simon James Jackson | Impact of extraction parameters and batch preparation on phytochemical composition and stability of TCM mushroom extracts for cosmetic applications                                                                                             |
| P44 | Simon James Jackson | Standardisation of botanical extracts through controlled extraction and stability profiling: a framework applied to TCM-relevant and cross-cultural species                                                                                     |
| P45 | Soek Ying Neo       | Investigation of the effects of <i>Leea indica</i> leaf extracts on cell viability of normal cells and chemical analyses via Gas Chromatography-Mass Spectrometry                                                                               |
| P46 | Wai Ching Lam       | Pharmacological and Non-pharmacological Approaches for the Management of IBS-C Patients: A Systematic Review with Network Meta-analysis                                                                                                         |
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| P48 | Weiyao Liao         | Pseudolaric acid B suppresses triple-negative breast cancer by inducing ferroptosis through inhibiting the PDIA3/STAT3 signaling pathway                                                                                                        |
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| P52 | Xuan Li             | Botanical medicine in breast cancer: effects, phytoconstituents, and potential mechanisms of action                                                                                                                                             |
| P53 | Xuan Yin            | Clinical Observation of Electroacupuncture Intervention for Abdominal Obesity in Perimenopausal Women                                                                                                                                           |
| P54 | Xuan Yin            | Machine Learning–Enabled Personalized Prediction of Electroacupuncture Response in Depression with Insomnia: A Secondary Analysis of a Randomized Controlled Trial                                                                              |
| P55 | Xun Li              | Traditional Chinese Medicine Knowledge Translation Interventions for Community-Dwelling Older Adults: A Systematic Review                                                                                                                       |
| P56 | Xun Li              | Integrated Traditional Chinese and Western Medicine Data Management Platform for Alzheimer's Disease Based on Disease-Syndrome Combination                                                                                                      |

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| P57 | Xun Li         | Digital Health Interventions for the Whole-Process Management of Alzheimer's Disease Continuum: A Scoping Review                                                                     |
| P58 | Yan Chun Ong   | Enhancing Good Practices in TCM Education: An AI-Assisted Approach to Tongue Diagnosis Training                                                                                      |
| P60 | Yihan Geng     | Selection and Application of Outcome Measures in Clinical Studies of Traditional Chinese Medicine for Chronic Heart Failure: Methodological Recommendations                          |
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| P64 | Yingying Zhang | The effect of auricular electro-acupuncture on changes in brain functional connectivity before and after smoking cessation in young nicotine-dependent individuals based on fMRI     |
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| P67 | Yiying Wang    | Developing an Integrated Process Evaluation Framework for Acupuncture as a Complex Intervention: A Methodological Synthesis                                                          |
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| P69 | Yujiao Huang   | Puerarin Attenuates Renal Fibrosis by Suppressing Clic4 in Macrophages                                                                                                               |
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| P71 | Zhaolan Liu    | A Multicenter Cost-Effectiveness Analysis of Qianliexin Capsule for Chronic Prostatitis with Benign Prostatic Hyperplasia                                                            |
| P72 | Zhaolan Liu    | A Multicenter Cost-Effectiveness Analysis of Qianliexin Capsule in the Treatment of Chronic Prostatitis                                                                              |
| P73 | Zhaolan Liu    | Evidence Mapping Analysis of Clinical Application Research on American Ginseng and Its Preparations                                                                                  |
| P74 | Zhaolan Liu    | Identification and Control Strategies for Immortal Time Bias in Traditional Chinese Medicine Cohort Studies                                                                          |
| P75 | Zhaolan Liu    | A Critical Appraisal of Delphi Processes in Traditional Chinese Medicine Guidelines and Expert Consensus: Applying the Delphi Critical Appraisal Tool (DCAT)                         |
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## Targeting Hsc70-Mediated Mitochondrial-Lipid Droplet Crosstalk via Ginsenoside Rb2 Promotes Post-Infarction Cardiomyocyte Regeneration

Ce Cao<sup>a,b,†</sup>, Lili Yang<sup>a,†</sup>, Min Wang<sup>c,†</sup>, Jialu Wang<sup>c,†</sup>, Jingfang Dong<sup>a</sup>, Zixin Liu<sup>a,b</sup>, Jianshu Song<sup>a</sup>, Jingjing Zhao<sup>a</sup>, Lu Xing<sup>a</sup>, Lei Li<sup>a</sup>, Xiaochang Ma<sup>a</sup>, Guibo Sun<sup>c,\*</sup>, Jianxun Liu<sup>a,\*</sup>, Jianhua Fu<sup>a,\*</sup>

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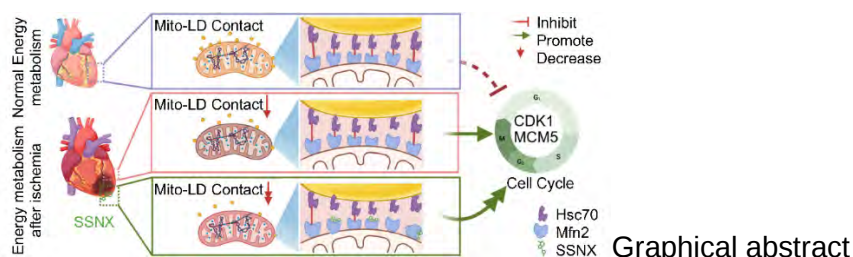
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**Introduction:** Inducing adult cardiomyocyte proliferation to repair infarcted hearts is challenging. While metabolic reprogramming drives regeneration, the underlying organelle-level mechanisms, particularly mitochondria-lipid droplet (mito-LD) crosstalk, remain elusive. Through structure-based *in silico* screening of a formula, we identified Ginsenoside Rb2 (Rb2) as a highly specific ligand for Heat Shock Cognate 71 kDa Protein (Hsc70). This study aims to uncover these mechanisms and evaluate Ginsenoside Rb2 (Rb2) for promoting cardiac repair.

**Materials and Methods:** We investigated mito-LD interactions mediated by Heat Shock Cognate 71 kDa Protein (Hsc70) and Mitofusin 2 (Mfn2). The binding affinity and pharmacological effects of Rb2 were evaluated. *In vivo* efficacy was tested in myocardial infarction (MI) rats, utilizing AAV9-mediated Hsc70 overexpression to confirm target specificity. Additionally, a retrospective clinical analysis of 60 patients receiving an Rb2-containing intervention assessed real-world outcomes, primarily evaluating high-sensitivity C-reactive protein (hs-CRP) levels and nitroglycerin usage.

**Results:** Hsc70 maintaining cardiomyocytes in a differentiated state by tethering mitochondria to LDs via Mfn2. Rb2 directly binds Hsc70 and disrupts this interaction. This uncoupling restores metabolic homeostasis and reactivates cardiomyocyte proliferation in MI rats. Clinically, patients treated with the Rb2-containing intervention demonstrated significantly reduced hs-CRP levels and decreased nitroglycerin usage compared to controls, confirming its robust cardioprotective and translational potential.

**Conclusions:** This study reveals a fundamental mechanism linking organelle dynamics to heart regeneration. Disrupting the Hsc70-Mfn2 interaction with Rb2 successfully releases a physiological metabolic brake, highlighting Hsc70 as a promising, druggable target for heart failure therapy.



## **From fragmented evidence to actionable safety decisions: a pharmacology-informed framework for evaluating herb-drug interactions in traditional Chinese medicine**

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**Background:** With the increasing prevalence of polypharmacy, the concurrent use of herbal medicines, traditional Chinese medicine (TCM) formulae, dietary supplements, and conventional medicines has emerged as an important public health concern. Herb-drug interaction (HDI) evidence remains fragmented across databases, monographs, mechanistic studies, case reports, and pharmacovigilance signals, and is inconsistently translated into clinical decision support (CDS). Existing tools often provide variable severity ratings, conflicting recommendations, and limited bedside usability. This Perspective proposes a pharmacology-informed, and clinically anchored framework for evaluating and translating HDI evidence into consistent, actionable CDS for TCM and related herbal medicine contexts.

**Methods:** Using a component-based workflow design, we mapped existing HDI knowledge resources, pharmacovigilance practices, and established evaluation instruments to sequential HDI safety tasks, from potential HDI signal detection and evidence appraisal to CDS and post-market updating. The framework adapted established drug–drug interaction and pharmacovigilance principles for heterogeneous herbal and Chinese herbal formula exposures. Layer definitions, decision domains, and tool assignments were refined through interdisciplinary author review.

**Results:** The framework comprises five layers: real-world signal generation, dual-track evidence synthesis, structured evidence evaluation across six domains (evidence quality, case-level causality, herbal exposure credibility, pharmacological plausibility, clinical seriousness, and recommendation strength), translation to concise actionable CDS, and continuous validation via real-world feedback. It links complementary evidence types, accounts for herbal product complexity, patient susceptibility, and uncertainty, and defines governance-ready interfaces for AI-supported prioritization, retrieval, and alert drafting under human oversight.

**Conclusion:** Organizing HDI assessment as a governed end-to-end process, this perspective provides a blueprint for patient-centered HDI decision support and safer integration of herbal products with conventional medicines. International collaboration among pharmacovigilance networks, clinical pharmacy, and TCM stakeholders is expected to facilitate pilot testing, implementation, and responsible deployment of AI-enabled CDS with audit and update cycles.

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## Research on the Mechanism of Traditional Chinese Medicine HZB in the Prevention and Treatment of Acne and Skin Repair

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### Main text

**Introduction:** This study aims to investigate the anti-acne efficacy and mechanism of action of the herbal compound HZB, composed of *Scutellaria baicalensis*, *Gardenia jasminoides*, and *Bletilla striata*, thereby providing experimental evidence and theoretical support for its further development as a traditional Chinese medicine preparation for acne treatment.

**Materials and Methods:** Antibacterial activity against *Cutibacterium acnes* was evaluated by MIC, MB C, membrane permeability, and membrane potential assays. A peptidoglycan-induced HaCaT keratinocyte model was established to assess cell viability, ROS levels, SOD expression, inflammatory cytokine secretion (IL-1 $\beta$ , IL-6, TNF- $\alpha$ ), cell migration, and TLR2/MyD88/NF- $\kappa$ B pathway protein expression. An acne rat model was developed using intradermal *C. acnes* injection combined with topical oleic acid. HZB gel was administered, and ear morphology, histopathology, serum cytokine levels, and tissue pathway protein expression were evaluated.

**Results:** HZB significantly inhibited *C. acnes* with an MIC of 6.25 mg/mL and an inhibition zone diameter of 19.84 mm, acting by disrupting cell membrane integrity and showing low resistance induction (MIC unchanged after 30 days). In the HaCaT cell model, HZB (80  $\mu$ g/mL) increased cell viability by 19.63%, reduced intracellular ROS levels, elevated SOD expression, and lowered IL-1 $\beta$ , IL-6, and TNF- $\alpha$  secretion (all  $P < 0.01$ ). It also promoted cell migration (healing rate increased from 5.33% to 14.5%) and downregulated TLR2, MyD88, and p-NF- $\kappa$ B/NF- $\kappa$ B protein expression. In the rat model, HZB gel (12.5 mg/g) dose-dependently reduced ear swelling and hyperkeratosis (skin score decreased from 9.2 to 3.5,  $P < 0.01$ ), attenuated histopathological damage, lowered serum IL-1 $\beta$ , TNF- $\alpha$ , and IL-6 levels, and suppressed TLR2/MyD88/NF- $\kappa$ B pathway activation, with no obvious toxicity.

**Conclusions:** HZB exerts anti-acne activity by disrupting the *C. acnes* cell membrane and inhibiting the TLR2/MyD88/NF- $\kappa$ B signaling pathway, thereby reducing oxidative stress and inflammation while promoting tissue repair. These findings support the potential of HZB as a safe and effective topical anti-acne agent.

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## Disclosure of Pregnancy Risk Warnings in Package Inserts of Chinese Patent Medicines

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**Introduction:** Although Chinese patent medicines (CPMs) are widely used in China, pregnancy-related safety information in their package inserts remains inconsistently reported. This study aimed to investigate the disclosure of such information in marketed CPMs in China.

**Materials and Methods:** Drug approval code data were downloaded from the National Medical Products Administration database to identify all CPMs<sup>1</sup>. Abnormal symbols and duplicate records were removed. Information on ingredients, indications, dosage, adverse reactions, contraindications, and precautions was manually extracted from package inserts. Herbs explicitly contraindicated during pregnancy were identified according to *the Pharmacopoeia of the People's Republic of China* (2025 edition, hereafter referred to as the Chinese Pharmacopoeia 2025). Package inserts of CPMs containing any of these herbs were further reviewed to determine whether pregnancy-related contraindications or warnings were clearly disclosed.

**Results:** After deduplication, 9,810 CPMs were included. *The Chinese Pharmacopoeia 2025* identified 37 herbs contraindicated during pregnancy, including *Eupolyphaga seu Steleophaga*, *Resina Toxicodendri*, and *Sparganii Rhizoma*, etc. A total of 1,628 CPMs contained at least one pregnancy-contraindicated herb, accounting for 16.60% of all included products. Among these, only 790 products reported pregnancy-related caution or contraindication information. In contrast, 147 products disclosed only general contraindications, such as contraindicated populations, diseases, symptoms, or concomitant medications. Another 63 products provided only vague medication restrictions, such as avoiding spicy food or use in certain undefined syndromes. Notably, 628 products did not report any medication contraindications.

**Conclusion:** Safety information in package inserts of CPMs remains insufficient, especially regarding pregnancy-related risks. Package inserts should clearly state whether use is contraindicated during pregnancy, identify ingredients associated with pregnancy risk, and provide more explicit precautionary information to support safer medication use.

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**Acknowledgements:** This work was supported by Tianjin Outstanding Talent Training Project (JC20230414).

## Practitioner-Based Survey Study for AI Adoption Among Chinese Medicine Practitioners in Asia

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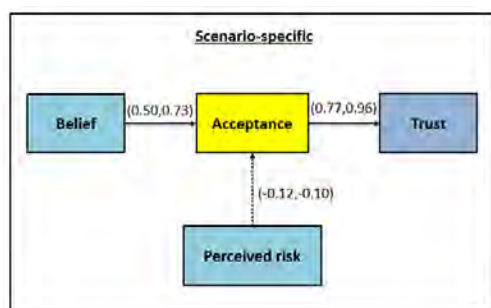
**Introduction:** Artificial intelligence (AI) has been increasingly researched on its potential use in Chinese Medicine (CM), yet little is known about how CM practitioners (CMPs) believe, accept, trust and perceive its usefulness in clinical practice.

**Objective:** This study aimed to evaluate the beliefs, perception, acceptance and concerns of CMPs towards AI in various clinical scenarios.

**Methods:** A structured survey was conducted and circulated to CMPs across Asia. CMPs were included if they were from Asia, licensed, and practicing CM in their home institution. The questionnaire assessed belief, perceived risk, acceptance, and trust towards AI in four application domains of symptom identification, syndrome differentiation, treatment planning, and intervention. Data preprocessing included principal component analysis. Subgroup analyses were conducted using Mann–Whitney U tests and visualized with violin-plots. Ordinary least squares regression models were constructed to evaluate relationships between belief, perceived risk, acceptance, and trust.

**Results:** Of 490 surveyed, 400 valid responses were analyzed. Respondents had a mean age of 37.0 (SD = 9.2), with a slight female majority (55.5%). While 56.0% reported prior AI use, most respondents reported familiarity with AI (93.5%). Scenario-based analyses showed lower belief, acceptance, and trust when AI was applied to CM-specific clinical intervention scenarios. Unlike findings in Western medicine, there was no senior–junior differences based on years of experience, but instead in clinical role and work setting. AI familiarity and prior use were strongly associated with higher belief, acceptance, and trust. Regression analyses demonstrated that belief strongly predicted acceptance ( $\beta = 0.50\text{--}0.73$ ), acceptance strongly predicted trust ( $\beta = 0.77\text{--}0.96$ ), while perceived risk had minimal influence.

**Conclusions:** Collectively, trust in AI appears driven primarily by acceptance shaped by positive belief rather than risk perception, thus highlighting the need for structured training and education to support AI implementation in CM.



**Figure 1:** Scenario-specific multivariate regression path model of the relationship between belief, perceived risk, acceptance, and trust towards AI.

## The Role of Chinese Medicine as a Complementary Therapy in the Management of Obesity-Associated Colorectal Cancer.

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**Background:** Colorectal cancer (CRC) is the third leading cause of cancer-related mortality worldwide, accounting for approximately 900,000 deaths annually. The global rise in obesity has further amplified this burden, with increasing body mass index (BMI) strongly associated with higher CRC incidence. Despite advances in novel therapies, treatment-related toxicities and suboptimal long-term outcomes remain. Hence, there is a need for safe and effective treatment options for CRC, and one potential complementary therapy might be Chinese Medicine (CM).

**Methods:** This narrative review focuses on the role of CM as a complementary therapy in obesity-associated CRC. We examine the underlying pathophysiological mechanisms between obesity and CRC and evaluate various CM modalities, including Chinese Herbal Medicine (CHM), acupuncture, moxibustion, dietary therapy, and exercise-based interventions. We then discuss current research on integrating CM with conventional oncology and conclude with some suggestions for future research.

**Results:** Complementary CM may be beneficial in the management of obesity-associated CRC. For instance, bioactive compounds in CHM have been shown to inhibit tumor proliferation, induce apoptosis, modulate key signaling pathways implicated in CRC progression, and improve metabolic and inflammatory profiles. Non-pharmacological approaches such as acupuncture and moxibustion may also enhance gastrointestinal motility, regulate immune responses, and alleviate treatment-related complications. In addition, dietary and lifestyle interventions may aid in improving metabolic health and modulating gut microbiota composition. Furthermore, increasing evidence suggests that combining CM with conventional oncological methods could benefit patients through improving quality of life.

**Conclusions:** CM shows potential as a complementary therapy in managing obesity-associated CRC, offering a holistic approach that aligns with current trends toward personalized and integrative oncology. However, challenges remain with regards to effective integration clinically, such as a lack of high-quality trials, potential herb–drug and herb-herb interactions, and heterogenous treatment standardization, which should be addressed with rigorous mechanistic studies and large-scale clinical trials.



**Figure 1:** Pathophysiology of obesity-associated CRC.

**References:** 1. Ng, C. Y. J., Kwan, H. Y., Wong, S., & Zhong, L. L. (2025). Obesity Reviews, e70070.

## Medical Food Therapy as an Emerging Anti-Aging and Regenerative Intervention: Insights from Advances in Medicine-Food Homology

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**Introduction:** The convergence of Traditional Chinese Medicine (TCM) and regenerative medicine presents new opportunities to combat age-associated decline through functional dietary interventions. The concept of “Medicine and Food Homology,” which originated from TCM theory, offers a unique framework for developing sustainable, low-toxicity strategies that target the metabolic, inflammatory, and degenerative processes central to aging. Hence, we aimed to evaluate the potential of TCM Medicinal Foods as a long-term intervention for anti-aging.

**Methods:** Across our recent series of reviews, we systematically examined the bioactive compositions and mechanistic pathways of several medicinal foods, namely *Crataegus pinnatifida*, *Poria cocos*, and *Atractylodes macrocephala*. We chose to focus on these medical foods as they constitute the TCM formula, Zhi Zhu Kuan Zhong capsule, which is one of our key research interests.

**Results:** For instance, *Poria cocos* polysaccharides (PCP-Cs) exert neuroprotective and hepatoprotective effects through MAPK, AMPK, and NF- $\kappa$ B modulation <sup>1</sup>; *Crataegus pinnatifida* polyphenols promote mitochondrial homeostasis and cardiometabolic protection <sup>2</sup>; and *Atractylodes macrocephala* polysaccharides enhance epithelial regeneration and intestinal barrier integrity via the gut–brain–immune axis <sup>3</sup>. In chronic disorders, medicinal food therapy may be continuously incorporated into the diet over long periods, making it a lifestyle-compatible intervention that may support metabolic health and cellular regeneration.

**Conclusions:** Collectively, our recent reviews highlight medicinal foods as potent anti-aging modulators bridging nutrition and pharmacology. Moving forward, our group aims to integrate multi-omics and microbiome–metabolome analyses to elucidate regenerative pathways and optimize clinical translation. Evaluating the effects of traditional medicinal foods through modern biomedical methods could ultimately enable the implementation of medical food therapy as a sustainable regenerative health intervention.



**Figure 1:** A proposed medicinal food development framework.

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# Effectiveness of tuina and physiotherapy to manage pain for patients with chronic low back pain: a pragmatic randomized clinical trial

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## Introduction:

Chronic non-specific low back pain(CNLBP) lacks a defined pathoanatomical cause, leading to diverse treatment methods including physiotherapy and Tuina. This study aimed to evaluate the effectiveness of Tuina, physiotherapy and a combination of physiotherapy and Tuina for managing CNLBP.

## Materials and Methods:

In this randomized, parallel-controlled, single-blind trial, 204 participants aged 21 to 75 with chronic non-specific low back pain were randomly assigned to physiotherapy, Tuina, or combined therapy. Pain intensity and quality of life were measured with the visual analog scale, 36-Item Short Form Survey and the Oswestry Disability Index, alongside trunk range of motion. Outcomes were assessed at baseline, two months, and five months. Data were analyzed using analysis of variance for within- and between-group comparisons, and post-hoc tests were applied to between-group comparisons.

## Results:

After two months, all groups had significant improvement in pain scores. Tuina was significantly better than the combination treatment for reducing pain ( $p = 0.021$ ; mean difference =  $-1.04$  [95% CI  $-1.85$  to  $-0.23$ ], Cohen's  $d = -0.41$ ). However, there was no significant difference between Tuina and combined treatment against physiotherapy. Pain scores were not significantly different at five months in all groups. The physiotherapy ( $p = 0.019$ ; mean difference =  $-5.28$  [95% CI  $-9.44$  to  $-1.11$ ],  $d = -0.44$ ) and combined ( $p = 0.028$ ; mean difference =  $5.59$  [95% CI  $1.17$  to  $10.01$ ],  $d = 0.42$ ) groups showed a significant reduction in Oswestry Disability Index scores compared to Tuina at five months. The combined group had significantly greater 36-Item Short-Form Survey than Tuina ( $p = 0.012$ ; mean difference =  $-71.15$  [95% CI  $-118.23$  to  $-24.06$ ],  $d = -0.47$ ), but not significantly greater than physiotherapy.

## Conclusions:

All treatment groups improved post-intervention and at five months. Between-group differences in were significant only for Oswestry Disability Index and 36-Item Short-Form Survey scores at five months. Pain scores showed no significant superiority of physiotherapy over Tuina and combined therapy ( $d < 0.2$ ), suggesting Tuina may be useful in CNLBP.

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## DPEP1 promotes immunosuppressive macrophage polarization through glycylglycine hydrolysis in microsatellite-stable colorectal cancer: therapeutic implications of luteolin

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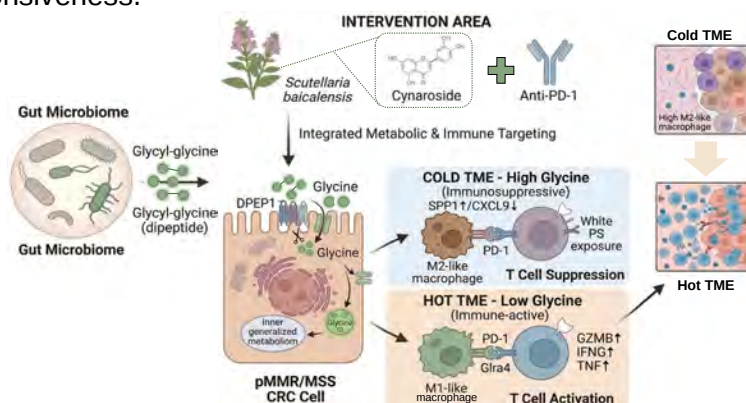
### Main text:

**Introduction:** Microsatellite-stable colorectal cancer (MSS CRC) is largely resistant to immune checkpoint inhibitors owing to an immune-cold microenvironment characterized by limited CD8<sup>+</sup> T-cell infiltration and enrichment of immunosuppressive macrophages. Through integrated transcriptomic and single-cell analyses, we identified dipeptidase 1 (DPEP1), a glycine metabolism-related enzyme, as a candidate regulator associated with immune exclusion in MSS CRC.

**Materials and Methods:** Public datasets, clinical samples, animal models, macrophage polarization assays, metagenomic sequencing, targeted amino acid metabolomics, molecular docking, and experimental validation were used to investigate the role of DPEP1 and evaluate luteolin as a potential DPEP1-targeting compound.

**Results:** DPEP1 was highly expressed in MSS CRC and correlated with reduced CD8<sup>+</sup> T-cell infiltration and increased M2-like macrophage abundance. Functional studies showed that DPEP1 promoted an immunosuppressive microenvironment in a macrophage-dependent manner. Mechanistically, DPEP1 hydrolyzed microbiota-derived glycylglycine to generate glycine, which promoted polarization toward SPP1<sup>+</sup> macrophages through both enhanced macrophage migration inhibitory factor (MIF) signaling from CRC cells and direct effects on macrophages. DPEP1 also improved tumor cell survival under serine/glycine-restricted conditions. Virtual screening and experimental validation identified luteolin as a DPEP1-binding flavonoid that attenuated DPEP1-associated metabolic and immune remodeling.

**Conclusions:** DPEP1 acts as a metabolic-immune regulator linking glycylglycine metabolism to immunosuppressive macrophage polarization in MSS CRC. Targeting DPEP1 with luteolin may represent a promising strategy for remodeling the immune-cold microenvironment and improving immunotherapy responsiveness.



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## ill the use of *Patrinia villosa* extract during FOLFOX treatment in colon cancer affect the efficacy and safety?

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### Introduction:

The medicinal herb *Patrinia villosa* (PV) is commonly prescribed by Chinese medicine practitioners to colorectal cancer patients. Thus, the use of PV and chemotherapeutics at the same period of time occurs in reality. This study aimed to evaluate whether daily consumption of PV extract during chemotherapy regimens FOLFOX (5-fluorouracil, folinic acid, oxaliplatin) treatment would affect the anti-tumor efficacy and metabolism of FOLFOX, in preclinical models.

### Materials and methods:

PV aqueous extract (which is the common form patients consume) was prepared as previously described [1]. The anti-tumor effects of FOLFOX and/or PV extract were examined in human HCT-116 xenograft-bearing and murine Colon-26 orthotopic tumor-bearing mouse models. Mice were treated with PV extract daily except the FOLFOX administration day. FOLFOX was given to mice weekly for 3 weeks. The tumor size and body weight of mice were monitored along the treatments. The levels of dihydropyrimidine dehydrogenase (for 5-fluorouracil), cysteine, methionine and reduced glutathione (for oxaliplatin), as well as serine hydroxymethyltransferase (for folinic acid) were measured in mice receiving FOLFOX with or without PV extract.

### Results:

HCT116 and Colon-26 tumor growth could be suppressed by combined treatment of PV and FOLFOX, with HCT-116 tumor weight of FOLFOX plus PV group being the lowest among all treated groups [2]. PV extract further enhanced apoptosis and immunomodulatory effects of FOLFOX in colon tumors. Furthermore, PV extract did not affect the drug metabolism of FOLFOX in HCT-116 xenograft-bearing mice [2].

### Conclusions:

This preclinical study demonstrated the beneficial effects of the combined use of PV extract and FOLFOX, which include better anti-tumor efficacy and minimum interference induced by PV extract on the metabolism of FOLFOX component drugs. Therefore, the combined use of PV and FOLFOX has been scientifically proven to be feasible, and future clinical trial on this integrative medicine approach is warranted for further verification.

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## Availability and Completeness of Trial Registration in Acupuncture Randomized Controlled Trials: A large-scale cross-sectional study

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### Background

Trial registration is essential for transparency in randomized controlled trials(RCTs). This study aimed to systematically evaluate the availability and content completeness of registration in acupuncture RCTs; and to identify factors associated with each.

### Methods

We searched MEDLINE, EMBASE, CENTRAL, PubMed, Web of Science, CNKI, or Wanfang Database to identified eligible RCTs. Registration-related documents were evaluated for both their availability, defined as the presence of publicly accessible registries, protocols, or SAPs, and their content completeness, based on eight predefined items capturing key elements of primary outcome specification and anticipated treatment effects. Logistic regression analyses were performed to identify factors associated with both dimensions.

### Results

A total of 885 RCTs were included. Of these, 349(39.4%) had at least one accessible registration-related document. Prospective registration occurred in 213 trials(24.1%), and only 110 trials(12.4%) were registered before unblinded outcome analysis. The availability of protocols(116,13.1%) and SAPs(115,13.0%) was low. Among trials with available documentation, content completeness was modest (mean score, 3.59 of 8). Among available registration documents (n = 349), primary outcomes were well defined in most cases (332[95.1%]). In contrast, key methodological elements were often missing: handling of missing data and statistical analysis methods were reported in only 63(18.1%) and 71(20.3%) documents, respectively. Studies published more recently, publication in English, use of electroacupuncture, reporting of adverse events and double- or triple-blind designs were associated with higher availability of registration documents as compared to their counterparts, whereas corresponding authors from Northeast China and more acupuncture sessions were associated with lower availability. Content completeness was associated with a narrower set of factors, mainly reflecting methodological rigor and reporting practices, with substantial heterogeneity across individual content domains.

### Conclusion

Trial registration in acupuncture RCTs remains limited in both availability and content quality. These gaps reflect a combination of structural, methodological, and reporting-related factors. Addressing them requires integrated strategies that combine stronger policy enforcement with targeted capacity building in key domains such as randomization, blinding, adverse event reporting, and prespecified analysis, alongside clearer standards for registration content to ensure transparency and reproducibility.

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## Assessment of Reporting Quality in Acupuncture Randomized Controlled Trials: A STRICTA-Based Analysis

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### Background

High-quality reporting is essential for the interpretation and reproducibility of randomized controlled trials (RCTs). This study aimed to comprehensively assess reporting quality in acupuncture RCTs using the revised STRICTA checklist and to identify factors associated with higher reporting quality.

### Methods

We evaluated a dataset of eligible acupuncture RCTs, with additional analyses restricted to two-arm trials to assess robustness. Reporting quality was assessed using the revised STRICTA checklist, comprising 17 items across six domains: acupuncture rationale, needling details, treatment regimen, co-interventions, practitioner background, and control or comparator interventions. Each item was scored as fully reported or not based on published reports. Domain-level and overall scores were calculated as the proportion of fully reported items (0%–100%). Logistic regression analyses were conducted to identify factors associated with higher reporting quality.

### Results

A total of 885 RCTs were included. The mean overall STRICTA reporting score was 68.5%. Reporting quality was highest for treatment regimen (95.2%), acupuncture rationale (83.4%), and needling details (68.4%), but lower for control/comparator interventions (47.4%), co-interventions (39.6%), and practitioner background (38.2%). Six items were fully reported in over 80% of applicable trials, whereas three items—treatment setting (21.6%), control description (32.5%), and practitioner background (38.2%)—were poorly reported. Higher reporting quality was associated with English-language publication, reporting of funding support, adverse event reporting, electroacupuncture use, use of acupuncture-related controls, analyst blinding, and a greater number of authors. Findings were consistent in analyses restricted to two-arm trials. Domain- and item-level analyses showed similar overall patterns, with variability across domains.

### Conclusion

Reporting quality in acupuncture RCTs remains variable across domains, with notable deficiencies in control descriptions and practitioner-related information. Improvements require strengthening reporting standards and promoting methodological and reporting rigor, alongside clearer guidance to enhance completeness and transparency in trial reporting.

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## Risk of Bias in Acupuncture Randomized Controlled Trials: A Cross-Sectional Study

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### Background

Risk of bias (RoB) critically affects the validity and interpretability of randomized controlled trials (RCTs). This study aimed to systematically assess the risk of bias in acupuncture RCTs using the Cochrane RoB 2 tool and to identify factors associated with higher methodological quality.

### Methods

We identified eligible acupuncture RCTs from major international and Chinese databases, focusing on needle-based interventions and excluding studies where the independent effects of acupuncture could not be isolated. Risk of bias was assessed across five domains using the Cochrane RoB 2 tool, with a subset independently double-reviewed for consistency. Descriptive analyses were performed using contingency tables, with Fisher's exact tests for categorical variables and Wilcoxon rank-sum tests for continuous variables. Univariable and multivariable logistic regression analyses were conducted to identify factors associated with lower risk of bias.

### Results

A total of 885 RCTs were included. Overall, substantial variability in risk of bias was observed across studies and domains. Several study characteristics were significantly associated with overall risk of bias, including funding support, type of RCT, control design, sample size, use of intention-to-treat (ITT) analysis, outcome type and nature, and blinding-related variables. In multivariable analysis, reporting of ITT analysis was independently associated with higher odds of low risk of bias, highlighting its importance as a key methodological indicator. Other factors showed variable associations, reflecting heterogeneity in trial design and conduct.

### Conclusion

Risk of bias in acupuncture RCTs remains heterogeneous, with important methodological limitations across studies. These findings highlight the need to strengthen trial design and conduct, particularly through promoting robust analytical approaches such as ITT analysis and improving key methodological features. Targeted efforts to enhance methodological rigor and reporting are essential to improve the reliability and interpretability of evidence from acupuncture trials.

**Acknowledgements:** The study was funded by Chinese Medicine Development Fund, Hong Kong SAR Government [Reference number: 24B2/006A]. The funders had no role in considering the study design or in the collection, analysis, interpretation of data, writing of the report, or decision to submit the article for publication.

## UPLC-qToF-MSE Metabolomics to Investigate Century-old Botanicals: A Case Study of Medicinal Aconite

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**Introduction:** Despite their importance in botanical research, many herbaria worldwide have closed due to high maintenance costs and limited funding. These collections are especially valuable today, in the era of plant metabolomics, as they allow access to species that are typically inaccessible or otherwise difficult to re-collect, enabling analysis through both untargeted and supervised methods. This study highlights this potential by analyzing historic samples of traditional medicinal plant, *Aconitum*, from the New York Botanical Garden Rusby Collection. We hypothesized that applying modern LC-MS metabolomic techniques to historic plant collections would reveal chemical variation in medicinally important and toxic metabolites over time.

**Materials and Methods:** *Aconitum* samples were analyzed using electrospray positive mode (ESI<sup>+</sup>) with an ACQUITY UPLC coupled to a Xevo G2 QToF-MS. Untargeted LC-MS analysis facilitated chemotaxonomic identification of unidentified *Aconitum* samples in the collection. Three diester diterpenoid alkaloids, along with their derivatives, were identified and compared across specimens.

**Results:** Even after more than a century, several diester diterpenoid alkaloids were found, although detection varied among samples. Untargeted principal component analysis divided *Aconitum* samples into three groups: historic *Aconitum napellus*; historic *Aconitum ferox* or historic unknown *Aconitum* samples; and newly collected *Aconitum napellus* samples. Supervised analysis was used to identify chemical features useful as *Aconitum* marker compounds. Features with  $p[1] < -0.5$  were targeted for identification, resulting in 33 chemical features associated with historic *Aconitum napellus* samples. Several of these were identified as other alkaloids known to occur in *Aconitum* species. No single compound was present in all three groups, primarily due to chemical differences between *Aconitum ferox* and *Aconitum napellus*, rather than between historic and modern samples.

**Conclusions:** This study highlights the importance of analyzing historic collections for plant metabolomics research. Pharmacologically-relevant diterpenoid alkaloids, like aconitine and mesaconitine, were still able to be detected in these traditional medicines that are more than 100 years old, despite less-than-ideal storage conditions. By curating and prioritizing historic collections, future researchers can better understand changes in phytochemical profiles of key traditional medicines over time.

**Acknowledgements:** We thank Drs. Michael Balick and Emily Sessa for providing access to the Rusby Collection at The New York Botanical Garden. The National Institutes of Health supported this project through the National Institute of General Medical Sciences (R16GM149468) and the National Institute of Integrative and Complementary Medicine (F31AT011471). The historic samples used in this study were curated through a National Science Foundation Infrastructure Capacity for Biological Research Grant (2140478).

## Investigation on the *in vitro* and *in vivo* anti-metastasis and immunomodulatory effects of a polysaccharides-rich herbal extract SOL on triple negative breast cancer

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### Introduction:

Breast cancer remains one of the most common cancer in women, with triple negative breast cancer (TNBC) presenting significant treatment challenges [1] due to high metastatic potential and immune suppression. On the other hand, polysaccharides-rich natural products were previously reported to exhibit anti-tumor, antioxidant, and immunomodulatory properties [2]. Hence, this study aimed to explore the potential of a polysaccharides-rich herbal extract SOL in inhibiting TNBC metastasis, and modulating immune function.

### Materials and Methods:

The *in vitro* effects of SOL were evaluated in human TNBC MDA-MB-231 and murine 4T1 cells using MTT assay for cytotoxicity, and transwell assay for migration ability. To assess the immunomodulatory activity of SOL, a co-culture model was established by culturing MDA-MB-231 cells with Jurkat T lymphocytes or primary peripheral blood mononuclear cells (PBMCs). For *in vivo* studies, the anti-metastatic and immunomodulatory effects of SOL were examined in 4T1 tumor-bearing mouse model, with assessments including liver and lung metastasis, as well as changes in immune cells population in the spleen of SOL-treated mice.

### Results:

SOL at 1600 µg/mL exhibited significant cytotoxicity against MDA-MB-231 and 4T1 cells, and effectively inhibited cell migration in transwell assay. In the co-culture models, SOL enhanced the suppressive activity of immune cells (Jurkat cells) against MDA-MB-231 cell proliferation from 5.6 % to 16.1 % and also increased IL-2 production. In breast tumor-bearing mice, SOL treatment (2.5 mg/kg) for 19 days could reduce lung metastasis without causing any significant weight loss. Besides, SOL treatment also increased the proportions of CD4<sup>+</sup> and CD8<sup>+</sup> T cells in the spleen, thereby activating systemic immune responses, which might contribute to its anti-metastatic effect.

### Conclusions:

SOL treatment exerted promising effect on TNBC by inhibiting lung metastasis and enhancing systemic antitumor immunity through the modulation of T-cell responses. The underlying mechanism of action of SOL will be further investigated.

Reference: 1. Almansour, NM. Front Mol Biosci, 2022. 9:836417; 2. Ying Y and Hao W. Front Immunol. 2023. 14:1147641.

# **A preclinical study to investigate whether *Coriolus versicolor* (Yunzhi) has additional benefits towards 5-fluorouracil chemotherapy in colon cancer**

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## **Introduction:**

5-Fluorouracil (5-FU) is one of the first-line chemotherapy for colorectal cancer patients. Meanwhile, *Coriolus versicolor* (Yunzhi), one of the commonly prescribed medicinal mushrooms in traditional Chinese medicine for colorectal cancer patients, has been reported on its anti-tumor properties [1]. However, the effect of the concurrent use of Yunzhi and 5-FU remain unclear. This study aimed to investigate whether Yunzhi extract (YZE) would have influenced on the anti-tumor efficacy of 5-FU as well as gut microbiota composition in preclinical colon cancer model.

## **Materials and Methods:**

Murine Colon-26 orthotopic tumor-bearing mice received 5-FU and/or YZE treatments for 3 weeks. 5-FU was administered weekly by intraperitoneal injection and YZE was administered daily by oral gavage except on those days that 5-FU was administered. At the end of treatments, mice were euthanized, tumor and fecal samples were collected for analysis. Tumors were weighed and then processed for flow cytometry and immunohistochemical analysis. The fecal microbiome was characterized using 16S rDNA amplicon sequencing.

## **Results:**

The combined treatment of YZE and 5-FU remarkably inhibited tumor growth, resulting in lower tumor weight in the combined treatment group (inhibition rate: 75.9 %) when compared to YZE (inhibition rate: 20.1 %) or 5-FU alone (inhibition rate: 40.5 %) groups. Besides, the numbers of proliferative cells (Ki67<sup>+</sup>) and myeloid-derived suppressor cells in tumors of combined treatment group were also lower than those in YZE or 5-FU alone groups. Furthermore, the influence of tumor on gut microbiota, such as the increased level of Bacteroidetes and decreased level of Firmicutes, were shown to be relieved after YZE and/or 5-FU treatments.

## **Conclusions:**

This study demonstrated that the combination of Yunzhi and 5-FU provided a better therapeutic potential as compared to 5-FU monotherapy in tumor-bearing mice, by restoring gut microbiota homeostasis, enhancing anti-tumor efficacy and modulating tumor microenvironment.

References: 1. He, Z, *et al.* Biomedicines, 2022. 10(11):2841.

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## Cross-Sectional Survey of Traditional, Complementary, and Integrative Medicine Journal Editors' Perceptions of Artificial Intelligence in Editorial and Peer-Review Processes

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### Abstract

**Introduction:** Artificial intelligence (AI) chatbots are increasingly used in scholarly publishing to reduce routine editorial workload and improve efficiency; however, in traditional, complementary, and integrative medicine (TCIM) journals, their use may be shaped by the diverse study designs, epistemological perspectives, and culturally grounded knowledge systems involved in editorial decision-making and peer review. This cross-sectional survey sought to investigate TCIM journal editors' familiarity with AI chatbots, their present use in editorial and peer-review activities, and their views on the benefits, risks, and future role of AI in scholarly publishing.

**Materials and Methods:** An online survey was distributed to editorial board members from 115 TCIM journals. The survey asked about familiarity with and current use of AI chatbots, perceived benefits and challenges, ethical concerns, and expected future roles within editorial workflows. It also explored participants' familiarity with use in editorial practice, perceived advantages and risks, ethical considerations, and expectations regarding the future role of AI in editorial and peer-review processes.

**Results:** 217 respondents completed the survey. Although ~70% reported being familiar with AI chatbots, more than 60% indicated they had never used such tools for editorial purposes. Respondents expressed the greatest support for language-related applications, especially grammar and language editing (81.0%), as well as plagiarism and ethical screening (67.4%). Overall, 82.8% considered AI to be important or very important to the future of scholarly publishing. 65.3% reported that their journals did not offer AI-specific policies or training for editors and peer reviewers.

**Conclusions:** Most TCIM editors believe AI tools could assist with routine editorial tasks, yet adoption within editorial and peer-review processes remains limited because of practical, ethical, and institutional barriers. These findings may help journals, editors, peer reviewers, and other stakeholders involved in evidence production develop policies, training, and guidance for the responsible and ethical use of AI in TCIM publishing.

**References:** Ng JY, Bhavsar D, Dhanvanthry N, Lee MS, Lee YS, Nesari TM, Ostermann T, Witt CM, Zhong L & Cramer H. (2025). Perceptions of artificial intelligence in the editorial and peer review process: A protocol for a cross-sectional survey of traditional, complementary, and integrative medicine journal editors. *Perspectives on Integrative Medicine*. Available at: <https://doi.org/10.56986/pim.2025.06.008>

## What are the Attitudes and Perceptions of Peer Reviewers Towards Generative Artificial Intelligence Chatbots for Traditional, Complementary, and Integrative Medicine Research? A Large-Scale, International Cross-Sectional Survey

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**Background:** Generative artificial intelligence (GenAI) chatbots are being explored for their potential to support the peer review process by improving efficiency and analytical capacity. While early applications show promise, their use within traditional, complementary, and integrative medicine (TCIM) remains underexplored. This study examines TCIM researchers' attitudes and perceptions toward the use of GenAI chatbots in peer review through a large-scale international survey.

**Methods:** Corresponding authors of TCIM-related publications indexed in Ovid MEDLINE were invited to participate in an online, anonymous, international cross-sectional survey distributed via SurveyMonkey. The questionnaire collected data on demographic characteristics, perceived importance of GenAI in peer review, likelihood of adoption, and perceived benefits and concerns.

**Results:** A total of 889 eligible respondents participated. Overall, 61.7% (437/708) reported a positive or very positive perception of GenAI in peer review, and 79.7% (564/708) considered it important or very important for the field. 52.5% (388/739) indicated they were likely to use GenAI, highlighting a gap between perceived importance and intended adoption. Identified benefits included improved efficiency (69.6%, 480/690), reduced reviewer workload (69.9%, 482/690), and generation of constructive feedback (61.1%, 421/689), reflecting respondents selecting "agree" or "strongly agree." Concerns included bias (73.2%, 489/668), lack of transparency (72.3%, 481/665), inaccuracies (77.3%, 515/666), accountability challenges (75.5%, 503/666), and data privacy risks (74.1%, 491/663). Most respondents (84.8% 599/706) expressed that researchers require at least some education to effectively use GenAI chatbots in peer review.

**Conclusion:** Respondents reported perceived benefits of GenAI in peer review, alongside notable concerns regarding its use. While opinions were mixed, findings suggest both perceived utility and apprehension about potential risks. Further work is needed to better understand these perspectives and to explore how GenAI may be responsibly integrated into peer review processes.

**References:** Ng JY, Tan J, Adapa K, Gupta PK, Gupta M, Li S, Mehta D, Ring M, Shridhar M, Souza JP, Yoshino T, Lee MS & Cramer H. (2025). Attitudes and perceptions of generative artificial intelligence chatbots in the peer review of traditional, complementary, and integrative medicine

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# Regenerative Medicine Meets Nanomedicine: A Comparative Bibliometric Analysis of Cell- and Plant-Derived Exosome Therapeutics

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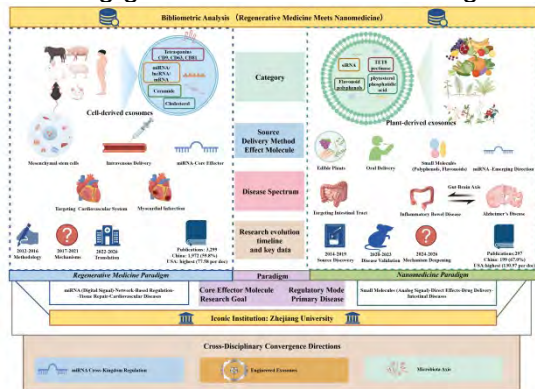
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**Introduction:** Cell-derived exosomes (CDEs) and plant-derived exosomes (PDEs) are key therapeutic nanobiologics, but a systematic comparison of their research trajectories and paradigms is lacking. This study aims to fill this gap via bibliometrics.

**Materials and Methods:** Publications up to February 2026 were retrieved from the Web of Science Core Collection. After screening, 3,299 CDE and 297 PDE papers were included. VOSviewer and CiteSpace were used for visual analysis.

**Results:** CDE research started in 2012, forming a mature globalized network with China and the US as dual cores; the US led in citation impact (77.58/doc), while Singapore showed a “small-scale, high-impact” model (141.17). PDE research started in 2014; China dominated output (67.0%), while the US set the quality benchmark (130.97). All top 10 CDE institutions were Chinese with dense domestic collaboration; PDE institutions were more international but Chinese institutions had low collaboration intensity. Keyword clustering revealed fundamental paradigm differences: CDEs follow a regenerative medicine paradigm (“MSC-exosome-miRNA” axis, cardiovascular disease), whereas PDEs follow a nanomedicine paradigm (“plant nanovesicle-oral delivery-intestinal disease” axis, inflammatory bowel disease).

**Conclusions:** The two fields exhibit distinct regenerative medicine and nanomedicine paradigms, rooted in source properties, delivery routes, and functional mechanisms. This study provides a theoretical framework for understanding their differentiated development and potential for cross-disciplinary integration, promoting global collaboration in integrative medicine.



Graphical abstract

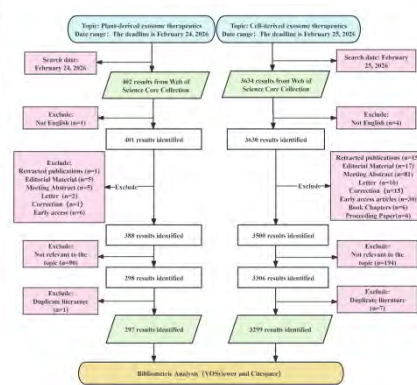


Fig. 1 Flowchart

## A Questionnaire Survey on the Cognition of Hong Kong Citizens Towards Chinese Herbal Tea

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Herbal tea, a Lingnan traditional beverage inscribed on China's National Intangible Cultural Heritage List in 2006, is widely consumed in Hong Kong. Public knowledge of its efficacy and properties directly impacts safe and proper use. This study evaluated Hong Kong citizens' herbal tea knowledge and its associations with age, gender, education, and income.

### Materials and Methods:

The study used a non-probability sampling method, combining convenience sampling, Snowball sampling, and Respondent-Driven sampling.

A cross-sectional survey was conducted via All Counted from January to March 2026, with 400 valid responses. A 10-item Herbal Tea Knowledge Scale (5 on efficacy, 5 on basic characteristics, total score 0–10) was used. Data were analyzed using the Mann-Whitney U test, the Kruskal-Wallis test, and the chi-square test ( $\alpha = 0.05$ ).

### Results:

The mean total knowledge score was  $6.055 \pm 1.785$  (efficacy:  $2.990 \pm 1.319$ ; basic knowledge:  $3.065 \pm 1.019$ ), reflecting a moderate-to-low level. Age, education, and income significantly affected knowledge: adults aged  $\geq 60$  scored higher in efficacy knowledge than those  $\leq 40$  ( $p = 0.002$ ); respondents with bachelor's degree or above outperformed those with lower education in both domains (both  $p < 0.001$ ); those with a monthly income  $\geq \text{HK\$}40,000$  had higher efficacy scores than those earning  $< \text{HK\$}18,000$  ( $p = 0.009$ ). No gender difference was found. Education had the strongest impact on efficacy knowledge, followed by age and income.

### Conclusions:

Hong Kong citizens show moderate-to-low herbal tea knowledge, with gaps in specific herb efficacies and origin knowledge. Education, age, and income are key influencing factors. Targeted health education should focus on younger, less educated, and lower-income groups to improve the safe use of herbal tea.

Furthermore, this study used nonprobability sampling, which limits the inferences that can be drawn from the results. Future studies could incorporate probability sampling to enhance external validity.

## Are conflict of interest disclosures in randomized controlled trials of herbal medicine complete and consistent?

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**Introduction:** In randomized controlled trials (RCTs) of herbal medicine (HM), conflict of interest (COI) has unique features, product supply by manufacturers, institutional ties to herbal companies, or investigator held patents. This study evaluated the completeness and consistency of COI disclosure in HM RCTs and examined associated trial characteristics.

**Materials and Methods:** A cross-sectional survey was conducted of HM RCTs indexed in PubMed and Embase from 2009 to 2025, starting when the ICMJE uniform disclosure format was introduced. This analysis focused on articles with a COI statement disclosing at least one relationship. Articles with no COI statement or no reported COI were retained in the full database and classified separately. Data on trial characteristics, funding, and disclosed COI were extracted. COI were classified into nine categories. We assessed two core disclosure quality outcomes: (1) “disclosed but denied” statements, authors disclosed a relationship but still stated no COI existed; (2) incomplete COI sections, relevant COI information appeared outside the designated COI section. Univariable associations were examined using Firth penalized logistic regression.

**Results:** Of 2,060 RCTs, 250 (12%) disclosed at least one COI. Institutional financial COI was the most common type. Disclosed but denied statements occurred in 54 trials (22%) and incomplete COI sections in 108 trials (43%). Compared with non commercially supported trials, commercially financially supported (OR=5.10, 95% CI 2.21–13.61,  $P < 0.001$ ) and commercially in kind only (OR=5.31, 95% CI 2.05–15.41,  $P < 0.001$ ) trials were more likely to have incomplete COI sections. First authors from upper middle income countries were more likely to have disclosed but denied statements (OR=2.36, 95% CI 1.21–4.58,  $P=0.012$ ).

**Conclusions:** Only one in ten HM RCTs disclosed any COI, mostly financial. Disclosure problems were common, especially with commercial support. The high frequency of “disclosed but denied” statements and incomplete sections reveals that current COI declarations in HM trials often remain insufficient. Structured disclosure forms, editorial checks, and further assessment of trials reporting no COI or lacking a COI statement are needed.

**References:** 1. Nejtgaard CH, et al. BMJ, 2020. 371: m4234; 2. Hakoum MB, et al. J Clin Epidemiol, 2017. 87: 78-86.

## **Tongue Image– and Microbiota–Based Prediction Models for Gastric Cancer and Gastric Precancerous Lesions: A Systematic Review and Meta-Analysis**

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### **Introduction**

Tongue diagnosis is an important component of traditional Chinese medicine observation, and any changes in the body can be reflected in the tongue. In recent years,prediction models based on tongue images and tongue microbiota are emerging as non-invasive tools for detecting gastric cancer (GC) and gastric precancerous lesions (GPLs), but their performance and methodological quality remain uncertain.

### **Methods**

PubMed, Web of Science, Cochrane Library, Embase, CNKI, WanFang, VIP, and Sinomed were searched from inception to 23 January 2026. Studies developing or validating GC or GPL prediction models using tongue data were included. Reporting quality and risk of bias were assessed using TRIPOD+AI and PROBAST+AI. Model performance was evaluated, and weighted mean area under the curve (AUC) was calculated. Evidence certainty was evaluated using GRADE.

### **Results**

Eighteen studies (22,449 participants) were included. Seven developed GC models using tongue images, six used microbiota, and five focused on GPLs. Most applied machine learning methods. Reporting quality was often suboptimal, and no study fully adhered to TRIPOD+AI. Although 77·8% of the studies showed low applicability concerns, <30% exhibited a low overall risk of bias. Pooled AUCs for GC prediction were 0·911 (95% confidence interval (CI) 0·860–0·920) for unimodal models and 0·911 (95% CI 0·899–0·939) for multimodal models, with multimodal approaches demonstrating improved discrimination (AUC difference: 0·047, 95% CI 0·020–0·050). Evidence certainty ranged from very low to high but was generally low.

### **Conclusions**

Tongue image–based models have shown potential for GC detection, particularly in multimodal approaches, but their clinical applicability is constrained by poor reporting quality, risk of bias, and lack of calibration. Evidence for GPL remains inconsistent, and findings from tongue microbiota–based models warrant cautious interpretation.

**Exploring the effects of emotional factors on thyroid in the context of the “constraint causing disease” theory**

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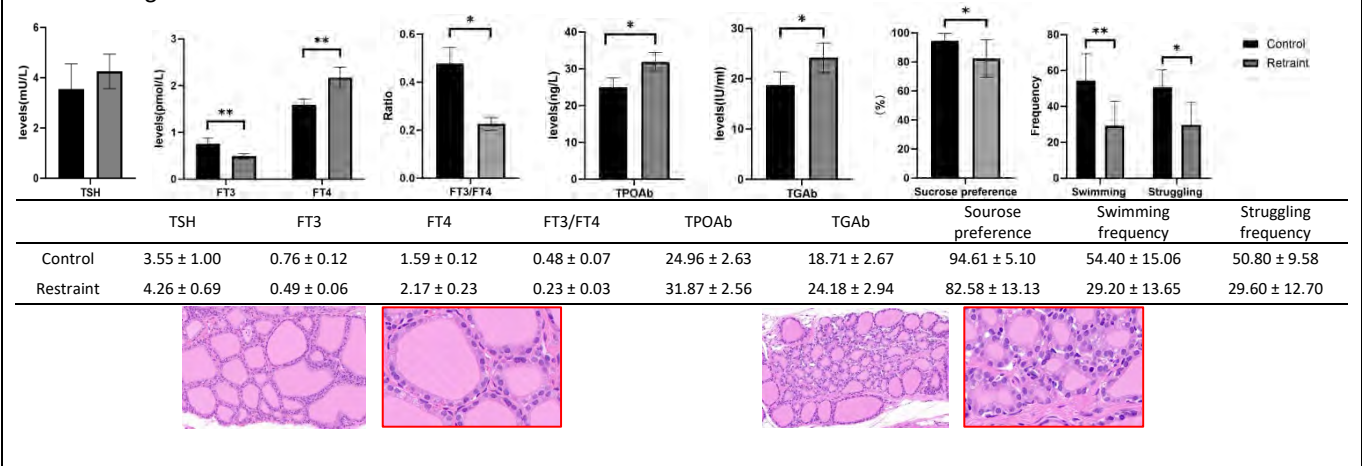
**Introduction:** The “constraint causing disease” theory, first recorded in Jingyue Quanshu, attributes disorders to emotional distress. Given the rising prevalence of emotional distress and its recognized impact on visceral functions, this study employed a depression model to investigate its effects on thyroid function, autoantibodies, and morphology, aiming to elucidate the modern scientific basis of this theory in thyroid disorders.

**Materials and Methods:** Female SPF-grade rats were randomly assigned to a control group and a depression group, with five rats in each group. A depression model was established by chronic restraint stress, applied daily for six consecutive weeks. The emotional state of the rats was evaluated using the sucrose preference test and the forced swim test. Serum levels of thyroglobulin antibody (TGAb), thyroid peroxidase antibody (TPOAb), free triiodothyronine (FT3), free thyroxine (FT4), and thyroid-stimulating hormone (TSH) were measured by enzyme-linked immunosorbent assay (ELISA). Histopathological changes and cellular damage in the thyroid tissue of rats in each group were assessed by hematoxylin-eosin (HE).

**Results:** In the depression group, sucrose preference, swimming frequency, and struggling frequency were significantly decreased compared with the control group ( $P<0.05$ ). Histological examination of the thyroid tissue in the depression group revealed increased lymphocytic infiltration in the interfollicular stroma, disorganized arrangement and abnormal morphology of follicular epithelial cells, thinning of the follicular wall, and focal destruction of follicular lumens. Compared with the control group, the levels of FT4, TGAb, and TPOAb in the depression group were significantly increased (all  $P<0.05$ ). Specifically, FT4 increased by 36.7%, TGAb by 29.24%, and TPOAb by 27.68%, with intergroup Cohen's d values of 3.16, 1.95, and 2.66, respectively. Conversely, the levels of FT3 and the FT3/FT4 ratio were significantly decreased ( $P<0.05$ ), with FT3 reduced by 35.53% and the FT3/FT4 ratio reduced by 52.08%, corresponding to Cohen's d values of 2.85 and 4.64, respectively.

**Conclusions:** Chronic restraint stress-induced depression resulted in thyroid follicular damage, hormonal imbalance, and elevated autoantibodies. Depression may precipitate Hashimoto's thyroiditis and lower FT3 by disrupting follicular cells and inhibiting deiodinase activity, supporting the “constraint causing disease” theory in thyroid disorders.

**Acknowledgements:** none.



## Acupuncture RCTs: A Scoping Review of Protocol Design Risk Factors

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**Introduction:** The validity and interpretability of acupuncture randomized controlled trials (RCTs) depend heavily on protocol design. Because acupuncture is complex, practitioner-dependent and context-sensitive, generic RCT standards may not fully capture acupuncture-specific design risks. This scoping review aimed to identify protocol design risk factors in acupuncture RCTs and inform a risk identification and prevention checklist.

**Methods:** Eight Chinese and international databases-CNKI, WanFang, VIP, SinoMed, PubMed, Embase, Cochrane Library and Web of Science-were searched from 1 January 2000 to 31 December 2025. Literature on acupuncture RCT protocol design, methodological quality, risk management and design challenges was included. Using a scoping review approach, and informed by SPIRIT-TCM 2025 and CONSORT-STRICTA, we extracted, categorised and synthesised generic RCT design risks and acupuncture-specific design risks.

**Results:** From 20,558 records, 114 studies were included. Fifty-seven protocol design risk factors were extracted and grouped into two domains. Generic RCT risks included mismatch between research objectives and trial design, poorly defined eligibility criteria, insufficient sample size justification, incomplete randomization and allocation concealment, unclear blinding arrangements, and inadequate outcome specification. Acupuncture-specific risks mainly involved insufficient theoretical rationale and operational detail for the acupuncture regimen, including acupoint prescription, needling technique, deqi criteria, practitioner qualifications and training, and boundaries of individualisation. Additional risks included inadequate justification of control interventions, poor integration between control design and blinding, and outcome selection that either mechanically adopted biomedical measures or over-relied on unvalidated acupuncture or TCM-specific outcomes. Risk hotspots clustered around aim-design alignment, intervention specification, control and blinding design, and outcome measurement.

**Conclusions:** Protocol design risks in acupuncture RCTs comprise both general methodological risks and intervention-specific risks. Quality control should shift from post hoc reporting assessment to prospective protocol risk governance. An acupuncture-specific risk identification and prevention checklist is needed to improve design rigour, intervention transparency and evidence credibility.

References: None.

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## Real-World Studies in Traditional Chinese Medicine: Opportunities, Challenges, and Paradigm Differences Compared with Western Medicine

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**Introduction:** Real-world studies (RWS) are increasingly used to generate clinical evidence for traditional Chinese medicine (TCM). However, TCM differs from Western medicine in theoretical foundations, diagnostic reasoning, individualised treatment, intervention complexity, and data infrastructure. This study explored experts' experiences of conducting RWS and examined perceived paradigm differences between TCM and Western medicine.

**Materials and Methods:** This qualitative interview study aimed to recruit 15-20 experts with direct experience in the design, conduct, analysis, or assessment of RWS. Eligible participants included clinicians and methodologists. Semi-structured interviews were conducted using a topic guide. Audio recordings were transcribed and analysed using thematic analysis.

**Results:** Fifteen experts were interviewed, including five clinicians and ten methodologists. Thematic analysis generated six categories, 16 themes, and 49 subthemes: practical foundations of RWS; clinical questions and application value; motivations for adopting RWS; quality risks and methodological challenges; distinctive features of TCM-oriented RWS; and future directions. Experts reported that TCM RWS commonly uses electronic medical records, insurance claims data, administrative health data, registries, and prospectively collected data. Frequently used designs included cohort studies, registry studies, target trial emulations, and registry-based randomised controlled trials. RWS was considered suitable for research on aetiology, diagnosis, effectiveness, safety, prognosis, health economics, prescription patterns, and syndrome evolution. Key challenges included incomplete or heterogeneous data, missing variables, limited data sharing, bias control, residual confounding, limited causal inference capacity, and insufficient standardisation of TCM-specific variables.

**Conclusions:** RWS is closely aligned with the complexity and individualisation of TCM clinical practice. However, TCM-oriented RWS should not simply reproduce Western medical research models. High-quality evidence generation requires approaches integrating TCM theory, clinically meaningful questions, data governance, causal inference, longitudinal database development, and multidisciplinary collaboration.

References: None.

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## Corynebacterium kroppenstedtii in Cystic Neutrophilic Granulomatous Mastitis: Contributory Role and Therapeutic Targeting by Qingre Jiedu Decoction

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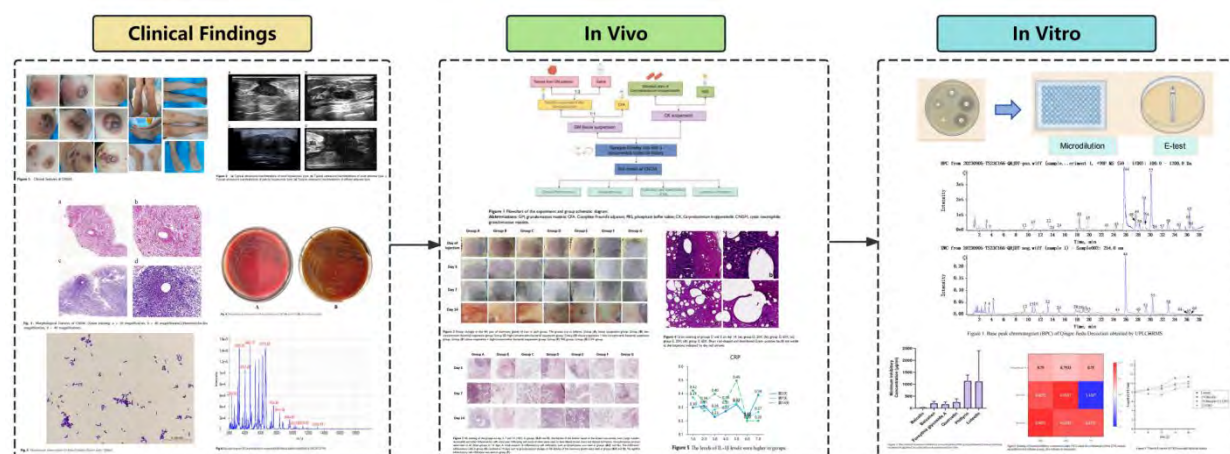
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**Introduction:** Cystic neutrophilic granulomatous mastitis (CNGM) has been increasingly associated with *Corynebacterium kroppenstedtii* (CK), but its pathogenic role and therapeutic implications remain unclear. This study investigated the clinical relevance of CK in CNGM and explored CK-targeted therapeutic strategies based on active compounds derived from Qingre Jiedu Decoction (QRJD).

**Materials and Methods:** A total of 141 patients with histologically confirmed CNGM were analyzed for clinical features and CK detection using Gram staining, culture, and mass spectrometry. A rat model was established using CK with or without patient-derived tissue homogenates. UHPLC-QE-MS was used to identify QRJD compounds. Six representative compounds were selected for antibacterial evaluation against clinical CK isolates using broth microdilution, E-test, and checkerboard assays.

**Results:** CNGM showed characteristic inflammatory breast lesions with abscess formation and ductal changes. CK was detected in patient tissues by Gram staining, pus culture, and mass spectrometry. In vivo, co-administration of CK and tissue homogenates induced typical granulomatous inflammation with lipid vacuoles and Gram-positive bacilli, accompanied by significantly elevated serum CRP and IL-1 $\beta$  levels compared to controls ( $p < 0.05$ ), whereas CK alone failed to reproduce the full pathological phenotype. UHPLC-QE-MS identified 67 compounds in QRJD, including baicalein, baicalin, forsythoside A, quercetin, forsythin, and luteolin. Among these six representative compounds, baicalein, baicalin, and forsythoside A showed significant antibacterial activity against CK isolates (MIC  $\leq 200$   $\mu$ g/mL). Most compound-antibiotic combinations showed synergistic effects, with the strongest interaction observed for baicalein plus ceftriaxone (FICI = 0.5627). Notably, baicalein combined with ceftriaxone retained antibacterial activity against both ceftriaxone-sensitive and ceftriaxone-resistant CK isolates, highlighting its potential to enhance antibiotic efficacy.

**Conclusions:** These findings support a key pathogenic role of CK in CNGM and identify QRJD-derived compounds, particularly baicalein, as promising adjunctive CK-targeting therapeutic agents against antibiotic-resistant isolates.



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## Potential of *Spondias dulcis* Fruit Extracts as Antibiofilm and Antivirulence Agents Against *Pseudomonas aeruginosa* PAO1

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**Introduction:** *Pseudomonas aeruginosa* infections are exacerbated by its ability to organise into biofilms; this structure decreases the action of antibiotics by 10 to 1000-fold compared to planktonic cells. To combat the bacteria resistance, novel strategies able to disarm bacteria without exerting selective pressure are crucial. As *Spondias dulcis* G.Forst yields edible fruits, also widely used in Malagasy traditional medicine to treat infections, the present study evaluates, in the PAO1 strain, the potential of its fruit extracts to modulate virulence factors and biofilm formation.

**Material and Methods:** Fruits extracts were obtained through extractions using solvents of increasing polarities: heptane, ethyl acetate, methanol. The minimal inhibitory concentration (MIC) was determined by a microdilution method. Antibiofilm activity was estimated at a sub-inhibitory concentration (100µg/ml) on preformed biofilms (24h), by crystal violet assay. The impact on virulence was measured through bacteria swimming, swarming and twitching motility assays on agar media and spectrophotometric quantification of pyocyanin production. To clarify which compounds are potentially bioactive, extracts were profiled by High-Performance Thin-Layer Chromatography (HPTLC) using specific mobile phases and derivatization reagents.

**Results:** At 100µg/ml, the tested extracts did not affect bacterial growth but the heptane and ethyl acetate extracts drastically decreased the biofilm biomass (87% and 84%, respectively) and effectively inhibited twitching (89% and 81%, respectively). Furthermore, a marked decrease in pyocyanin production (33% and 38%, respectively), a key virulence factor associated with oxidative stress, was observed.

**Conclusions:** The predominant chemical groups identified through HPTLC fingerprinting of the active extracts are terpenoids. These compounds may be responsible for the notable biological activities observed in *Spondias dulcis* extracts.

**Acknowledgements:** The authors express their gratitude to ARES – Académie de Recherche et d'Enseignement Supérieur (Belgium) for the financial support provided to the PRD2022 – TRIADMAD project, aimed at promoting the recognition of traditional and modern knowledge for sustainable integrative medicine in Madagascar, conducted in collaboration with the University of Mons and the University of Antananarivo.

## Edible pomegranate seeds as a source of antivirulence agents against *Pseudomonas aeruginosa*

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In the ethnobotanical pharmacopeia, *Punica granatum* (pomegranate) stands out for its traditional antidiarrheal use, reflecting a significant anti-infective potential. Given the severe worldwide impact of diarrheal diseases and the alarming rise in antibiotic resistance, investigating the antibacterial and antivirulence properties of this fruit is a worthwhile objective. Among diarrhea-causing bacteria, *Pseudomonas aeruginosa* infection is associated with post-antibiotic diarrhea as a highly infectious, virulent and resistant strain. Indeed, this bacterium, not only invades the host through complex motility mechanisms and the production of injurious virulence factors, but also evades immune defenses and treatments by forming protective biofilms.

In this regard, extracts from the edible parts of *P. granatum* (seeds and arils), obtained by maceration using solvents of increasing polarity (hexane, ethyl acetate and ethanol), were evaluated against the reference strain *P. aeruginosa* PAO1. Analyses included the determination of the minimum inhibitory concentration (MIC) (15–1000 µg/mL), inhibition of biofilm formation (6–100 µg/mL), and assessment of bacterial motilities and pyocyanin production at 100 µg/mL. While DMSO 1% served as the negative control, Tobramycin (1.5 µg/mL), Oleanolic acid (800 µM), and Naringenin (1mM and 4mM) were used as positive controls in the respective assays. The effect of the most bioactive extracts on a one-day old preformed biofilm was also evaluated by fluorescence microscopy, as well as its impact on biofilm-encapsulated PAO1 when combined with Tobramycin. All assays were performed in three independent experiments (n=3) with three technical replicates, and data were analyzed using one-way ANOVA followed by a post-hoc test ( $p < 0.0001$ ).

Finding showed that, despite the absence of direct bactericidal activity (MIC > 1000 µg/mL), all seed extracts at 100 µg/mL considerably inhibited biofilm formation (45% to 86%). Specifically, the hexane extract displayed a dose-dependent effect, ranging from 42% to 84% across the tested concentrations, whereas, the ethyl acetate extract maintained high activity (74% to 86%). Furthermore, at 100 µg/mL, the seed extracts reduced swarming motility by 49% to 72%, while pyocyanin production was significantly decreased only by hexane and ethyl acetate extracts, by 51% and 37%, respectively. Finally, combining these two active extracts with Tobramycin resulted in a significant synergistic effect against one-day-old preformed biofilms, leading to enhanced eradication of biofilm-embedded *P. aeruginosa* cells compared with Tobramycin alone.

These results highlight the potential of *P. granatum* seeds extract as antibiotic adjuvants against *P. aeruginosa* infections, particularly for the prevention of post-antibiotic diarrhea.

**Acknowledgements :** The authors would like to thank ARES (Académie de Recherche et d'Enseignement Supérieur, Belgium) for financial support throughout Tradimad PRD projects and Doctoral Fellowship.

## Identification of obesity-associated molecular features and screening of candidate anti-obesity constituents derived from Citri Grandis Exocarpium

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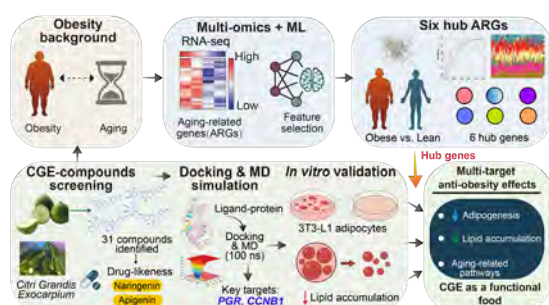
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**Introduction** (includes the aim of the study): Citri Grandis Exocarpium (CGE) is derived from the immature or nearly mature dried outer peel of *Citrus grandis* 'Tomentosa' (Huazhou pomelo) or *C. grandis* (L.) Osbeck (pomelo). As a traditional medicinal food enriched in bioactive flavonoids, CGE has demonstrated anti-inflammatory and lipid-modulating properties, highlighting its potential as a multi-target intervention for obesity. The aim of this study was to identify key genes associated with obesity and to explore the anti-obesity mechanisms of CGE-derived bioactive constituents.

**Materials and Methods:** Transcriptomic datasets from GEO were integrated with machine learning analyses to identify key genes. Aging-related genes were incorporated to capture overlapping molecular features between obesity and aging, thereby improving the identification of biologically relevant targets. Active compounds detected from CGE by LC/MS were screened based on Lipinski's rule and ADMET properties. Molecular docking and 100 ns MD simulations were performed to assess interactions between candidate compounds and hub targets. Finally, 3T3-L1 adipocytes were used to experimentally validate the effects of selected compounds on lipid accumulation and gene expression.

**Results:** LC-MS analysis identified thirty-one phytochemicals, among which six compounds with favorable drug-likeness and ADME/T properties were selected for further investigation. Six hub genes were identified as obesity-associated signatures. Molecular docking and MD simulations revealed stable binding interactions between naringenin and apigenin to these targets, supporting their potential biological relevance. *In vitro* experiments further revealed that naringenin and apigenin exerted pronounced anti-adipogenic effects, with an approximate 50% reduction in intracellular triglyceride accumulation. This was accompanied by a 30–50% decrease in the expression of key adipogenic markers, PPAR- $\gamma$  and C/EBP- $\alpha$ , as well as an approximate 40% downregulation of aging-related targets, including PGR and CCNB1.

**Conclusion:** These findings integrate *in silico* predictions with *in vitro* validation and identify naringenin and apigenin as promising bioactive compounds derived from CGE warranting further mechanistic and preclinical investigations.



## ***Aristolochia* Species Used in Congolese Traditional Medicine: Ethnopharmacology and Chromatographic Identification and Quantification of Aristolochic Acids**

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### **Abstract**

**Introduction:** The *Aristolochia* genus contains aristolochic acids (AAs), nephrotoxic and carcinogenic compounds identified in many species. Although the use of *Aristolochia* has been restricted worldwide due to safety concerns, no information is currently available on the species occurring in the flora of the Democratic Republic of the Congo (DRC). This lack of information regarding occurrence, use, and chemical composition of *Aristolochia* species limits the evaluation of potential exposure risks associated with traditional medicinal practices.

**Material and methods:** The present study identified, through a bibliographic and herbarium survey, the *Aristolochia* species reported in the DRC and assessed the presence of AAs in *A. heppii* Merxm., a species native to Katanga and widely used in traditional medicine. Microscopic examination of root powders and HPLC-DAD/MS analysis of this species hydroalcoholic and aqueous extracts were performed according to the European Pharmacopoeia on one authenticated sample and twelve commercial samples purchased in Lubumbashi.

**Results:** Microscopy confirmed diagnostic features consistent with the genus *Aristolochia*. Mass spectrometry analysis identified AAs, majoritarily the AA-I, that was quantified in hydroalcoholic extracts in the range  $566 \pm 5$  ppm to  $3533 \pm 32$  ppm (0.057–0.353% w/w; n = 3) and in the aqueous extract at  $204.2 \pm 0.4$  ppm (0.020% w/w; n = 3).

**Conclusion:** These results indicate that traditional preparations of *A. heppii* may lead to exposure to AA-I and underline the need for risk assessment and regulatory oversight.

## What's in a name? Confusions can arise both from naming of plants (binomial scientific, pharmaceutical and vernacular) and trivial naming of chemical components

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For forming the binomial scientific names of algae, fungi, and plants, the International Code of Nomenclature (ICN)<sup>1</sup> provides rules but grants wide latitude to taxonomists<sup>2</sup>; this historical practice, widely appreciated, however leads to deviations from absolute rigor. Also, continuous taxonomic revisions need to be thoroughly followed. For herbal medicines, the commonly used pharmaceutical and/or vernacular names add to this nomenclatural complexity.

For chemicals naming, the IUPAC<sup>3</sup> provides a standardized, unambiguous, but complex set of rules. Nevertheless, informal trivial names, more convenient or traditional, are commonly used. Although some standardizations are provided by official organisms (e.g. ACS, ISO, or WHO), names can be origin-based (place of discovery or discoverer), property-based (appearance, taste, smell) or source-based (often for natural products). Also, depending on context of use or geographical regions, trivial names can be ambiguous or take on different meanings.

Of note<sup>Error! Bookmark not defined.</sup>, for herbal medicines, (i) names of species and chemicals may shape why and how they are studied, which may lead to considerable, but sometimes futile, efforts in pharmacology, toxicology and translational researches; and (ii) the influence of species and compound names extends way beyond chemical, biological or cultural references when they are applied by the large public.

This communication will present examples of good and bad naming practices and consequences on the landscape of natural product research and uses.

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**Acknowledgements:** This communication was prepared in the frame of (i) the ARES-PRD projects "Reconnaissance mutuelle des savoirs traditionnels et modernes: conditions pour l'implémentation durable d'une médecine intégrative dans le contexte malgache (TradiMad)", "Appui à l'opérationnalisation des centres de médecine traditionnelle au Burkina Faso, par une recherche multidisciplinaire coordonnée sur la qualité et la sécurité des remèdes à base de plantes (MT-QUAL)", and "Valorization of the medicinal and agroecological potential of natural extracts in Northern Vietnam (MEDNATHAN); and (ii) the WBI project "Amélioration de la qualité et de la sécurité des produits de médecine traditionnelle vendus sur les marchés des trois villes principales de la RDC (TradiQual)", Commission Mixte Permanente WBI-RDC.

## The impact of cultivar on the biological activity and phenolic composition of Algerian olive leaf NADES extracts

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**Introduction:** It is well known that the phytochemical quality of plants is influenced by a variety of factors, including genotype, eco-physiological growth conditions, temperature stress, and/or sun radiation (1). This study aims to compare the phenolic compound content of leaves from five Algerian olive varieties; to investigate the impact of cultivar on biological activities; and to highlight the relationship between chemical composition and biological activity in order to promote olive leaves as a potential source of high-value bioactive compounds. The choice of NADES as extraction solvent relies on its composition based on natural compounds, its biodegradability, its non-toxicity, and its respect for the environment; being of natural origin, the obtained extracts can be considered for applications in the food, pharmaceutical and cosmetics sectors.

**Material and Methods:** The olive leaves obtained from five different varieties [Aymel (AY), Azeradj (AZ), Bouchouk (BO), Chemlal (CH), and Picholine (PI)] grown in Algeria were examined. The extraction was achieved by a fructose: malic acid: glycerol (1:1:1) as Natural Deep Eutectic Solvent. The total phenolics (TP) and flavonoids (TF) as well the antioxidant capacity were assessed by *in vitro* colorimetric techniques. The antibacterial effect was evaluated against five strains (*Shigella sp.*, *E. coli*, *L. monocytogenes*, *B. subtilis*, *S. aureus*).

**Results:** While the AY variety displayed the highest total phenolics ( $52.6 \pm 1.5$  mg/g dry weight), the CH variety presented the highest total flavonoids ( $42.3 \pm 0.4$  mg/g DW) and antioxidant power ( $IC_{50} = 105.6 \pm 1.4$  µg/mL). This extract presented a very low antibacterial activity towards *E. Coli* and *Shigella sp.* with MIC of 25 mg/mL and MBC of 50 mg/mL.

**Conclusions:** This investigation demonstrated significant divergence in phenolic content between olive leaves cultivars. Two cultivars, CH and AY, displayed the highest amounts in phenolic compounds and interesting bioactivities, which may make them a valuable source for industrial extraction.

**Reference:** 1. Ea, G, et al. BMC Plant Biology, 2025. Vol: 25. Page 1566.

**Acknowledgements:** We gratefully acknowledge the financial support provided by the Direction Générale de la Recherche Scientifique et du Développement Technologique (DGRSDT) as part of the PRIMA 2023-FoWRSaP project.

**Title: *In vitro* cytotoxicity of seven medicinal plants from DR Congo against melanoma, head and neck, and triple-negative breast cancer cells.**

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**Introduction:** Cancer is a global burden. In many developing countries, its treatment remains prohibitively expensive, with very limited access to suited care. Given that many plants are used in traditional medicine for "cancer-like" conditions, these may represent an accessible and significant alternative for the discovery of new anticancer molecules. This study aims to objectify the knowledge on anticancer plants used in D.R. Congo traditional medicine by evaluating their ability to inhibit the growth of cancer cell lines. The effects of 21 plant extracts, obtained from 7 plant species, were evaluated against (i) cancer cell lines, including melanoma (MM074), head and neck cancer (FaDu) and triple negative breast cancer (MDA-MB231); and (ii) a non-malignant cell line derived from a normal kidney human (HK-2), to determine the selectivity indices (SI) of the interesting plant extracts.

**Material and Methods:** The plant species and organs were selected from a bibliographic inventory drawn from literature and ethnobotanical surveys conducted in RDC. The *in vitro* anticancer activity of methanolic extracts of selected plants was evaluated by Crystal Violet and MTT tests. Dose-response curves allowed to determine IC<sub>50</sub> values, using the online software AAT Bioquest IC<sub>50</sub> calculator. The SI were calculated as the ratio of IC<sub>50</sub> value in the non-malignant cell and IC<sub>50</sub> value in each cancer cell line. **Results:** Four of the twenty-one tested extracts (Table 1) showed interesting activity against the 3 tested cancer cell lines (IC<sub>50</sub> < 200 µg/mL on MM074; IC<sub>50</sub> < 65 µg/mL on FaDu and IC<sub>50</sub> < 150 µg/mL on MDA-MB231) with favourable selectivity indices (IS > 2). According to the classification of Kuete and Efferth<sup>(1)</sup>, these four extracts are interesting candidates for bioassay-guided purifications.

**Conclusions:** Plants from the flora of the DRC traditionally used to "treat cancer" indicate potential sources for the isolation and development of new anticancer compounds.

**Table 1. List of selected plant species**

| n° | Plant species (Family)                                   | Organs used                     | Interesting cytotoxic activity |
|----|----------------------------------------------------------|---------------------------------|--------------------------------|
| 1  | <i>Brachystegia boehmii</i> Taub. (Fabaceae)             | Leaves, Stem bark and Root bark |                                |
| 2  | <i>Brachystegia spiciformis</i> Benth. (Fabaceae)        | Leaves, Stem bark and Root bark |                                |
| 3  | <i>Brachystegia taxifolia</i> Harms (Fabaceae)           | Leaves, Stem bark and Root bark | Yes (Stem and Root bark)       |
| 4  | <i>Ficus sur</i> Forssk. (Moraceae)                      | Leaves, Stem bark and Root bark |                                |
| 5  | <i>Ficus stuhlmannii</i> Warb. (Moraceae)                | Leaves, Stem bark and Root bark | Yes (Root bark)                |
| 6  | <i>Khaya anthotheca</i> (Welw.) C.DC. (Meliaceae)        | Leaves, Stem bark and Root bark |                                |
| 7  | <i>Vachellia farnesiana</i> (L.) Wight & Arn. (Fabaceae) | Leaves, Stem bark and Root bark | Yes (Leaves)                   |

<sup>(1)</sup> Kuete, V., & Efferth, T. (2015). African flora has the potential to fight multidrug resistance of cancer. *BioMed Research International*, (1–24).

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## **A cross-sectional survey of the usage of complementary and alternative medicine in Singapore**

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**Introduction:** Complementary and alternative medicine (CAM) may be defined as healthcare approaches that are not part of conventional medicine, e.g. Traditional Chinese Medicine (TCM) and herbal medicine. Usage of CAM in the general population is common worldwide, and periodic surveys are required to monitor changing patterns in CAM use, public awareness and perceptions. We aim to understand the usage, attitudes, perceptions and knowledge of CAM among adult CAM users in Singapore.

**Methods:** A cross-sectional study of CAM usage among CAM users ( $\geq 21$  years old) in Singapore is carried out. Recruitment was via social media, recruitment posters, or word of mouth. Demographic data, medical history, information about CAM usage, attitudes towards and knowledge of CAM are collected via face-to-face interviews using an approved standard questionnaire (NUS-IRB-2023-303).

**Results:** All 62 (100%) have used CAM in their lifetime while 54 (87.1%) used CAM in the previous 12 months. The top three types of CAM used in lifetime were TCM (79.0%), massage (72.6%) and herbal medicine (62.9%). CAM was most frequently used for health maintenance (80.6%). The most common condition treated with CAM was muscle aches (46.8%). 29 participants (46.8%) perceived CAM to be very effective and 24 participants (38.7%) were extremely satisfied. 15 participants (24.2%) believed herbal medicine is natural and without side effects. 43 participants (69.4%) used CAM together with conventional medicine, and 22 did not inform or consult healthcare professionals. 47 participants (75.8%) indicated interest to be educated on CAM approaches.

**Conclusions:** Our results show that CAM can play a role in health maintenance. More education on CAM is needed to ensure safe use of CAM. The survey findings can inform healthcare professionals, the general public, CAM practitioners and policymakers on the motivations for using CAM and the potential role CAM can play in preventive healthcare and integrative health to achieve optimal health outcomes.

*Acknowledgements: This study is supported by the NUS Research Scholarship (HR) and NUS Industry-Relevant PhD Scholarship (LX).*

## Knowledge Graph-Guided Graph Neural Network Framework for Decoding the Anti-Obesity Potential of Citri Grandis Exocarpium Flavonoids

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### Introduction:

Obesity is a multifactorial metabolic disorder characterized by lipid metabolic dysfunction, chronic inflammation, insulin resistance, impaired energy expenditure, and adipose tissue remodeling. Citri Grandis Exocarpium, also known as Huajuhong, is rich in flavonoids and exhibits metabolic regulatory activities. However, the systematic mechanisms by which its flavonoid constituents contribute to obesity management remain unclear. Conventional network pharmacology relies heavily on static compound–target associations and lacks the capacity to capture transferable biological patterns among structurally and functionally related flavonoids.

### Materials and Methods:

This study establishes a knowledge graph-guided graph neural network framework to decode the anti-obesity mechanisms of Citri Grandis Exocarpium flavonoids. A comprehensive flavonoid knowledge graph is constructed by integrating flavonoid compounds, chemical features, targets, pathways, disease phenotypes, and evidence sources. Graph neural network models are trained to learn generalizable flavonoid biological rules through link prediction, functional classification, and representation learning. A Citri Grandis Exocarpium-specific flavonoid subgraph is then extracted and compared with known anti-obesity flavonoids. Key compounds, targets, and pathways are prioritized according to prediction confidence, graph centrality, evidence strength, novelty, and synergy scores.

### Results:

The framework identifies naringin, naringenin, rhoifolin, poncirin, and neoeriocitrin as central Citri Grandis Exocarpium flavonoids associated with obesity-related biological networks. These compounds are connected to regulatory modules involving lipid metabolism, adipogenesis, fatty acid oxidation, insulin signaling, inflammatory responses, and adipocyte browning. Comparative subgraph analysis reveals complementary target and pathway distributions among multiple flavonoid constituents, supporting a coordinated multi-component mechanism for obesity intervention.

### Discussion:

This study provides an interpretable AI-driven strategy for investigating the multi-component, multi-target, and multi-pathway mechanisms of Citri Grandis Exocarpium in obesity management. By integrating comprehensive flavonoid knowledge with graph neural network-based prediction, this framework moves beyond static network pharmacology and enables transferable learning across flavonoid biology. The findings provide mechanistic hypotheses for developing Citri Grandis Exocarpium as a natural product-based intervention for obesity and offer a generalizable computational framework for studying complex traditional medicines.

# **Efficacy Observation of Thumbtack Needle Therapy Combined with Chinese Herbal Medicine for Hashimoto's Thyroiditis: A Randomized Controlled Study**

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## **Main text:**

**Introduction:** This study aimed to evaluate the efficacy and safety of adding thumbtack needle therapy to the Qinggan Sanjie Xiaoying Formula (QGXYF) in treating euthyroid Hashimoto's thyroiditis (HT) patients with the traditional Chinese medicine (TCM) pattern of liver-channel heat depression and spleen-deficiency phlegm-coagulation.

**Materials and Methods:** This randomized, controlled trial was conducted at Dongzhimen Hospital, Beijing University of Chinese Medicine. Euthyroid HT patients who met the inclusion criteria and provided consent were randomly assigned at a 1:1 ratio to receive either QGXYF granules alone (control group, n=32) or QGXYF granules combined with thumbtack needle therapy (trial group, n=33). QGXYF composition: Prunella Spike (Xia Ku Cao), Platycodon Root (Jie Geng), Bupleurum Root (Chai Hu), Albizia Flower (He Huan Hua), etc. The thumbtack needles were applied at six auricular points: Liver (CO<sub>12</sub>), Spleen (CO<sub>13</sub>), Kidney (CO<sub>10</sub>), Shenmen (TF<sub>4</sub>), Sympathetic (AH<sub>6a</sub>), and Endocrine (CO<sub>18</sub>). Both groups underwent a 4-week treatment course. The primary outcome was the change from baseline to week 4 in serum thyroid peroxidase antibody (TPOAb) and thyroglobulin antibody (TGAb) titers. Secondary outcomes were changes in the Hamilton Anxiety Rating Scale (HAMA) and Pittsburgh Sleep Quality Index (PSQI) scores. Safety was monitored throughout the study.

**Results:** After 4 weeks of treatment, the median TPOAb and TGAb levels in the experimental group were significantly lower than those in the control group (TPOAb: 121.83 vs. 287.00 IU/mL; TGAb: 150.83 vs. 366.87 IU/mL; all  $P < 0.05$ ). Compared with baseline, the median TPOAb and TGAb levels in the experimental group decreased by 327.47 and 288.55 IU/mL, respectively (all  $P < 0.01$ ). For the secondary outcomes, the trial group showed significantly lower post-treatment HAMA and PSQI scores compared with the control group (all  $P < 0.05$ ). No serious adverse events were reported in either group.

**Conclusions:** In euthyroid HT patients with the liver-channel heat depression and spleen-deficiency phlegm-coagulation TCM pattern, the addition of thumbtack needle therapy to QGXYF significantly reduced thyroid autoantibody levels and led to greater improvements in anxiety and sleep quality compared with QGXYF alone. This integrative approach appears safe and represents an effective new therapeutic option for HT.

*Acknowledgements: We would like to thank all the patients who participated in this study. We also gratefully acknowledge the staff at Dongzhimen Hospital, Beijing University of Chinese Medicine, for their assistance with patient recruitment and data collection.*

## Current practices and methodological challenges in establishing objective performance criteria for single-arm trials in traditional Chinese medicine: a scoping review

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**Background:** Objective performance criteria (OPCs) are critical for evaluating efficacy in single-arm trials. This study aimed to examine current practices and methodological challenges in establishing OPCs in single-arm trials of traditional Chinese medicine (TCM).

**Methods:** PubMed, Embase, the Cochrane Library, CNKI, Wanfang, and VIP were searched for TCM single-arm trials using OPCs published up to December 2025. Data on OPC sources, population comparability, uncertainty quantification, and primary outcome alignment were extracted and descriptively analysed.

**Results:** Twelve studies (13 publications; 1134 participants) conducted in China (2019-2025) evaluated Chinese herbal decoctions (n=9), proprietary Chinese medicines (n=2), or acupuncture plus rehabilitation (n=1) across kidney, neurological, gynaecological and other conditions. OPCs were derived from prior clinical studies (n=6), meta-analyses (n=5), or a synthesis of clinical experience and literature (n=1). Three studies reported 95% confidence intervals, and four justified population comparability. Ten studies exhibited limited comparability due to differences in disease duration, severity, or assessment timing. One study mentioned expert discussion but provided no details. Eleven studies reported a clear primary outcome, among which ten aligned their OPCs accordingly and one based its OPC on a secondary outcome. Only one study lacked an explicit primary outcome definition. Four studies based their OPCs on non-standardised composite outcomes such as remission rate.

**Conclusions:** Current TCM single-arm trials face challenges in establishing OPCs, including incomplete reporting, poor population comparability, inadequate uncertainty quantification, and non-standardised endpoints. Future studies should adopt transparent and contextually appropriate OPC specification guidelines, ensuring methodological rigour in source selection, population comparability, and outcome definition.

## Adjunctive Tongxinluo Capsule for patients with acute coronary syndromes undergoing percutaneous coronary intervention: a GRADE-assessed systematic review and meta-analysis of randomised controlled trials

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**Background:** Tongxinluo Capsule (TXL) is widely used in China as an adjunctive therapy for patients with acute coronary syndromes (ACS) who underwent percutaneous coronary intervention (PCI), collectively referred to as ACS-PCI. It consists of multiple herbal ingredients, including Ren Shen, Chi Shao, Bing Pian, Chan Tui, and so on. However, current evidence on its therapeutic effects and safety remains limited and insufficiently synthesised. This review aims to evaluate the therapeutic effects and safety of adding TXL to Western medical therapy (WM) in this population.

**Methods:** A systematic literature search was performed in PubMed, the Cochrane Library, CNKI, VIP and Wanfang from inception to August 2024; a rapid supplemental search was conducted up to November 2025, without language restrictions, to identify randomised controlled trials (RCTs) evaluating the therapeutic effects and safety of adding TXL to WM in patients with ACS-PCI. Dichotomous outcomes were summarised using risk ratios (RRs) with 95% confidence intervals (CIs); absolute risk reductions (ARRs) were estimated as risk differences, and corresponding numbers needed to treat (NNTs) were calculated. Continuous outcomes were summarised using mean differences (MDs) with 95% CIs. All meta-analyses were performed using a random-effects model. The included studies generally had limitations in methodological quality, heterogeneity across analyses was low to moderate, and the potential for publication bias could not be excluded. The evidence certainty for each outcome was assessed using the GRADE approach.

**Results:** Eighteen RCTs involving 1800 participants were included. Low-certainty evidence indicated that adding TXL to WM may reduce the risks of restenosis (RR = 0.30, 95% CI [0.10, 0.91]; ARR = 0.056, NNT = 18), revascularisation (RR = 0.28, 95% CI [0.10, 0.80]; ARR = 0.069, NNT = 15), myocardial infarction (RR = 0.44, 95% CI [0.20, 0.98]; ARR = 0.033, NNT = 31), angina (RR = 0.32, 95% CI [0.17, 0.61]; ARR = 0.076, NNT = 14), and other cardiovascular events (RR = 0.41, 95% CI [0.24, 0.71]; ARR = 0.075, NNT = 14). The observed NNTs suggest that treating 14–31 patients with TXL could prevent one additional adverse cardiovascular event, which may be clinically meaningful in secondary prevention. TXL also improved Seattle Angina Questionnaire (SAQ) scores (MD = 8.82, 95% CI [6.58, 11.05]), exceeding the commonly accepted minimal clinically important difference (MCID) of 5 points, indicating a substantial improvement in disease-specific quality of life, further supported by qualitative synthesis of patient-reported outcomes. However, no statistically significant reductions were observed for sudden cardiac death (RR = 0.39, 95% CI [0.12, 1.27]; ARR = 0.022, NNT = 45), or non-cardiovascular adverse events (RR = 0.67, 95% CI [0.32, 1.40]; ARR = 0.043, NNT = 24) when TXL was added to WM.

**Conclusion:** Current evidence suggests that adjunctive TXL may reduce key cardiovascular events and improve symptoms and quality of life in ACS-PCI patients, without increasing the risk of non-cardiovascular adverse events. However, all findings are based on low-certainty evidence. These results provide preliminary support for the use of TXL as an adjunctive therapy, but high-quality, multicentre RCTs are needed to confirm these effects and inform clinical guidelines.

## Intra-articular Puerarin Attenuates Cartilage Degeneration in Knee Osteoarthritis by Modulating LOX-1/mTORC1-Driven Chondrocyte Senescence

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### Main text:

**Introduction:** Knee osteoarthritis (KOA) is a significant cause of disability worldwide and involves senescent chondrocyte-derived senescence-associated secretory phenotype (SASP), which perpetuates a feedback loop of senescence and inflammation, ultimately leading to cartilage destruction. The benefits of intra-articular Puerarin administration in KOA have been demonstrated in clinical studies; however, the underlying mechanisms remain poorly understood. This study aimed to investigate whether Puerarin delays KOA cartilage degeneration by modulating LOX-1-associated oxidized low-density lipoprotein (oxLDL) accumulation and mTORC1-driven chondrocyte senescence.

**Materials and Methods:** In vivo, the efficacy of Puerarin was assessed in destabilization of the medial meniscus- and modified Hulth-induced rat KOA models using behavioral tests, micro-CT, histology, and OARSI scoring. Cartilage LOX-1, oxLDL accumulation, p16, p21, and phosphorylated mTOR, S6K, and S6 were assessed by immunofluorescence and Western blotting. In IL-1 $\beta$ -stimulated SW1353 chondrocytes, matrix metabolism, inflammation, lipid accumulation and senescence were assessed by qPCR, Western blotting, ELISA, BODIPY and SA- $\beta$ -gal staining. LOX-1-mediated oxLDL uptake and mTORC1 activation were evaluated using Dil-oxLDL uptake assays and detection of p-mTOR, p-S6K and p-S6, with LOX-1 inhibition employed for functional validation. Data were analyzed by ANOVA, with  $P < 0.05$  considered significant.

**Results:** Intra-articular Puerarin improved joint function, relieved pain-related behaviors, attenuated subchondral bone remodeling, preserved proteoglycan deposition and reduced OARSI scores in both KOA models. It decreased cartilage oxLDL accumulation, p16/p21 expression and mTORC1 activation. In IL-1 $\beta$ -stimulated SW1353 chondrocytes, Puerarin restored the balance between ECM synthesis and degradation and reduced inflammation, lipid accumulation and senescence. Mechanistically, Puerarin reduced Dil-oxLDL uptake and mTORC1 phosphorylation, with LOX-1 inhibition showing similar protection, supporting a LOX-1/mTORC1-driven anti-senescent mechanism underlying its cartilage-protective effects in KOA models.

**Conclusions:** Intra-articular Puerarin attenuates cartilage degeneration in KOA, potentially by inhibiting LOX-1-dependent oxLDL uptake and subsequent mTORC1-driven chondrocyte senescence. This provides mechanistic evidence supporting Puerarin-based therapeutic strategies for KOA.

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*Acknowledgements: This research was funded by the National Key R&D Program of China (No.2018YFC1706800).*

## From traditional use to functional application: phytochemical characterisation and formulation relevance of *Garcinia mangostana* L. (莽吉柿, mǎng jí shì) extracts for cosmetic systems

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### Introduction:

*Garcinia mangostana* L. (莽吉柿, mǎng jí shì) has a history of use in Southeast Asian traditional medicine for inflammatory skin conditions. Previous in silico studies<sup>1</sup> on *Garcinia mangostana* xanthenes and benzophenones identified compounds with predicted anti-inflammatory and antimicrobial activity, relevant to skin-associated pathways. Building on this foundation, the present study investigates the phytochemical composition and functional properties of mangosteen-derived extracts for cosmetic application.

### Materials and Methods:

Mangosteen pericarp extracts were prepared using aqueous and oil-based extraction systems. Phytochemical characterisation included total phenolic content, antioxidant capacity (DPPH and ABTS assays), and qualitative profiling of xanthenes and flavonoids. Functional evaluation included assessment of antimicrobial potential, as well as formulation-relevant properties such as solubility, film formation, and stability across different solvent systems and storage conditions.

### Results:

Mangosteen extracts demonstrated high antioxidant activity, associated with xanthenes such as  $\alpha$ -mangostin and a range of polyphenolic compounds. Aqueous and oil-based extracts exhibited distinct compositional and functional profiles, reflecting differential solubility of bioactive compounds. Antimicrobial and anti-inflammatory potential were consistent with previous in silico predictions. In addition to biochemical activity, extracts showed functional properties including film-forming behaviour, conditioning effects, and compatibility across both aqueous and lipid-based systems. These properties support performance in formulations requiring hold, definition, and surface protection. Stability studies indicated that these characteristics were maintained under standard storage conditions.

### Conclusions:

Mangosteen-derived extracts demonstrate a combination of bioactivity and functional performance that supports their translation from traditional use into modern cosmetic systems. The integration of phytochemical characterisation with formulation-relevant evaluation highlights their potential as multifunctional ingredients for reproducible, high-performance applications across diverse formulation systems.

<sup>1</sup> Blicharska N, Ben Ahmed Z, Jackson SJ, Rotondo D, Seidel V. (2024). In silico studies on the anti-acne potential of *Garcinia mangostana* xanthenes and benzophenones. *Zeitschrift für Naturforschung C*, 79(3–4): 47–60.

## Impact of extraction parameters and batch preparation on phytochemical composition and stability of TCM mushroom extracts for cosmetic applications

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### Introduction:

Mushroom-derived ingredients are increasingly explored in cosmetic science due to their antioxidant, barrier-supporting, and polysaccharide content. However, variability in extraction methods and raw material processing can significantly affect extract quality and stability. The aim of this study was to evaluate the impact of extraction parameters and batch preparation on selected Traditional Chinese Medicine (TCM) mushroom extracts.

### Materials and Methods:

Five extracts from four species (*Hericium erinaceus* (Lion's Mane, 猴头菇), *Lentinula edodes* (Shiitake, 香菇), *Pleurotus ostreatus* (Oyster mushroom, 平菇), and *Ganoderma lucidum* (Reishi, 灵芝)) were prepared using Naviglio™ extraction with a ternary solvent system (water:glycerin:butylene glycol, 1:1:1). Extractive ratios (1:10, 1:20), matrix concentration (10% vs 5%), and microfiltration were evaluated. Stability was assessed over 3 months at 4 °C, RT, and 45 °C, including evaluations at time zero (T0) and after 10 days (T10). Analyses included total phenolic content (Folin–Ciocalteu), antioxidant capacity (ABTS, TEAC), polysaccharides, and UPLC-PDA profiling.

### Results:

Extraction parameters significantly influenced extract quality. Reducing matrix concentration (10% to 5%) and applying microfiltration improved microbiological compliance (non-compliant at T0 vs compliant at T10) and stability, particularly in *H. erinaceus*. Extracts at 1:20 showed improved clarity, reduced precipitation, and acceptable odour compared to 1:10. Species-specific differences were observed: *H. erinaceus* showed the highest polysaccharide content; *L. edodes* exhibited crystallisation and odour degradation at 45 °C; *P. ostreatus* showed low polysaccharide levels; *G. lucidum* remained stable but less distinctive. Batch preparation influenced total phenolic content, with higher apparent concentrations in higher drug-load extracts.

### Conclusions:

Extraction design and batch preparation are critical determinants of TCM mushroom extract quality. Optimised conditions improve stability and compliance, while species selection influences bioactive composition. These findings support the need for standardised extraction frameworks to enable reproducible and standardised high-performance botanical ingredients.

## Standardisation of botanical extracts through controlled extraction and stability profiling: a framework applied to TCM-relevant and cross-cultural species

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### Introduction:

The translation of traditional medicinal plants into modern cosmetic and wellness applications is often limited by variability in extraction methods, raw material quality, and stability of bioactive compounds. This challenge is particularly relevant for Traditional Chinese Medicine (TCM) and related botanical systems, where reproducibility and standardisation remain key barriers to wider industrial application. The present study presents a standardised extraction and evaluation framework applied to a set of TCM-relevant and cross-cultural botanical species.

### Materials and Methods:

Extracts from multiple plant matrices, including *Centella asiatica* (积雪草, Jī xuě cǎo), *Hibiscus sabdariffa*, *Calendula officinalis*, and *Garcinia mangostana* L. (莽吉柿, mǎng jí shì), as well as selected medicinal mushrooms, were prepared using controlled extraction systems based on water:glycerin:butylene glycol mixtures. Variations in matrix concentration, solvent composition, and processing conditions were systematically evaluated. Analytical characterisation included total phenolic content (Folin–Ciocalteu), antioxidant capacity (ABTS, TEAC), polysaccharide quantification, and UPLC-PDA profiling. Stability studies were conducted over three months at 4 °C, room temperature, and 45 °C. Selected extracts were further assessed using cell-based assays (MTT viability and ROS modulation).

### Results:

Extraction parameters significantly influenced phytochemical yield, stability, and functional performance across all species. Increased water content enhanced extraction efficiency but often reduced physical stability, while higher polyol content improved extract robustness. Species-specific behaviours were observed, with *C. asiatica* and mushroom extracts showing high polysaccharide content, and *H. sabdariffa* and *C. officinalis* demonstrating stable antioxidant profiles. Stability studies highlighted trade-offs between extract potency and physical stability, while batch-to-batch variability in raw materials influenced total phenolic content. Cell-based assays confirmed safety and demonstrated modulation of oxidative stress under induced conditions.

### Conclusions:

The integration of controlled extraction design with multi-parameter analytical and stability assessment provides a robust framework for the standardisation of botanical extracts. This approach supports the translation of TCM-relevant species into reproducible, high-performance ingredients for cosmetic and wellness applications, bridging traditional knowledge with modern industrial requirements.

## Investigation of the effects of *Leea indica* leaf extracts on cell viability of normal cells and chemical analyses via Gas Chromatography-Mass Spectrometry

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**Introduction:** Botanical medicine and natural products are used for the treatment or prevention of diseases as a complementary and integrative approach to healthcare. Drugs derived from plants include artemisinin and paclitaxel. *Leea indica* (Burm.f.) Merrill, a tropical plant native to Southeast Asia, is traditionally used to treat ailments such as vertigo, cancer, and rheumatoid arthritis. However, little is known about the effects of *L. indica* leaf preparations on cell viability of normal cells. This study aims to evaluate the effects of *L. indica* preparations on cell viability of normal cells and identify the phytoconstituents of *L. indica* using Gas Chromatography-Mass Spectrometry (GC-MS).

**Materials and Methods:** Leaves of *L. indica* were prepared using either water or 70% ethanol by heating under reflux, maceration or blending (for fresh leaves). Effects of *L. indica* leaf preparations on cell viability of normal human bronchial epithelial cells (NL20), normal human embryonic kidney cells (HEK293), and African green monkey kidney cells (Vero) were studied using water-soluble tetrazolium-1 assay. Leaf extracts were also analysed for putative phytoconstituents using GC-MS.

**Results:** The IC<sub>50</sub> values for the crude extracts varied amongst the three normal cell lines, ranging from 100 µg/mL to more than 1600 µg/mL. GC-MS analyses identified putative compounds that were present in the different extracts.

**Conclusions:** This is the first assessment of the effects of *L. indica* crude leaf extracts on cell viability of human and monkey normal cell lines, and all the extracts may be considered non-cytotoxic. Overall, this study contributes to the understanding and safety profile of *L. indica*, and to the scientific knowledge for the future development of *L. indica* as a health product.

**Acknowledgements:** This project is supported by Ministry of Education Academic Research Fund (A-8001964-00-00, A-8001048-00-00), the NUS Department of Pharmacy & Pharmaceutical Sciences Final Year Project Fund, NUS Research Scholarship (RH), and NUS Industry-Relevant PhD Scholarship (XL).

## Pharmacological and Non-pharmacological Approaches for the Management of IBS-C Patients: A Systematic Review with Network Meta-analysis

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### Introduction:

Approximately one-third of irritable bowel syndrome (IBS) patients have constipation-dominant IBS (IBS-C). This systematic review and network meta-analysis of pharmacological and non-pharmacological (including traditional, complementary, and integrative medicine (TCIM)) approaches aims to compare the effectiveness and safety of various interventions and identify the most promising strategies for IBS-C management.

### Materials and Methods:

Following PRISMA-NMA guidelines, 107 randomized controlled trials of IBS-C patients are included. Interventions are compared against placebo, sham, or active treatments. Primary outcomes and timepoints are defined based on expert input. Data extraction and risk of bias assessments were conducted independently. Random-effects models and frequentist NMA were used, with heterogeneity and inconsistency evaluated.

### Results:

Stool frequency, pain severity, depression, anxiety, etc were evaluated. 13 studies assessing global IBS-C symptoms using IBS-SSS scale were included in the NMA. Treatments such as acupuncture, breathing training, Chinese medicine, and linaclotide were compared against no intervention. Only breathing training showed significant improvement, reducing the total IBS-SSS score compared to no intervention (MD = -116.08, 95% CI: -219.10 to -10.59). Acupuncture, Chinese medicine and linaclotide did not show a significant effect on global IBS-C symptoms. Linaclotide showed significant improvement compared to placebo in CSBM (RR = 2.47, 95% CI: 1.76 to 3.48). Chinese medicine combined with linaclotide, linaclotide alone, and tenapanor increased the frequency of CSBM per week compared to placebo, whereas treatments like minesapride and PEG plus electrolytes did not. Linaclotide had the highest probability of improving CSBM frequency, followed by Chinese medicine plus linaclotide. No significant differences were found among the treatments for depression or anxiety.

### Conclusions:

This paper provides valuable insights for IBS-C management, revealing non-pharmacological interventions such as TCIM approaches. Further clinical research is needed to establish the long-term benefits and optimal integration of TCIM practices into IBS-C treatment.

The Prospero Registration Number of this review is: CRD42023432561.

### Acknowledgements:

*This study is supported by grant #022448-00001: "Electro-acupuncture for irritable bowel syndrome with constipation: a pilot randomized, double-blinded, sham-controlled trial."*

## Jingfang Baidu San for Respiratory Diseases: Clinical Applications, Bioactive Constituents, and Mechanisms of Action

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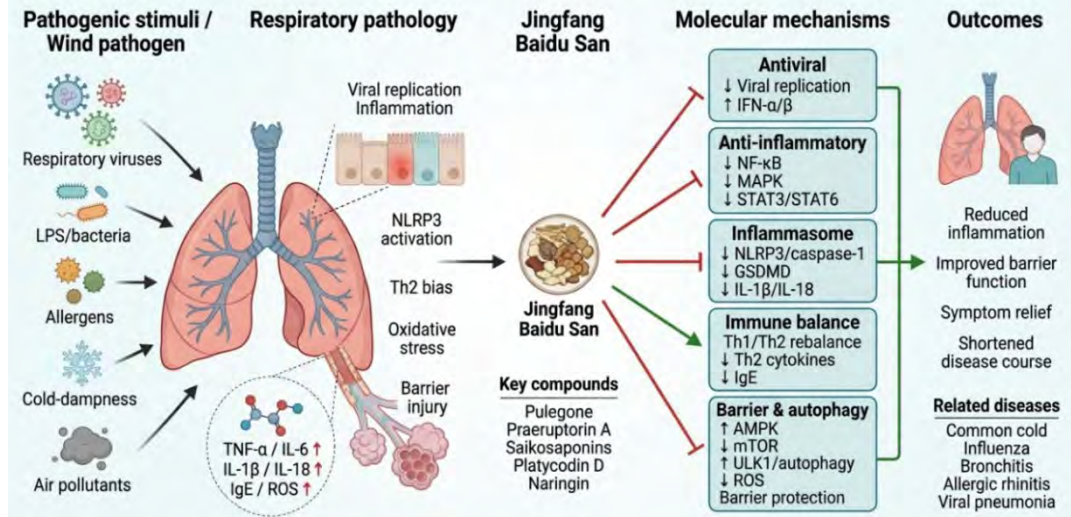
**Introduction:** Respiratory diseases pose a major public health threat and are closely associated with viral infection, inflammation, immune imbalance, and airway barrier dysfunction. Jingfang Baidu San, a classical traditional Chinese medicine formula recorded in *Shesheng Zhongmiao Fang* during the Ming Dynasty, has traditionally been used to dispel wind, release the exterior, disperse cold and dampness, and eliminate pathogenic toxins. This review summarizes its clinical applications, bioactive constituents, and potential mechanisms in respiratory diseases.

**Materials and Methods:** A narrative review was conducted using structured searches of CNKI and PubMed from inception to April 1, 2026. Evidence was drawn from classical texts, clinical studies, chemical analyses, pharmacological experiments, network pharmacology, animal models, and safety reports. Respiratory clinical evidence was prioritized, while non-respiratory studies were included when relevant to traditional use, pharmacology, mechanisms, or safety. Duplicate, irrelevant, and poorly reported studies were excluded, and evidence was narratively synthesized by study type, disease category, mechanism, and safety.

**Results:** Current evidence, mainly from small randomized trials, clinical observations, and case reports, suggests that Jingfang Baidu San, alone or with standard treatment, may improve fever, aversion to cold, cough, nasal congestion, rhinorrhea, and expectoration in wind-cold pattern-related respiratory diseases, including common cold, acute upper respiratory tract infection, influenza A, influenza-associated cough, and pediatric acute bronchitis. Reported benefits include shorter symptom duration, reduced traditional Chinese medicine syndrome scores, improvements in selected inflammatory markers, and favorable short-term safety. Representative bioactive compounds include pulegone, prim-O-glucosylcimifugin, 5-O-methylvisammioside, praeruptorin A, saikosaponins, and platycodin D. Potential mechanisms involve regulation of TLR4/MyD88/NF-κB, MAPK, NLRP3/caspase-1, AMPK/mTOR/ULK1, and Th1/Th2-related immune pathways.

**Conclusions:** Jingfang Baidu San may benefit respiratory diseases through integrated antiviral, anti-inflammatory, barrier-protective, and immunomodulatory effects. However, evidence remains limited by small sample sizes, variable study quality, inconsistent outcomes, and insufficient long-term safety data. Further high-quality clinical studies incorporating syndrome differentiation and multi-omics approaches are needed.

## Mechanisms of Jingfang Baidu San in Respiratory Diseases



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## **Pseudolaric acid B suppresses triple-negative breast cancer by inducing ferroptosis through inhibiting the PDIA3/STAT3 signaling pathway**

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Main text (Arial 11 pt/normal/ single line spacing/ left and right justification, not exceeding 300 words):

**Introduction** (includes the aim of the study): Triple-negative breast cancer (TNBC) is an aggressive type of breast cancer with limited effective targeted therapies. Pseudolaric Acid B (PAB), a bioactive compound derived from *Cortex pseudolaricis*, exhibits potential anticancer activities<sup>1</sup>, yet its role and mechanism in TNBC remain undefined. This study aimed to investigate the antitumor activity of PAB against TNBC and elucidate its molecular mechanism.

**Materials and Methods:** The antitumor effects of PAB were evaluated in TNBC cell lines and mouse xenograft models. In vitro assays assessed cell growth, malignant phenotypes, apoptosis, and ferroptosis-related markers, while xenograft models examined in vivo efficacy. A biotinylated PAB probe was synthesized for affinity pull-down assays to identify covalently modified targets. PAB-target engagement was validated by cellular thermal shift assay (CETSA) and drug affinity responsive target stability (DARTS) assay. Peptide mapping identified the covalent binding site, and CRISPR/Cas9-mediated knockout was used to assess target function. Safety was evaluated by serum liver/kidney biomarkers and histological analysis of major organs.

**Results:** PAB inhibited TNBC cell proliferation with an IC<sub>50</sub> of 5.489  $\mu$ M and reduced cell migration and invasion. In xenograft models, PAB significantly suppressed tumor growth. Mechanistically, PAB induced ferroptosis, accompanied by decreased GPX4 expression and increased ACSL4 and transferrin receptor expression. Affinity pull-down identified protein disulfide-isomerase A3 (PDIA3) as a covalent target of PAB. CETSA and DARTS confirmed PAB-PDIA3 interaction, and peptide mapping revealed covalent binding at lysine 226. PAB-mediated PDIA3 modification inhibited STAT3 phosphorylation. PDIA3 knockout induced ferroptosis but did not further enhance PAB-induced ferroptosis, supporting the involvement of the PDIA3/STAT3 axis. In vivo, PAB caused no significant changes in ALT, AST, BUN, or creatinine levels and did not damage major organs.

**Conclusions:** Our findings demonstrate that PAB exerts potent anticancer effects in TNBC by suppressing proliferation, migration, and invasion while inducing apoptosis and ferroptosis. Crucially, the identification of PDIA3 as a direct target of PAB provides a mechanistic basis for its clinical efficacy. These results not only advance our understanding of PAB's antitumor activity but also highlight PDIA3 as a potential biomarker for future clinical applications. Collectively, this study offers novel insights into the therapeutic potential of PAB for TNBC treatment.

**References:** 1. Liu ML, Sun D, Li T, Chen H. A Systematic Review of the Immune-Regulating and Anticancer Activities of Pseudolaric Acid B. *Front Pharmacol.* 2017 Jun 28;8:394.

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### What do value clarification tools ask patients? A scoping review and proposed framework for shared decision making

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**Objectives:** Shared decision making requires integrating patient values, yet it is unclear what existing value clarification tools actually ask patients. This review aimed to map the content of these instruments and develop a comprehensive framework for assessing patient values in evidence-based practice.

**Design:** Scoping review reported following the PRISMA-ScR guideline.

**Methods:** Eight databases were searched from inception to June 2025. Empirical studies describing instruments designed to clarify patient values and preferences for health decisions were included. Eligible participants were adults with cancer, cardiovascular disease, diabetes, or chronic respiratory disease. Data on study and instrument characteristics were extracted. Instrument content was analysed using thematic analysis.

**Results:** The search yielded 93 unique instruments from 109 studies. Most tools were from North America or Europe (87%), focused on cancer (69%), and delivered digitally (59%); 52% lacked a theoretical foundation. Thematic analysis revealed a critical content imbalance: instruments consistently addressed clinical outcomes and decision-making autonomy, but systematically neglected patients' psychological and cognitive experience, social and lifestyle context, and economic and practical considerations. This neglect was most severe for non-cancer conditions. Based directly on the thematic analysis of all 93 instruments, we developed an evidence-based five-domain framework that comprehensively captures the identified value dimensions (clinical outcomes, autonomy, psychological/cognitive experiences, social/lifestyle context, and economic/practical considerations).

**Conclusion:** Current value clarification tools offer a narrow and imbalanced view of what matters to patients. This review provides an evidence-based, five-domain framework as an actionable blueprint for clinicians, researchers, and guideline developers to support truly patient-centred decisions.

**Keywords:** shared-decision making; value clarification; patient preference; scoping review; patient decision aids; framework

Figure 1. Five-domain framework for the integration of patient values

| Theme                                  | Cancer | Cardiovascular diseases | Diabetes Mellitus | End-of-life care | Long-term care | Multiple chronic conditions | Respiratory diseases |
|----------------------------------------|--------|-------------------------|-------------------|------------------|----------------|-----------------------------|----------------------|
| Clinical Outcomes                      | 100    | 100                     | 100               | 100              | 100            | 100                         | 100                  |
| Decision-making and Autonomy           | 100    | 100                     | 100               | 100              | 100            | 100                         | 100                  |
| Economic and Practical Considerations  | 100    | 100                     | 100               | 100              | 100            | 100                         | 100                  |
| Psychological and Cognitive Experience | 100    | 100                     | 100               | 100              | 100            | 100                         | 100                  |
| Social and Lifestyle                   | 100    | 100                     | 100               | 100              | 100            | 100                         | 100                  |

Figure 2. Distribution of value themes across diseases

## Exploring the Mechanism of Electroacupuncture in Improving Metabolic Disorders in Obese Insulin-Resistant Rats Based on Gut Microbiota Differential Analysis

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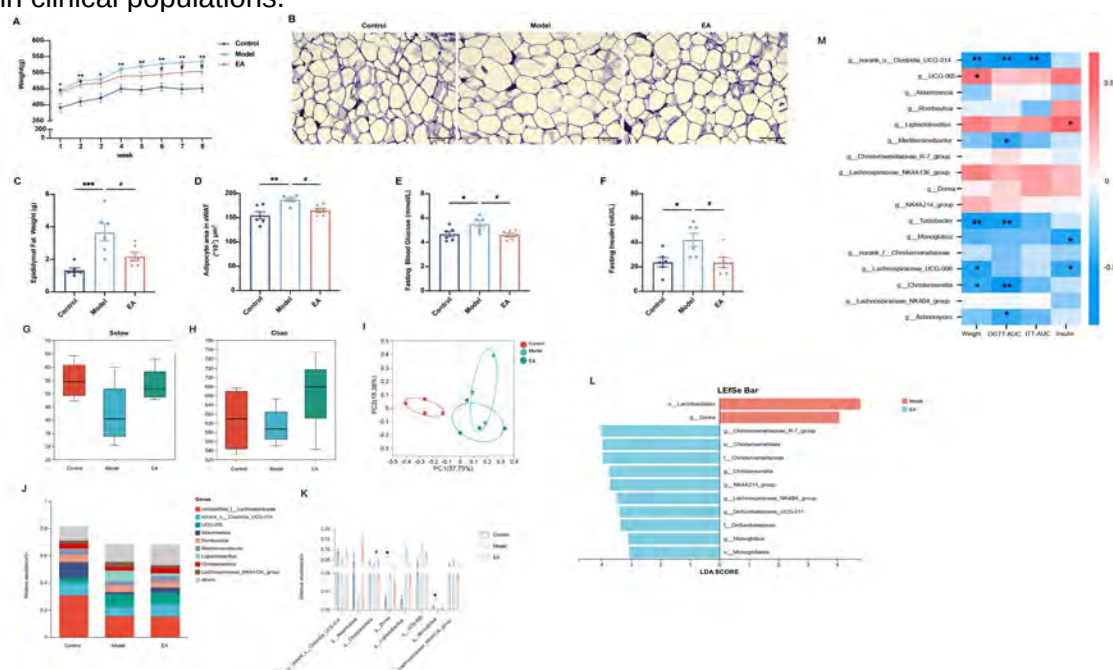
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**Introduction:** Electroacupuncture (EA) alleviates weight gain and glucose metabolic abnormalities in obese patients with glucose dysregulation, yet its mechanism remains unclear. This study explored the mechanism by which EA improves obesity-induced insulin resistance through regulation of the gut microbiota.

**Materials and Methods:** Twenty-two male SD rats were used (control: n=6; model induction: n=16). A high-fat diet was used to establish a model of obesity-induced insulin resistance. Successfully modeled rats were assigned into model and EA groups, with 6 rats in each group. EA treatment (parameters: 2 Hz, 1 mA, 5 sessions per week, 20 minutes per session) lasted 8 weeks. Body weight, Lee's index, adipose weight, glucose tolerance, insulin sensitivity and gut microbial profiles were detected.

**Results:** EA significantly reduced body weight ( $P<0.05$ ), Lee's index ( $P<0.01$ ), epididymal fat weight ( $P<0.01$ ), and adipocyte area ( $P<0.05$ ). OGTT and ITT showed lower blood glucose in the EA group, with reduced 120-min AUC ( $P<0.001$ ). Fasting glucose and insulin decreased ( $P<0.05$ ), as did HOMA-IR ( $P<0.05$ ). Gut microbiota analysis revealed that at the genus level, the model group had increased *Dorea* ( $P<0.05$ ) and decreased *Monoglobus* ( $P<0.01$ ) versus controls. EA increased *Christensenella* ( $P<0.05$ ). LEfSe analysis indicated distinct bacterial taxa such as \**Christensenellaceae* R-7 group\*, *Christensenella*, and *Monoglobus* were significantly enriched in the EA group. Correlation analysis showed *Christensenella* negatively correlated with body weight and OGTT-AUC ( $P<0.05$ ,  $P<0.01$ ), and *Monoglobus* negatively correlated with insulin level ( $P<0.05$ ).

**Conclusions:** EA alleviates insulin resistance in obese rats. Its mechanism may involve regulating the gut microbiota structure and increasing the relative abundance of beneficial bacteria. Among them, *Christensenella* and *Monoglobus* may be potential key mediators of EA efficacy. While animal models offer unique opportunities to investigate gut microbiota-related mechanisms, species differences may limit the direct translation of the identified microbial signatures to humans, warranting further validation in clinical populations.



# Title: Lymphoid Tissue-Resident *Alcaligenes faecalis* Cooperates with *Fusobacterium nucleatum* to Promote the Colorectal Inflammation-to-Cancer Transition by Triggering OSM/OSMR/STAT3/PFKL-Mediated Aerobic Glycolysis in M1 Macrophages

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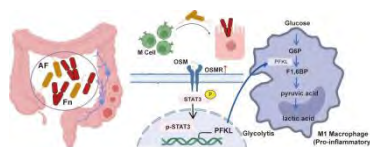
## Main text

**Introduction:** The colorectal inflammation-to-cancer transition is the primary pathological manifestation of the Damp-Heat Syndrome (DHS), which constitutes the predominant clinical phenotype (43%) of colorectal cancer (CRC). Dysbiosis of the intestinal microbiota represents a key factor in the initiation and progression of DHS-CRC, wherein the accumulation proportion of the pathobiont *Fusobacterium nucleatum* (*Fn*) reaches as high as 56.25%. *Alcaligenes faecalis* (*AF*), a lymphoid tissue-resident commensal (LRC), undergoes ectopic translocation during ulcerative colitis (UC). However, during the evolutionary progression of DHS-CRC, the spatiotemporal interaction and underlying molecular mechanisms governing the anomalous co-enrichment of this opportunistic commensal with the core luminal pathobiont *Fn* remain poorly understood. This study aims to elucidate the pathological mechanisms driving this synergistic pathogenic axis.

**Materials and Methods:** This study was approved by the Institutional Animal Care and Use Committee and the Clinical Research Ethics Committee. Fluorescence in situ hybridization (FISH) detected *AF/Fn* co-localization in colitis-cancer tissues. In vivo pathogenicity was assessed in single/joint-colonized dextran sulfate sodium (DSS) and azoxymethane (AOM)/DSS induced mice. Inter-bacterial crosstalk and host immunometabolic remodeling were investigated via co-culture kinetics, metabolomics, and macrophage profiling.

**Results:** FISH revealed stage-dependent spatial *AF/Fn* co-enrichment in colitis-cancer tissues. Combined colonization significantly exacerbated colitis and heightened tumor burden (2.5-fold increase) versus mono-challenges. Mechanistically, *AF* accelerated *Fn* growth by 1.8-fold and enhanced its carbohydrate metabolism, driving glucose-6-phosphate (G6P) hyper-secretion. Crucially, this crosstalk activated the host OSM/OSMR axis to induce STAT3 phosphorylation (p-STAT3), directly upregulating phosphofructokinase (PFKL) transcription. Enhanced PFKL fueled aerobic glycolysis, driving pro-inflammatory M1 macrophage polarization and a localized cytokine storm.

**Conclusions:** The LRC *AF* constructs a pathological synergistic network with luminal *Fn* to accelerate the colorectal inflammation-to-cancer transition. This process is mediated by inter-bacterial metabolic crosstalk that fuels macrophage aerobic glycolysis, thereby inducing M1 polarization and an inflammatory storm. This *AF-Fn* axis presents a promising therapeutic target for early intervention in DHS-CRC.



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## Acknowledgements:

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## Botanical medicine in breast cancer: effects, phytoconstituents, and potential mechanisms of action

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**Introduction:** Breast cancer has the highest incidence and mortality among women worldwide. Despite advances in breast cancer treatment, severe adverse/side effects and refractory tumors remain a challenge. Therefore, safer, more affordable, and effective therapeutic options are urgently needed. There is increased interest in the development of botanical medicine for unmet medical needs, due to its historical use and perceived safety. Thus, the objective of this study is to review botanical medicine used in breast cancer.

**Methods:** A narrative literature search in English was performed in Scopus, Web of Science, PubMed, and Google Scholar using keywords related to breast cancer, medicinal plants, herbal medicine and botanical medicine. Relevant studies were included to summarize representative effects, phytoconstituents, and potential mechanisms of action.

**Results:** More than 400 medicinal plants are used for breast cancer. They are from more than 100 families and most of them are in preclinical research, with a few studied clinically. Examples of these plants are *Prunella vulgaris*, *Astragalus membranaceus*, *Withania somnifera*, *Curcuma longa* and *Panax ginseng*. The phytoconstituents include epigallocatechin gallate, curcumin, hydroxytyrosol and limonene. The plants and phytoconstituents may inhibit proliferation of cancer cells, increase efficacy of chemotherapy, alleviate chemotherapeutic side effects or relieve discomfort of breast cancer, thereby improving quality of life. Potential mechanisms of action include induction of apoptosis, hormone receptor regulation, anti-angiogenesis and suppression of metastasis. However, there are some potential risks due to herb-drug interaction potential and phytoestrogenic effects.

**Conclusions:** A review of the botanical medicine associated with the treatment of breast cancer is conducted. It is important to have a basic understanding of medicinal plants before using due to potential risks involved. More research, including clinical trials, should be carried out on the botanical medicine and their phytoconstituents to further evaluate their applications for the treatment of breast cancer.

**Acknowledgements:** This project is supported by Ministry of Education Academic Research Fund (A-8001964-00-00), research collaboration with Natura Biotechnologies (A-8000513-00-00), NUS Industry-Relevant PhD Scholarship (LX) and NUS Research Scholarship (HR).

## Clinical Observation of Electroacupuncture Intervention for Abdominal Obesity in Perimenopausal Women

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**Introduction:** Evidence on electroacupuncture for abdominal obesity in perimenopausal women is limited. This study evaluated its effects on anthropometric parameters, body composition, and quality of life.

**Materials and Methods:** From February to December 2025, 110 eligible women were randomized 1:1 by random number table to electroacupuncture or sham electroacupuncture, with allocation concealed in sealed opaque envelopes. The trial was approved by the Ethics Committee of Shanghai Municipal Hospital of Traditional Chinese Medicine (2025SHL-KY-08-02) and conducted under a parent trial registered with the Chinese Clinical Trial Registry (ChiCTR2300073431). Patients were blinded, whereas acupuncturists were not. Electroacupuncture was administered for 30 minutes, three times weekly for 12 weeks; sham treatment involved superficial insertion without electrical stimulation. Waist circumference (WC), hip circumference (HC), weight, BMI, body composition, InBody score, IWQOL-Lite, MENQOL, and adverse events were assessed at baseline, 12 weeks, and 24 weeks. Analyses followed the intention-to-treat principle.

**Results:** 97 participants completed the trial. WC and HC showed noticeable reductions in the electroacupuncture group at 12 weeks, though not statistically significant, and became significant at 24 weeks (WC:  $P < 0.001$ ; HC:  $P < 0.05$ ). Weight, BMI, body fat percentage, and visceral fat area also decreased more, with improved InBody scores (all  $P < 0.05$ ). MENQOL scores were significantly lower, particularly in psychological, sleep, and physical domains (all  $P < 0.01$ ), while IWQOL-Lite scores showed no significant difference ( $P > 0.05$ ). No serious adverse events occurred.

**Conclusions:** Electroacupuncture safely and effectively reduces weight, BMI, and body fat in perimenopausal women with abdominal obesity, with sustained benefits. It also improves quality of life, particularly psychological, sleep, and physical well-being.

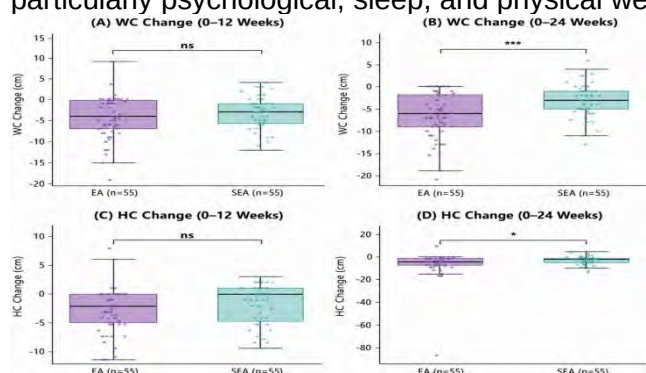


Figure 1. Comparison of WC and HC Changes Relative to Baseline in the Two Groups

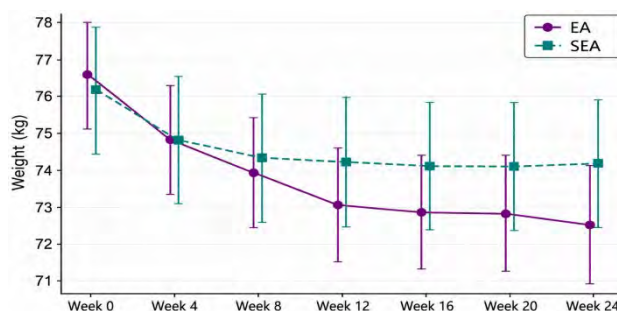


Figure 2. Trends of Body Weight Changes Over Time in the Two Groups

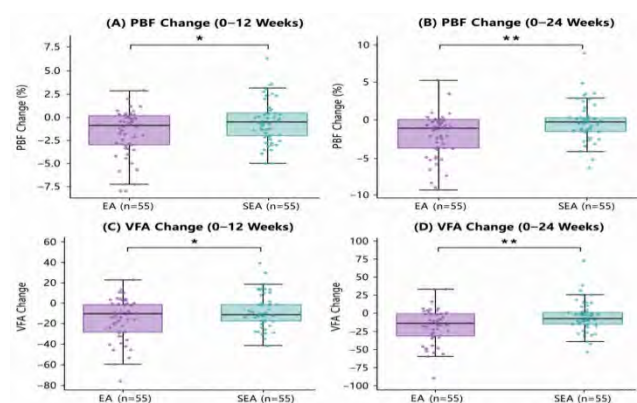


Figure 3. Comparison of PBF and VFA Changes Relative to Baseline in the Two Groups

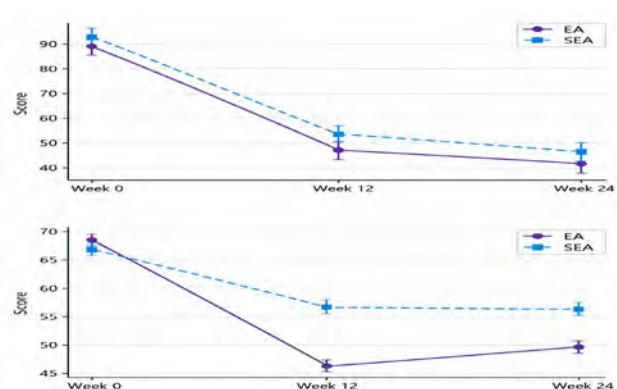


Figure 4. Comparison of IWQOL and MENQOL Scores at Each Time Point

**Machine Learning–Enabled Personalized Prediction of Electroacupuncture Response in Depression with Insomnia: A Secondary Analysis of a Randomized Controlled Trial**

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**Introduction:** Electroacupuncture (EA) shows promising efficacy in depression comorbid with insomnia<sup>1</sup>; however, treatment response varies substantially. This study aimed to develop multidimensional machine learning (ML) models for individualized therapeutic response prediction and to identify key determinants of response heterogeneity.

**Materials and Methods:** This secondary analysis was based on a multicenter randomized controlled trial (n = 268), including EA (Group A), sham acupuncture (Group B), and standard care (Group C). Predictors included intervention type, baseline demographics, and clinical scales (PSQI, HAMD, ISI, SAS). The model target was a binary variable representing treatment response (defined as a PSQI reduction  $\geq 3$  at week 8<sup>2</sup>). Five ML algorithms (LR, SVM, RF, CatBoost, XGBoost) were applied. Model performance was evaluated using AUC, calibration curve, decision curve analysis, etc. SHAP values and post-hoc regression analysis were used to interpret feature impacts and interactions.

**Results:** CatBoost achieved the best performance (AUC 0.85, accuracy 0.78, F1 0.78, sensitivity 0.76, precision 0.80), with good calibration and consistent net clinical benefit. SHAP analysis identified EA as the strongest positive predictor, whereas standard care was negatively associated with response. Older age, longer disease duration, and marital status were positively associated with response, while higher baseline anxiety and depression scores reduced response probability. A significant age-by-treatment interaction was observed for standard care (P interaction = 0.038), indicating diminished benefit in younger patients, whereas EA effects remained stable across age groups, with a trend toward higher response in younger and middle-aged individuals.

**Conclusions:** ML models accurately predicted individualized treatment response and elucidate response heterogeneity. EA showed stable efficacy across patient subgroups, supporting its application in precision psychiatry and sleep medicine.

Table 1 Model Performance evaluation

| Model    | Set   | AUC  | Specificity | Sensitivity | Precision | Recall | Accuracy | F1   |
|----------|-------|------|-------------|-------------|-----------|--------|----------|------|
| LR       | Train | 0.87 | 0.78        | 0.71        | 0.77      | 0.71   | 0.74     | 0.74 |
| LR       | Test  | 0.79 | 0.74        | 0.67        | 0.74      | 0.67   | 0.7      | 0.7  |
| XGBoost  | Train | 0.87 | 0.85        | 0.74        | 0.84      | 0.74   | 0.79     | 0.78 |
| XGBoost  | Test  | 0.84 | 0.82        | 0.69        | 0.81      | 0.69   | 0.75     | 0.74 |
| RF       | Train | 0.91 | 0.9         | 0.73        | 0.89      | 0.73   | 0.81     | 0.8  |
| RF       | Test  | 0.84 | 0.87        | 0.64        | 0.84      | 0.64   | 0.75     | 0.73 |
| SVM      | Train | 0.91 | 0.92        | 0.67        | 0.9       | 0.67   | 0.79     | 0.77 |
| SVM      | Test  | 0.81 | 0.82        | 0.64        | 0.79      | 0.64   | 0.73     | 0.71 |
| CatBoost | Train | 0.89 | 0.84        | 0.83        | 0.84      | 0.83   | 0.83     | 0.84 |
| CatBoost | Test  | 0.85 | 0.79        | 0.76        | 0.8       | 0.76   | 0.78     | 0.78 |

Table 2 SHAP Analysis of Age – Intervention Group Interaction

|                | coef    | std err | t       | P> t  |
|----------------|---------|---------|---------|-------|
| Intercept      | -0.3075 | 0.023   | -13.232 | 0     |
| Group[T.B]     | -0.0417 | 0.038   | -1.111  | 0.27  |
| Group[T.C]     | -0.0677 | 0.033   | -2.029  | 0.046 |
| Age            | 0.0063  | 0       | 14.414  | 0     |
| Age:Group[T.B] | 0.0008  | 0.001   | 1.128   | 0.263 |
| Age:Group[T.C] | 0.0013  | 0.001   | 2.107   | 0.038 |

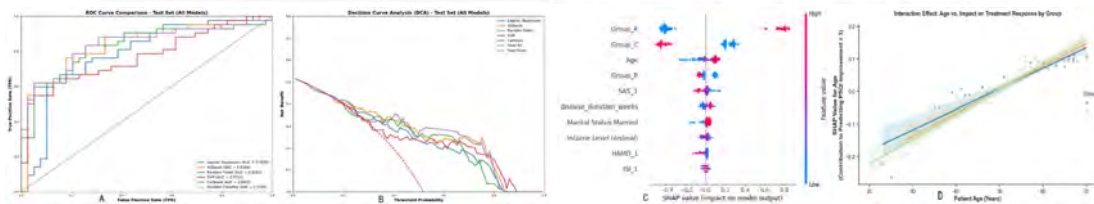


FIG 1 Model Performance evaluation (A. ROC Curve; B. DCA Curve; C. SHAP Value; D. SHAP Analysis of Age–Intervention Group Interaction)

**References:** 1. Yin X, Li W, Liang T, et al. Effect of Electroacupuncture on Insomnia in Patients With Depression: A Randomized Clinical Trial. JAMA Netw Open. 2022;5(7):e2220563. doi:10.1001/jamanetworkopen.2022.20563; Kim J, Lee SH, Kim TH. Improvement of sleep quality after treatment in patients with lumbar spinal stenosis: a prospective comparative study between conservative versus surgical treatment. Sci Rep. 2020;10(1):14135. doi:10.1038/s41598-020-71145-0

## Traditional Chinese Medicine Knowledge Translation Interventions for Community-Dwelling Older Adults: A Systematic Review

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### Introduction:

Traditional Chinese Medicine (TCM) interventions (e.g. Baduanjin, Tai Chi, TCM constitution management) can effectively promote healthy aging. However, the application of knowledge translation (KT) theories, models, and frameworks (TMFs) to TCM interventions in community settings remains unclear. This systematic review aims to identify and synthesize TCM-related KT interventions for community-dwelling older adults.

### Materials and Methods:

We searched PubMed, Web of Science, Embase, Cochrane and CNKI from 2013 to April 2026. Studies were included if they: (1) involved community-dwelling older adults (≥55 years); (2) evaluated TCM-related KT TMF, including integrated strategy; (3) reported health outcomes; (4) carried RCTs, quasi-experimental, qualitative, or mixed-methods studies. Data were narratively synthesized.

### Results:

Among 682 studies concerning KT TMF, 24 studies evaluated TCM strategy. Common interventions were TCM constitution management (45%), TCM health education (16%), integrated TCM health care management (16%), Baduanjin/Tai Chi (12%), and other TCM theory (11%), including the theory of Preventive Treatment of Disease. Interventions were primarily face-to-face and lasted 3-6 months. Significant improvements were reported in blood pressure, self-efficacy, self-management behaviors, sleep quality (PSQI), and quality of life (SF-36) ( $p < 0.05$ ).

### Conclusions:

TCM-based KT interventions show promise for improving health outcomes in older generations living in communities, but explicit use of KT frameworks is limited and fragmented. Future research is required to integrate established TMFs with TCM holistic principles to enhance replicability and international applicability.

## **Integrated Traditional Chinese and Western Medicine Data Management Platform for Alzheimer's Disease Based on Disease-Syndrome Combination**

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**Introduction:** To address the fragmentation and low utilization of Alzheimer's disease (AD) medical data, alongside complexities in Traditional Chinese Medicine (TCM) syndrome differentiation and heterogeneous integration standards between Chinese and Western medicine, this study develops an integrated "prevention-diagnosis-intervention" data management platform based on the fusion of diseases and syndromes.

**Materials and Methods:** Multi-source medical data were standardized and structured utilizing Hadoop distributed architecture and Optical Character Recognition (OCR) technology. Syndrome elements were extracted via a Large Language Model (LLM)-driven multi-task text embedding model (Instr-MT-CM), while an Agent-GNN three-stage decoupled learning framework was introduced to establish a "disease-symptom-syndrome" mapping pathway. Furthermore, Long Short-Term Memory (LSTM) networks and mixed-effects models were employed for personalized risk prediction and evaluation of intervention efficacy.

**Results:** The platform successfully integrated data from 306 patients across five Grade-A tertiary hospitals, encompassing 311 structured indicators. This resulted in a comprehensive AD data management system that facilitates multi-center integration, "disease-symptom-syndrome" diagnostic alignment, and dynamic risk assessment.

**Conclusions:** By resolving semantic ambiguities in TCM syndrome differentiation and the intricacies of mapping between Chinese and Western medicine, the platform provides robust support for clinical practice and research innovation in AD chronic disease management. The developed framework offers a scalable model potentially applicable to other chronic disease domains.

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## Digital Health Interventions for the Whole-Process Management of Alzheimer's Disease Continuum: A Scoping Review

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**Introduction:** To systematically map the application, technological modalities, and intervention effects of digital health technologies across the Alzheimer's disease (AD) continuum—from subjective cognitive decline (SCD) and mild cognitive impairment (MCI) to clinical dementia—to establish a robust evidence base for AD prevention and chronic disease management.

**Materials and Methods:** Guided by the PICOS framework, a systematic search was conducted across seven major databases (CNKI, Wanfang, VIP, SinoMed, PubMed, Web of Science, and Cochrane Library) from database inception to March 2026.

**Results:** A total of 234 studies were included (82 Chinese; 152 English). The included literature encompasses cognitively unimpaired adults (n=33, 14.1%), preclinical AD, (n=126, 53.8%), and clinical AD stages (n=90, 38.5%) , utilizing designs such as randomized controlled trials (n=165, 70.5%), non-randomized controlled study (n=28, 12.0%), observational studies (n=24, 10.3%), qualitative research (n=7, 3.0%) and mixed methods research (n=8, 3.4%). Primary intervention modalities included digital cognitive interventions (n=122, 52.14%), telemedicine (n=42, 17.9%), digital support platforms (n=41, 17.5%), mHealth applications (n=37, 15.8%), monitoring and feedback devices (n=13, 5.5%), AI-driven decision support (n=11, 4.7%), digital health combined with Traditional Chinese Medicine (TCM) interventions (n=10, 4.3%), and others (n=12, 5.1%).

**Conclusions:** Digital health technologies are extensively integrated into the management of the AD continuum, with digital cognitive interventions serving as the predominant modality. While telemedicine and mobile applications are increasingly established, AI-driven decision support remains an emerging frontier that represents the future trajectory of the field. This review clarifies the current technological landscape and clinical value of these tools, providing essential evidence for developing standardized, multi-stage protocols for AD prevention and long-term care.

**Acknowledgements:** This work was supported by the National Key R&D Program of China (Grant No. 2022YFC3501405).

## Enhancing Good Practices in TCM Education: An AI-Assisted Approach to Tongue Diagnosis Training

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### Introduction (includes the aim of the study):

TCM tongue inspection is a core diagnostic method, yet its interpretation is inherently subjective and highly dependent on clinical experience. This results in variability in diagnostic outcomes, particularly among junior practitioners. In current training environments, this inconsistency is difficult to address fully due to constraints such as large class sizes and limited opportunities for individualized feedback. These challenges highlight the need for approaches that can support more standardized teaching while preserving the interpretive nature of TCM diagnosis. In this context, this study explores the use of an AI-assisted tongue assessment system to improve consistency in training in a local setting.

### Materials and Methods:

A dataset of 500 tongue images was curated using a structured multi-expert annotation process involving licensed TCM practitioners. Independent assessments were followed by senior physician adjudication to reflect real-world interpretive variability while grounding labels in local clinical practice. 16 clinically meaningful tongue features were defined with regional specificity. An AI-assisted system was developed using a multi-feature approach that reflects the differing diagnostic importance of tongue features. To support scalable use, the system was implemented as a mobile application, enabling low-barrier access without reliance on specialised imaging hardware.

### Results:

When evaluated on a held-out dataset, the system achieved a mean ROC–AUC of 0.79 across 16 tongue features, demonstrating stable discrimination despite class imbalance. Compared with clinical benchmarks, the system showed higher agreement with senior expert consensus than one of two junior practitioners, suggesting its potential as a consistent teaching aid. In real-world deployment, the mobile-based system enabled accessible use in public settings. It demonstrated practical feasibility, interpretable outputs, and positive engagement among users, supporting both practitioner training and public understanding of tongue features in relation to health.

### Conclusions:

This study demonstrates the potential of AI-assisted tongue assessment as a practical tool for supporting good practices in TCM training. The system helps address variability in interpretation while supporting scalable learning in pre-clinical and public education. Looking ahead, there are significant opportunities to further strengthen the robustness and impact of this approach. Future work will focus on expanding the dataset to higher quality and more diverse cohorts in the Southeast Asian region, developing standardized benchmarking frameworks for evaluating TCM diagnostic consistency, and fostering interdisciplinary, intersectoral, and international collaborations. These efforts will support the continued refinement of the system and enable broader integration of AI-assisted TCM diagnostics into education, research, and clinical practice.

References: 1. 舌像 Dataset (2025) 舌像 Computer Vision Dataset. Available at: <https://universe.roboflow.com/37/-tt3dc> (Accessed: 19 January 2026).

### Acknowledgements:

*The authors would like to thank the TCM physicians at the Singapore College of Traditional Chinese Medicine for their valuable contributions to the expert annotation and adjudication of tongue images used in this study.*

## Selection and Application of Outcome Measures in Clinical Studies of Traditional Chinese Medicine for Chronic Heart Failure: Methodological Recommendations

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**Introduction:** Outcome selection determines the interpretability and comparability of clinical studies. Although TCM is widely used for chronic heart failure (CHF), outcome selection in TCM clinical research remains insufficiently standardized. This study aimed to conduct a comparative analysis of outcome selection in TCM and conventional medicine research, and to propose methodological recommendations.

**Methods:** CNKI, Wanfang Data, VIP, SinoMed, Embase, Web of Science, PubMed and the Cochrane Library were searched for RCTs and real-world studies of TCM or conventional medicine for CHF published between March 2023 and March 2026. The study selection followed PRISMA guidelines, and the research was classified into TCM and conventional medicine groups. Basic study characteristics and outcome-related information were extracted. Outcomes were classified into predefined domains, analysed by combinations and application characteristics, and compared between TCM and conventional medicine, RCTs and real-world studies. Methodological problems in outcome selection and application were identified using a previously developed risk identification checklist.

**Results:** Seventy-eight studies were included: 36 TCM studies (29 RCTs, 7 RWS) and 42 conventional medicine studies (28 RCTs, 14 RWS). Outcomes were diverse but fragmented, with frequent reliance on surrogate indicators. In TCM RCTs, outcomes mainly assessed cardiac function/structure (36%) and biochemical/molecular markers (28%), whereas TCM syndromes/symptoms (6%), quality of life (5%), and clinical/prognostic endpoints (4%) were rarely assessed. Conventional medicine RCTs emphasized clinical/prognostic endpoints (41%), with biochemical markers (21%) and cardiac function/structure (18%) mainly as secondary outcomes, and greater attention to quality of life (15%). TCM RWS showed similar reliance on cardiac function (35%) and biomarkers (24%) but narrower domain coverage; 43% assessed only one outcome domain. Conventional medicine RWS adopted more multidimensional outcome assessments, with greater emphasis on composite outcomes (23%) and quality of life (33%). Only 8% of TCM studies distinguished primary and secondary outcomes, 6% reported standardized measurement protocols, 22% included follow-up assessments, and 6% comprehensively reported safety outcomes. Drug quality information was inadequate in 95% of TCM studies.

**Conclusions:** Outcome selection in TCM studies for CHF has important methodological limitations, including the failure to distinguish between primary and secondary outcomes, unclear outcome hierarchy, insufficient TCM-specific outcomes, limited clinical endpoints, follow-up, safety reporting, standardized measurement, and drug quality assessment. A standardized outcome framework is needed to improve the rigor and comparability of future TCM studies.

References: None.

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## Analysis of Baseline Index Application and Methodological Recommendations in Clinical Studies of Traditional Chinese Medicine for Chronic Coronary Syndrome

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**Introduction:** Since the 2019 ESC guidelines, "Chronic Coronary Syndromes" (CCS) has replaced stable angina. However, the rationale for selecting baseline characteristics in CCS research remains unclear, especially in Traditional Chinese Medicine (TCM) studies lacking standardized guidance. This study aims to analyze the application of baseline indicators in high-quality studies to provide methodological recommendations.

**Methods:** We searched PubMed, Embase, Cochrane Library, WOS, CNKI, Wanfang, SinoMed, and VIP for RCTs and cohort studies on CCS published within three years. Studies were screened based on adherence to international reporting guidelines (CONSORT, STROBE). Descriptive statistics were used to evaluate preferences in baseline indicator selection. Consistency among trial registry information, protocols, and published reports was assessed. The source of baseline indicators and the reporting quality of prognostic factors were analyzed.

**Results:** A total of 47 articles were included: 15 RCTs and 8 cohort studies on Western medicine, and 18 RCTs and 6 cohort studies on TCM. Although few studies specified the source of indicators, 86.7% (13/15) of Western RCTs and 75.0% (6/8) of cohorts aligned with guideline recommendations, systematically incorporating etiology and comorbidities. In contrast, only 38.9% (7/18) of TCM RCTs and 16.7% (1/6) of cohorts reported baseline distributions of core TCM syndromes (e.g., Blood Stasis, Phlegm-Dampness), indicating a lack of prognostic data. Furthermore, 44.4% (8/18) of TCM RCTs showed inconsistencies between registry protocols and published reports. Retrospective cohorts often had unexplained missing baseline data. Western studies preferred objective markers (e.g., hs-CRP, imaging), whereas TCM studies relied heavily on subjective symptom scores.

**Conclusions:** TCM research should improve baseline indicator selection through several key recommendations. First, indicator selection must follow internationally recognized guidelines or empirical evidence rather than relying on subjective choice. Second, differentiated standards are needed; RCTs should prioritize prognostic factors affecting internal validity, while cohort studies should emphasize exposure characterization, with reasons for missing baseline data clearly reported. Third, core syndrome elements should be mandatory baseline variables in TCM research. Finally, researchers must ensure strict consistency among registry information, protocols, and publications to enhance transparency and the overall reliability of the evidence.

References: None.

*Acknowledgements: This study was supported by the Beijing Natural Science Foundation-Haidian Original Innovation Joint Fund under the project "Construction of a Bias Identification and Control Platform for Real-World Dose-Response Relationship Studies of Traditional Chinese Medicine Compound Formulas" (Grant No. L242058).*

## Melanogenesis Suppression with Natural Stilbenoid Glycosides: Functional Importance of Piceid Structure

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### Main text:

**Introduction:** Skin hyperpigmentation caused by UV-induced tyrosinase activation and melanin overproduction remains a challenge in cosmetic and dermatological applications. Piceid, also known as polydatin, is a major stilbenoid glycoside derived from *Polygonum cuspidatum*, a Traditional Chinese Medicine (TCM) known as Huzhang. Although the influence of the conjugated C=C bond on phenolic activity is chemically foreseeable, its contribution to tyrosinase inhibition and anti-melanogenic activity in glycosylated stilbenoids remains insufficiently defined. This study aimed to clarify the role of the vinyl moiety in piceid and provide mechanistic evidence for the development of TCM-derived anti-hyperpigmentation agents.

**Materials and Methods:** Here, we investigate how the vinyl moiety in the TCM-derived stilbenoid glycoside piceid (resveratrol-3-O- $\beta$ -glucoside) affects tyrosinase inhibition. We reduced the vinyl moiety to yield dihydropiceid by catalytic hydrogenation and systematically assessed both compounds for anti-melanogenic effects.

**Results:** As results, piceid exhibited superior monophenolase inhibition over dihydropiceid in enzyme kinetics, while both compounds showed comparable diphenolase inhibition. Cellular assays revealed that piceid reduced melanin production by 59.2% at 25  $\mu$ M in  $\alpha$ -MSH-stimulated B16F10 melanoma cells, whereas dihydropiceid showed weaker activity (<25% reduction). MolgpKa analysis indicated that the vinyl moiety lowered the 4'-OH pKa (9.7 vs. 9.9), while UV-vis spectroscopy validated that the vinyl moiety enhanced the copper chelation capacity of piceid ( $\Delta$ OD: 0.459) over dihydropiceid ( $\Delta$ OD: 0.233). Molecular docking revealed that 4'-OH in piceid closely coordinated the tyrosinase binuclear copper center, whereas molecular dynamics simulation validated that hydrogen bonding supports the binding of both compounds to tyrosinase.

**Conclusions:** Collectively, this study establishes the vinyl moiety in dietary stilbenoids as a critical pharmacophore for tyrosinase inhibition and thereby provides a molecular basis for developing TCM-derived natural anti-hyperpigmentation functional foods or cosmeceuticals.

**Acknowledgements:** The authors thank Professor Hongjie Zhang for technical support. This work was supported by the Seed Funding (2202100899 and 2409100350) for Basic Research and the Seed Funding (2201101504) for Basic Research for new staff from the University of Hong Kong.

## Therapeutic Potential of a Ginger-Derived Novel 6-Shogaol Analog as a Promising Antidepressant Candidate

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### Main text:

**Introduction:** Microglia-mediated neuroinflammation hallmarks the pathophysiology of depression. We recently identified 6-shogaol (6Sh) from the ginger root (*Rhizoma Zingiberis Recens*) as a potent anti-neuroinflammatory and antidepressant drug candidate. This study aimed to resolve the bioavailability and cost-effectiveness of 6Sh for the development of novel anti-neuroinflammatory drugs against depression.

**Materials and Methods:** 6SA, containing an amide moiety, was synthesized by coupling vanillylamine with trans-2-octenoic acid. Its pharmacological effects were evaluated in a corticosterone-induced depression model using male C57BL/6J mice, with six mice per group. Since only male mice were used, sex was not analyzed as an independent variable. Behavioral assessments included the tail suspension test (TST), forced swimming test (FST), and open field test (OFT). Single-cell RNA sequencing (scRNA-seq) was performed to profile brain transcriptomic responses to 6SA. Statistical analyses were performed using one-way ANOVA followed by Tukey–Kramer or Dunnett's post-hoc test in GraphPad Prism 9.5.0, with  $p < 0.05$  considered statistically significant.

**Results:** Compared with 6Sh, 6SA showed improved water solubility, oral bioavailability, cytotoxicity profile, cost-effectiveness, and pharmacokinetic properties. In corticosterone-treated mice, 6SA significantly alleviated depressive-like behaviors in TST, FST, and OFT, and these effects were reversed by TRPV1 antagonist, indicating TRPV1-dependent antidepressant-like activity. 6SA also attenuated neuroinflammation and showed a favorable safety profile. Mechanistically, scRNA-seq identified prefrontal cortex microglia as a key responsive cell population and highlighted Glul and lncRNA Gm57375 as important differentially expressed genes. Further in vivo and in vitro experiments showed that 6SA regulated Glul and Gm57375 expression in a TRPV1-dependent manner.

**Conclusions:** Thus, 6SA may be a promising drug candidate with the capacity to tune neuroinflammation via targeting the TRPV1–Glul–Gm57375 axis in microglia against depression.

**Acknowledgements:** This project was supported by General Research Fund (GRF) grants (17108725) from the Research Grants Council of Hong Kong.

## The effect of auricular electro-acupuncture on changes in brain functional connectivity in young nicotine-dependent individuals using fMRI

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**Introduction:** Acupuncture has been used for smoking cessation for nearly 50 years. This study aimed to preliminarily evaluate the efficacy of auricular electro-acupuncture (AEA) for smoking cessation and to investigate its underlying mechanisms using functional magnetic resonance imaging (fMRI).

**Methods:** Twenty young nicotine-dependent subjects were recruited as the treatment group, and 15 gender- and age-matched healthy non-smokers served as the control group. The treatment group received 4 weeks of AEA intervention, while the control group received no intervention. Four fMRI scans were performed on the treatment group: at 24 hours post-cessation (cigarette craving period), at 20 minutes post-smoking (immediate gratification craving period), and at 1 and 4 weeks of AEA treatment. The control group underwent a single fMRI scan. Data preprocessing and statistical analysis were conducted using DPABI 6.0 and SPSS 26 software.

**Results:** Compared with the control group, the nicotine-dependent group showed significantly decreased functional connectivity (FC) between the paraventricular thalamic nucleus (PVT) and nucleus accumbens (NAc) during the cigarette craving period (24 hours post-cessation) ( $t = -2.409$ ,  $P < 0.05$ ). During the immediate gratification craving period (20 minutes post-smoking), relative to the 24-hour cessation time point, FC between the PVT and NAc further decreased ( $t = -2.284$ ,  $P < 0.05$ ), while FC between the thalamus and insula increased ( $t = 2.855$ ,  $P < 0.05$ ). After 1 and 4 weeks of AEA treatment, PVT-NAc FC significantly increased ( $t = 2.354$  and  $2.866$ , respectively, both  $P < 0.05$ ), whereas thalamus-insula FC significantly decreased after 1 week of AEA ( $t = -2.866$ ,  $P < 0.05$ ). Additionally, both smoking cravings and nicotine dependence were significantly relieved compared with baseline ( $P < 0.05$ ).

**Conclusions:** AEA may reduce smoking craving and nicotine dependence, possibly by modulating PVT-NAc and thalamus-insula pathways.

**Keywords:** Acupuncture, smoking cessation, nicotine dependence, young smokers, fMRI.

## Auricular electro-acupuncture for smoking cessation in young smokers with nicotine dependence: a randomized controlled trial

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**Introduction:** Acupuncture has been used for smoking cessation for nearly 50 years. To evaluate the efficacy and safety of auricular electro-acupuncture (AEA) for quitting smoking.

**Methods:** Sixty young smokers with nicotine dependence were randomly allocated to either auricular electro-acupuncture (AEA) group or waiting list control group. The treatment group (n=30) received AEA in Lung (CO<sub>14</sub>) and Stomach (CO<sub>4</sub>) acupoints for 4 weeks. The primary outcomes were abstinence rate and smoking cravings. The secondary outcomes were nicotine dependence, withdrawal symptoms, daily cigarette consumption, and depression. The data were collected at four time points: baseline, 2 weeks and 4 weeks of treatment, and 4 weeks of follow-up. The chi-square test and repeated ANOVA were used for statistical analysis with SPSS 26.0. Trial registration (ITMCTR2024000144).

**Results:** At both 4 weeks of treatment (53.33% vs. 20.00%, P=0.007) and 4 weeks of follow-up (43.33% vs. 16.67%, P=0.024), the exhaled carbon monoxide (CO)-validated abstinence rate was significantly higher in the AEA group. Compared with the control group, smoking cravings in the AEA group were significantly reduced at each time point: by 9.47 (95% CI [-15.63, -3.30], P=0.003) after 2 weeks; by 10.53 (95% CI [-16.65, -4.42], P=0.001) after 4 weeks of treatment. Significant reductions were also observed in the AEA group for nicotine dependence, exhaled CO levels, and daily cigarette consumption at 2 weeks, 4 weeks of treatment, and follow-up (all P<0.05), while withdrawal symptoms and depression showed no significant changes between groups throughout the study period (both P>0.05).

### Conclusions:

This pilot randomized controlled trial provides preliminary evidence that AEA may be associated with improvements in abstinence rate, smoking cravings, nicotine dependence, and daily cigarette consumption. Given the exploratory nature of this study, larger sample sizes and longer-term follow-up data are warranted to confirm these findings.

**Keywords:** Acupuncture, smoking cessation, nicotine dependence, young smokers, randomized controlled trial.

## Developing an Integrated Process Evaluation Framework for Acupuncture as a Complex Intervention: A Methodological Synthesis

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### Abstract

**Background:** Acupuncture is a typical complex intervention, but a unified theoretical framework for its process evaluation—covering implementation, mechanisms, and context—is lacking <sup>[1]</sup>. Existing single framework approaches cannot fully capture its multidimensional characteristics.

**Objective:** To synthesize six major process evaluation frameworks and develop an integrated model for acupuncture process evaluation.

**Methods:** A systematic search was conducted in PubMed, Embase, Web of Science, Cochrane Library, Joanna Briggs Institute (JBI), China National Knowledge Infrastructure (CNKI), Wanfang, VIP, and China Biology Medicine (CBM) databases from inception to April 2026. Six major frameworks relevant to process evaluation were synthesized: Medical Research Council (MRC) (2021) <sup>[2]</sup>, Reach-Effectiveness-Adoption-Implementation-Maintenance (RE-AIM) <sup>[3]</sup>, Realist Evaluation (Context-Mechanism-Outcome, CMO) <sup>[4]</sup>, Consolidated Framework for Implementation Research (CFIR) <sup>[5,6]</sup>, Logic Model <sup>[7]</sup>, and Implementation Fidelity Theory <sup>[8]</sup>. Comparative analysis was performed to assess their strengths, limitations, and applicability to acupuncture.

**Results:** The six frameworks demonstrated complementary strengths. MRC provides overarching methodological guidance; RE-AIM focuses on implementation and sustainability; CMO explains outcome heterogeneity through context–mechanism interactions; CFIR identifies contextual determinants and implementation barriers; Logic Models clarify causal pathways; and Fidelity Theory evaluates intervention delivery and adherence. No single framework adequately addresses all dimensions of acupuncture process evaluation. Based on their complementary functions, we developed an integrated model in which MRC serves as the overarching structure, CFIR and CMO examine contextual and mechanistic influences, Fidelity Theory evaluates intervention quality, RE-AIM assesses implementation outcomes, and Logic Models map causal pathways.

**Conclusion:** The proposed integrated model provides a theoretically grounded and operationally feasible framework for developing acupuncture-specific process evaluation indicators and assessment tools. It may support more comprehensive evaluation of implementation, mechanisms, context, and clinical translation in acupuncture research and practice.

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## PRECIS-2-Based Correlation of Acupuncture RCT Design Coordination and LDH Treatment Outcomes

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**Introduction:** Acupuncture randomized controlled trials (RCTs) for lumbar disc herniation (LDH) often suffer from inconsistent design and reporting. The Pragmatic Explanatory Continuum Indicator Summary 2 (PRECIS-2) tool can evaluate trial design features, but its value for assessing design consistency and effect size remains unclear. This study aimed to explore the association between PRECIS-2 based parameter consistency and effect size in acupuncture RCTs for LDH, to improve trial methodological quality and guideline development.

**Methods:** We included acupuncture RCTs for LDH published 2015–2025 from 8 databases. Cochrane RoB 2.0 was used for bias risk assessment. PRECIS-2 was scored across 9 domains. Intraclass correlation coefficient (ICC) tested reliability, coefficient of variation (CV) assessed parameter consistency, and correlation/regression analyses examined relationships with effect size (Cohen's d).

**Results:** 18 RCTs were included. ICC  $\geq 0.75$  confirmed scoring reliability. Most trials showed poor parameter consistency (CV  $\geq 10\%$ ). Multicenter design, sham control, detailed manipulation, and acupuncturist qualification were associated with lower pragmatic scores ( $P < 0.05$ ). Parameter consistency was negatively associated with effect size ( $r = -0.28$ ,  $P = 0.041$ ).

**Conclusions:** Better parameter consistency is associated with larger effect size in LDH acupuncture RCTs. PRECIS-2 can help optimize RCT design. We recommend improving parameter consistency and key item reporting, and updating CONSORT guidelines to better support high-quality acupuncture trials.

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**Puerarin Attenuates Renal Fibrosis by Suppressing Clic4 in Macrophages**

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**Main text:**

**Introduction:** Renal fibrosis is the final common pathway of chronic kidney disease progression, in which macrophage-mediated extracellular matrix (ECM) remodeling plays a critical role. Puerarin, a bioactive isoflavone derived from the traditional Chinese medicine *Pueraria lobata*, exhibits anti-fibrotic activity, although its molecular mechanism remains unclear. This study combined single-cell transcriptomic analysis with experimental validation to investigate the role of macrophage-associated Clic4 in renal fibrosis and its modulation by puerarin.

**Methods:** Renal fibrosis was induced in mice by intraperitoneal injection of 300 mg/kg folic acid (FA). From day 7 post-induction, puerarin (100 mg/kg) was given orally for 3 weeks. Renal function was assessed by serum creatinine (Scr) and blood urea nitrogen (BUN). Kidney injury and collagen deposition were evaluated by HE and Masson staining. Expression levels of fibrosis and ECM-related proteins were detected by Western blot. Mechanistically, using single-cell RNA sequencing data from the GEO database, we performed differential expression, functional enrichment, and pseudotime trajectory analyses to define the role of Clic4 in macrophages during fibrosis progression. Finally, functional validation was performed using siRNA-mediated Clic4 knockdown in an in vitro macrophage activation model.

**Results:** Puerarin treatment significantly reduced Scr and BUN levels, alleviated kidney injury and collagen deposition, and downregulated the expression of TGF- $\beta$ 1, Collagen I,  $\alpha$ -SMA, and Fibronectin. Single-cell RNA sequencing identified Clic4 as a macrophage-associated fibrosis regulator that was markedly upregulated during fibrosis progression and enriched in ECM remodeling pathways. In vitro experiments further demonstrated that Clic4 knockdown attenuated ECM remodeling and decreased fibrosis-related protein expression.

**Conclusion:** Puerarin alleviates FA-induced renal fibrosis and its anti-fibrotic effects may be partially mediated through suppression of macrophage-associated Clic4 and ECM remodeling. These findings identify Clic4 as a potential therapeutic target and support puerarin as a promising natural medicine candidate for renal fibrosis treatment.

**Acknowledgements:** This work was supported by the National Natural Science Foundation of China (No. 82173995) and the National Key R&D Program of China (No.2018YFC1706800).

### TCM Characterization and Hypoglycemic Effects of *Annona muricata* Leaf: Evidence for Heat-Clearing and Dampness-Drying Activity

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#### Main text :

*Annona muricata* leaf, a newly introduced medicinal resource, has been traditionally used for diabetes management in South America, but its traditional Chinese medicine (TCM) properties and pharmacological basis remain unclear. This study characterized its TCM cold-heat nature and evaluated its hypoglycemic efficacy.

For TCM characterization, gastric heat and gastric cold syndrome rat models were established, with *Coptidis Rhizoma* and *Zingiberis Rhizoma* as cold and warm controls. In gastric heat syndrome rats, *Annona muricata* extract (AME) significantly reduced serum cAMP (30.46 to 20.71 nmol/L), normalized the cAMP/cGMP ratio (2.48 to 1.65), decreased T4 (64.08 to 45.72 pmol/L), TSH (25.54 to 22.31 mIU/L), and ACTH (135.40 to 124.60 ng/L), with improved gastric pathology. No clear benefit was observed in gastric cold syndrome, supporting its slightly cold TCM nature. For hypoglycemic evaluation, a high-fat diet/streptozotocin-induced type 2 diabetes mouse model was established. After 4 weeks, high-dose AME reduced fasting blood glucose from 15.18 to 9.97 mmol/L (34.3%), comparable to metformin (10.17 mmol/L). Glucose tolerance improved significantly, with AUC reduced from 55.28 to 33.92 (38.6%), outperforming metformin (48.02). AME also reduced HbA1c, improved insulin resistance (HOMA-IR 4.76 to 2.68), decreased ALT (72.53 to 52.24) and AST (94.79 to 69.41), and alleviated hepatic and pancreatic injury. Serum metabolomics identified 146 reversed differential metabolites associated with glucose/lipid metabolism and insulin signaling.

These findings suggest that *Annona muricata* leaf possesses a slightly cold TCM nature with heat-clearing and dampness-drying properties, while exerting significant hypoglycemic effects through metabolic regulation, improved insulin sensitivity, and tissue protection.

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**A Multicenter Cost-Effectiveness Analysis of Qianliexin Capsule for Chronic Prostatitis with Benign Prostatic Hyperplasia**

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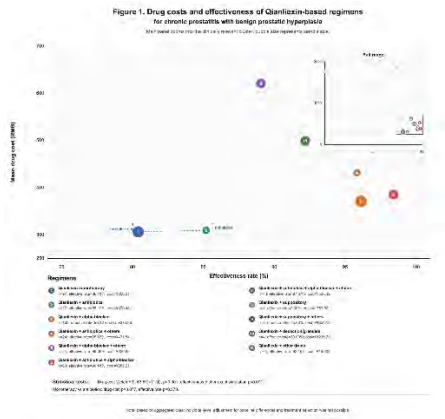
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**Introduction:** Chronic prostatitis co-existing with benign prostatic hyperplasia (CP-BPH) presents a significant clinical challenge, impacting patients' quality of life. Qianliexin Capsule, a traditional Chinese medicine, addresses symptoms common to both conditions. This study aimed to assess the real-world cost-effectiveness of different therapeutic strategies involving Qianliexin Capsule for patients diagnosed with CP-BPH, providing economic insights for clinical practice.

**Methods:** Data were drawn from a prospective observational study conducted across 28 Chinese medical centers. A total of 498 patients with chronic prostatitis co-existing with benign prostatic hyperplasia were included. Effectiveness was defined as a  $\geq 30\%$  reduction in the National Institutes of Health Chronic Prostatitis Symptom Index total score after 4 weeks. Drug costs were compared across Qianliexin-based regimens using summary-data Welch tests. Effective and ineffective cases were compared using chi-square tests, with simulated Fisher's exact tests used because several groups had small sample sizes.

**Results:** Among the 11 regimens, Qianliexin plus antibiotics had the lowest cost-effectiveness ratio (¥3.63 per 1% effectiveness), followed by Qianliexin monotherapy (¥3.81 per 1%). Drug costs differed significantly across regimens (Welch test:  $F(9, 53.51)=11.92, p<0.001$ ); the suppository-only combination group was excluded from this test because it included only one patient. Overall effectiveness also differed across regimens (Pearson  $\chi^2=44.12, df=10, p<0.001$ ; simulated Fisher's exact test,  $p<0.001$ ). Compared with monotherapy, Qianliexin plus antibiotics showed similar drug costs (¥309.48 $\pm$ 82.67 vs. ¥306.31 $\pm$ 126.37,  $p=0.877$ ) and a non-significantly higher effective rate (85.19% vs. 80.41%,  $p=0.573$ ).

**Conclusion:** Qianliexin plus antibiotics showed the most favorable cost-effectiveness ratio among the evaluated regimens, but its cost and effectiveness were not statistically different from monotherapy. These findings should be interpreted cautiously because only aggregated data were available, preventing individual-level adjustment for baseline differences, center effects, and treatment-selection bias.



## A Multicenter Cost-Effectiveness Analysis of Qianliexin Capsule in the Treatment of Chronic Prostatitis

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### Main text:

**Introduction:** Qianliexin Capsule, a traditional Chinese medicine, is widely used for chronic prostatitis (CP) symptoms<sup>1</sup>. However, its economic value in real-world clinical practice remains unclear. This study aimed to evaluate the cost-effectiveness of Qianliexin Capsule, used alone or in combination therapies, for treating CP.

**Materials and Methods:** This multicenter, prospective real-world study analyzed 2,373 CP patients. The primary effectiveness outcome was the total effective rate after 4 weeks of treatment, defined as a >30% reduction in the National Institutes of Health Chronic Prostatitis Symptom Index (NIH-CPSI) score<sup>2</sup>. From a payer's perspective, total outpatient costs described overall financial burden, while direct medication expenses were utilized to calculate cost-effectiveness ratios (CER) and incremental cost-effectiveness ratios (ICER) across 11 regimens.

**Results:** Qianliexin monotherapy (Regimen 1, n=721) had the lowest expenditure (mean cost: ¥548.86) and the best CER (¥3.42/%) with an 87.38% effective rate. Using Regimen 1 as the primary comparator, Qianliexin plus antibiotics (Regimen 2, n=417) was the optimal clinical baseline, yielding a significantly higher effective rate of 94.72% ( $P < 0.0001$ ) and a mean cost of ¥619.93, resulting in an economical ICER of ¥8.24/%. Adding  $\alpha$ -blockers to regimen 2 (Regimen 6, n=312) yielded a slightly higher effective rate of 94.87% but with no statistical superiority compared to Regimen 2 ( $P = 1.00$ ). In terms of medication investment, this regimen led to an unfavorable ICER of ¥27.80/%. Regimens with suppositories (mean cost: ¥1806.35) or decoctions (mean cost: ¥942.54) were strictly dominated, escalating costs while compromising outcomes.

**Conclusions:** In a real-world setting, Qianliexin combined with antibiotics represents the most optimal therapeutic baseline for CP, achieving significantly higher efficacy at a reasonable cost. Although limited by potential selection biases and unmeasured confounding factors inherent in real-world observations, these findings provide robust evidence to support optimized medical decision-making for CP management.

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Cost-effectiveness of Qianliexin Capsule (Traditional Chinese Medicine) for chronic prostatitis (CP)

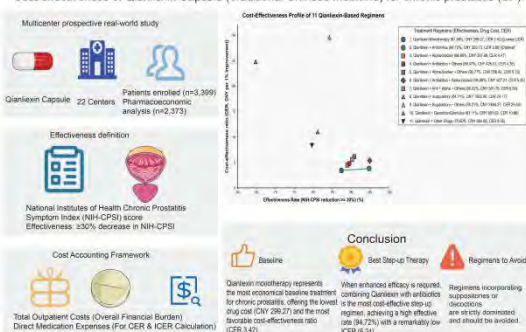


Figure1 Economic Evaluation of Qianliexin-Based Regimens

## Evidence Mapping Analysis of Clinical Application Research on American Ginseng and Its Preparations

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### Main text

**Introduction:** The number of studies on American ginseng (*Panax quinquefolium*) and its preparations has been increasing, and its healthcare and therapeutic advantages are gradually becoming prominent. However, a comprehensive analysis of clinical research evidence is still lacking at this stage. This study will use the evidence mapping method to clarify the evidence distribution, areas of application, literature quality, and research gaps.

**Materials and Methods:** Eight database including CNKI, WanFang, VIP, Sinomed, PubMed, EMBASE, Cochrane Library, and Web of Science were searched from inception to September 29, 2025.

Randomized controlled trials (RCTs) using American ginseng alone or its preparations as the main intervention were included. Methodological quality was assessed using RoB 2.0. Key information (population, formulation, outcomes) was extracted and coded. Bubble charts visualized evidence distribution.

**Results:** Seventy-eight RCTs were included. Main preparations: capsules, tea substitute, water decoction, lozenges, oral liquid. Populations: predominantly cardiovascular diseases (46 studies, 58.97%), especially coronary heart disease (34 studies); others included fatigue, respiratory, and neurological disorders. Outcomes focused on blood biochemical/metabolic indicators (32 studies), clinical response rate (32 studies), and safety (27 studies). Quality assessment: 67 studies (85.9%) and 63 studies (80.8%) had high risk of bias in randomization and outcome measurement, respectively; 55 (70.5%) and 73 (93.6%) had some concerns regarding deviations from intended interventions and selective reporting; 73 (93.6%) had low risk for missing outcome data.

**Conclusions:** Existing evidence concentrates on American ginseng capsules for cardiovascular diseases, while evidence for traditional decoction pieces and its traditional "supplement Qi and nourish Yin" benefits (e.g., anti-fatigue, respiratory recovery) is insufficient. Although potential benefits on cardiovascular surrogate outcomes (biochemical/metabolic) are suggested, evidence strength is limited by lack of endpoint data and methodological flaws. Future research should validate traditional decoction pieces and develop standardized RCTs in metabolism and immunity.

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## Identification and Control Strategies for Immortal Time Bias in Traditional Chinese Medicine Cohort Studies

CHEN Yuhan<sup>a</sup>, LI Runtong<sup>b</sup>, YUAN Ziyi<sup>c</sup>, WEI Shuwen<sup>c</sup>, LIU Kai<sup>a</sup>, WEN Yaqian<sup>a</sup>, JIA Shulin<sup>d</sup>, LIU Jianping<sup>a,e</sup>, LIU Zhaolan<sup>a\*</sup>

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### Main text:

#### Introduction

Immortal time bias, common in cohort studies (especially TCM research), can lead to overestimated treatment effects and false - positive conclusions. It results from the interval between enrollment and intervention initiation, with outcome events misclassified or wrongly excluded. This study aims to identify types and causes of this bias in TCM cohort studies and propose control strategies.

#### Materials and Methods

We systematically reviewed TCM cohort studies and methodological literature to analyze immortal time bias mechanisms. A simulation was performed based on a multicenter randomized controlled trial (RCT) involving 1,500 acute myocardial infarction patients with 90-day follow-up. The simulation compared conventional cohort analysis (misclassification design, N=1 to 5 days) versus time-dependent Cox regression and landmark analysis to quantify bias impact on hazard ratios (HRs) and statistical significance.

#### Results

Under misclassification design, the 90-day mortality HR decreased from >1 (non-significant) to <1 (significant,  $P<0.05$ ) as the immortal time window extended from 1 to 5 days, reversing the conclusion. Under erroneous exclusion design, HR became significant at N=8 days. Time-dependent Cox regression produced HRs >1 (non-significant) under all N<6, whereas conventional Cox regression yielded false-positive HRs <1. Landmark analysis maintained stable HRs with minimal fluctuation (<0.02 in Odds Rates).

#### Conclusions

Immortal time bias can reverse study conclusions by creating spurious treatment benefits. A multidimensional strategy—incorporating study design (target trial emulation, nested case-control), statistical analysis (time-dependent Cox regression, landmark analysis, sensitivity analysis), and hardware technologies (rapid diagnostics, wearable devices)—is essential to minimize immortal time bias and improve validity of TCM cohort studies.

**A Critical Appraisal of Delphi Processes in Traditional Chinese Medicine Guidelines and Expert Consensus: Applying the Delphi Critical Appraisal Tool (DCAT)**

Chen Yuhan<sup>a</sup>, Zhang Chiyu<sup>b</sup>, Jiang Yuqian<sup>c</sup>, Shi Yichen<sup>c</sup>, Liu Zhaolan<sup>a\*</sup>

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Correspondence: LIU Zhaolan and [lzl1019@163.com](mailto:lzl1019@163.com)

**Introduction**

Despite its central role in developing Traditional Chinese Medicine (TCM) guidelines, the Delphi technique is vulnerable to methodological flaws that undermine recommendation credibility, prompting this critical appraisal using the Delphi Critical Appraisal Tool (DCAT).

**Methods**

PubMed, Web of Science, Cochrane Library, Embase, CNKI, WanFang, VIP, and Sinomed were searched from inception to 23 February 2026. TCM clinical guidelines and expert consensus statements that utilized a Delphi process were included. The methodological quality and risk of bias in the Delphi procedures were then evaluated against the DCAT.

**Results**

Among the 79 TCM Delphi studies, a median of 2 consensus rounds (range 1–6) were conducted with a median panel size of 25 experts (range 8–113). Analysis using the DCAT framework revealed profound methodological disparities (Fig.1). Only 16 studies (20.25%) fully reported controlled feedback, while seven conducted only a single round and two lacked relevant information. Critical deficiencies were evident in multidisciplinary panel composition (met by only 5.06%), pilot testing of the survey instrument (32.91%), and comprehensive ethical disclosure (10.26%). Overall Delphi quality was rated as high in just 6 studies, moderate in 10, low in 52, and very low in 11. In contrast, most studies demonstrated adequate anonymity, statistical aggregation, and overall reporting of the Delphi procedure.

**Conclusions**

With over three-quarters of TCM Delphi studies rated low or very low quality due to absent controlled feedback, limited interdisciplinary input, insufficient pilot testing, and inadequate ethical safeguards. Urgent methodological reforms are needed to ensure the credibility of future consensus-based recommendations.

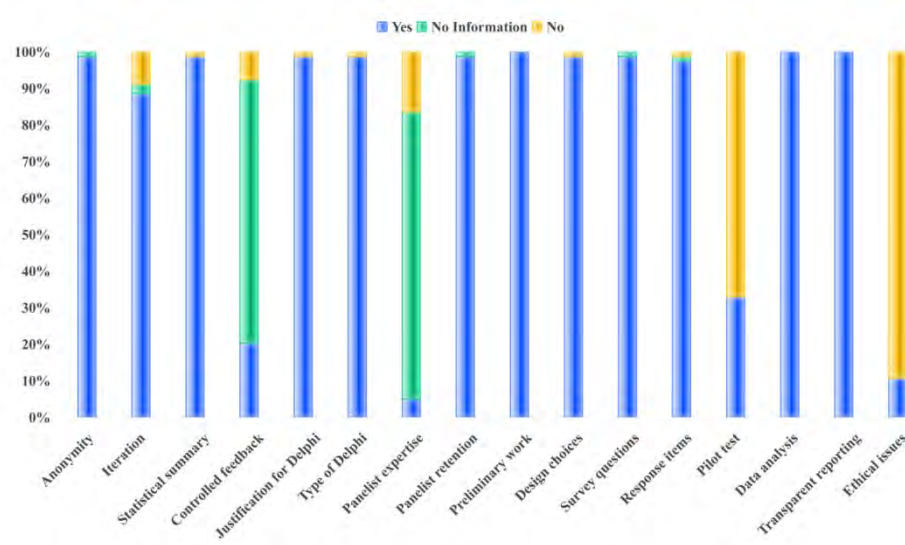


Fig.1 Results of DCAT Evaluation

## Artificial intelligence and multi-omics integration in traditional Chinese medicine for diabetic retinopathy: A bibliometric analysis of methodological evolution (2015-2026)

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\*Siping Peng, 771953972@qq.com

**Introduction:** Diabetic retinopathy (DR) is a leading cause of blindness worldwide. Traditional Chinese Medicine (TCM) has shown promise in DR management, while research methodologies are rapidly evolving. This bibliometric study aims to map the knowledge landscape and identify methodological trends in TCM-DR research over the past decade.

**Materials and Methods:** Publications related to TCM and DR from 2015 to 2026 were retrieved from the PubMed database. The search strategy combined terms for TCM, DR, and computational methodologies (artificial intelligence, machine learning, deep learning, network pharmacology, bioinformatics). Bibliometric and visualization analyses were performed using VOSviewer and Biblioshiny, including keyword co-occurrence analysis and thematic evolution mapping.

**Results:** A total of 68 publications were included. Annual publication output showed a steady increase after 2020, reflecting growing interest in computational approaches. China dominated the field, accounting for approximately 65% of publications. Keyword co-occurrence analysis revealed four research clusters: (1) network pharmacology and molecular docking; (2) oxidative stress and inflammatory pathways; (3) multi-omics integration; and (4) emerging machine learning approaches. Thematic evolution analysis indicated a clear methodological shift: traditional network pharmacology dominated pre-2020, while AI and multi-omics strategies emerged as the frontier after 2023.

**Conclusions:** TCM-DR research is undergoing a paradigm shift from conventional network pharmacology toward AI-driven multi-omics approaches. This transition represents a novel frontier for global collaboration in integrative medicine.

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# Study on the pharmacological material basis and mechanism of action of hypoglycemic and brain-protecting formula in the treatment of cognitive impairment in diabetes

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## Main text:

**Introduction:** To evaluate the therapeutic effect of Jiangtang Jiannao Formula (JTJN) on diabetic cognitive impairment (DCI), identify its substance basis and absorbed prototypes, and explore mechanisms from insulin resistance and metabolic regulation perspectives.

**Materials and Methods:** db/db mice were treated with JTJN (high, medium, low doses) or metformin for 4 weeks; db/m mice served as control. Fasting glucose, HbA1c, insulin, HOMA-IR, Morris water maze, and histopathology of pancreas and hippocampus were assessed. IRS1/PI3K/Akt pathway and synaptic proteins were measured. In vitro, palmitic acid-induced insulin-resistant SH-SY5Y cells were treated with JTJN-containing serum; cell viability, glucose consumption, and pathway were examined. UPLC-Q-TOF-MS identified chemical constituents and serum prototypes. Serum metabolomics with LC-MS and ELISA verified arachidonic acid metabolites.

**Results:** JTJN reduced fasting glucose, HbA1c, insulin, and HOMA-IR ( $P < 0.01$ ), improved cognitive performance ( $P < 0.05$ ), attenuated pancreatic and hippocampal injury, downregulated p-IRS1 (Ser307) and upregulated p-PI3K and p-Akt ( $P < 0.05$ ), and increased SYP/PSD95 ( $P < 0.01$ ). In vitro, 10% JTJN serum reversed PA-induced decreases in viability and glucose consumption and normalized p-IRS1, p-PI3K, p-Akt ( $P < 0.05$ ). 43 compounds were identified, with 27 prototypes absorbed, mainly flavonoids. Metabolomics revealed 49 differential metabolites enriched in arachidonic acid metabolism. JTJN decreased brain 15-HPETE/15-HETE and increased LXA4/LXB4 ( $P < 0.05$ ).

**Conclusions:** JTJN effectively alleviates DCI by improving insulin resistance, attenuating hippocampal neuronal damage and enhancing synaptic plasticity. Flavonoids like calycosin, formononetin and orientin are key absorbed components. The mechanisms involve regulating IRS1/PI3K/Akt pathway and modulating arachidonic acid metabolism to reduce neuroinflammation. This provides experimental support for JTJN in DCI treatment.

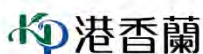
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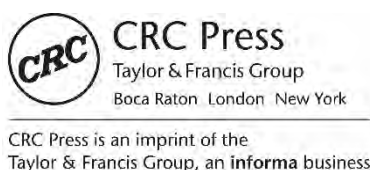
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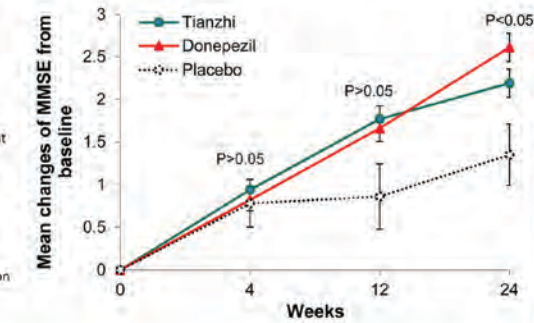
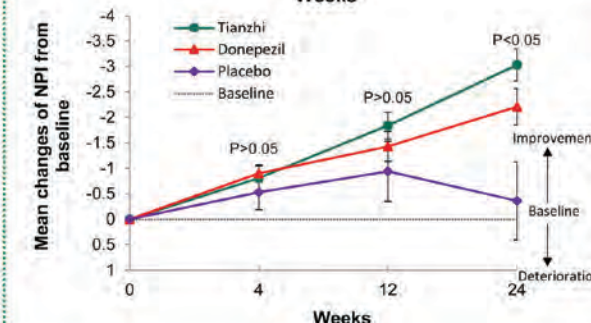
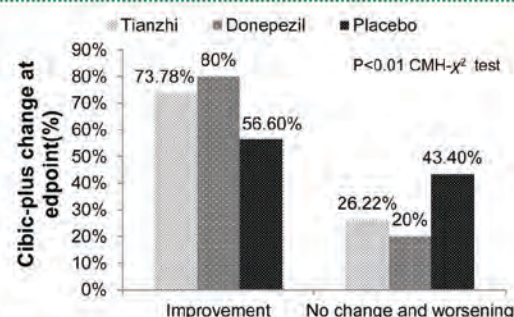
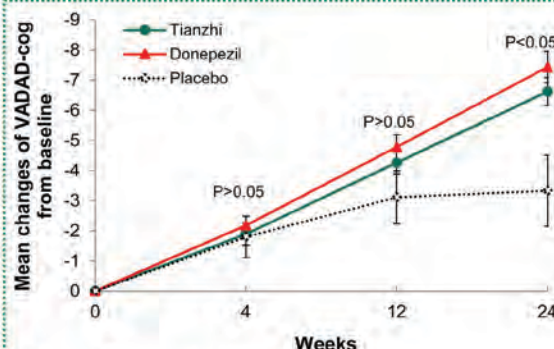
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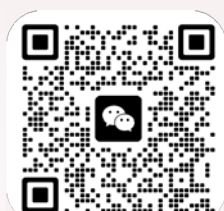
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跟诊资深医师，二十年经验传承

第三个月：  
中医诊所实践与运营培训



Established since 1999

### 公司简介

马光保健集团创立于1990年台湾澎湖县马公市，故取“马公之光”为名。新加坡马光成立于1999年，天津马光成立于2010年。马光保健集团于体制上、院所数量、医疗效益、皆为华人地区具有相当规模的中医医疗体系之一，并在2011年于台湾以“马光保健控股股份有限公司”挂牌上市。

马光保健集团提供中医、西医、医学美容、健康管理、医药、保健品服务。

### 集团愿景

成为亚洲地区领先医疗企业，广受业界同仁的认可，成为传统中医药领域的领导者。我们不断的努力，促进传统中医药行业的现代化发展，尽量大可能引进现代科技，以注入传统中医药产业提供更佳的服务。我们相信悠久历史的中医药与现代科技突破性的结合，将会带给我们坚实的基础，以推动我们迈向新的巅峰。



### 马光文化

