The August 2020 Newsletter of The GP-TCM Research Association

Contents of the GP-TCM RA Newsletter August 2020

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The August 2020 Newsletter of
The GP-TCM Research Association

Highlights on Academic Achievements of GP-TCM RA Members

Potential targets for treatment of Coronavirus Disease 2019 (COVID-19): A review of Qing-Fei-Pai-Du-Tang and its major herbs. *The American Journal of Chinese Medicine*. 2020. COVID-19 has been declared a pandemic by WHO on March 11, 2020. No specific treatment and vaccine with documented safety and efficacy for the disease have been established. Hence it is of utmost importance to identify more therapeutics such as Chinese medicine formulae to meet the urgent need. Qing Fei Pai Du Tang (QFPDT), a Chinese medicine formula consisting of 21 herbs from five classical formulae has been reported to be efficacious on COVID-19 in 10 provinces in mainland China. QFPDT could prevent the progression from mild cases and shorten the average duration of symptoms and hospital stay. It has been recommended in the 6th and 7th versions of Clinical Practice Guideline on COVID-19 in China. The basic scientific studies, supported by network pharmacology, on the possible therapeutic targets of QFPDT and its constituent herbs including *Ephedra sinica*, *Bupleurum chinense*, *Pogostemon cablin*, *Cinnamomum cassia*, *Scutellaria baicalensis* were reviewed. The anti-oxidation, immuno-modulation and antiviral mechanisms through different pathways were collated. Two clusters of actions identified were cytokine storm prevention and angiotensin converting enzyme 2 (ACE2) receptor binding regulation. The multi-target mechanisms of QFPDT for treating viral infection in general and COVID-19 in particular were validated. While large scale clinical studies on QFPDT are being conducted in China, one should use real world data for exploration of integrative treatment with inclusion of pharmacokinetic, pharmacodynamic and herb-drug interaction studies. Details: https://doi.org/10.1142/S0192415X20500512

(Corresponding author **Vivian Wong is the chairperson of GP-TCM RA Interest Group of Good Clinical Practice Guidelines**)

Selected Information on COVID-19

1. **Evolutionary origins of the SARS-CoV-2 sarbecovirus lineage responsible for the COVID-19 pandemic.** *Nature Microbiology,* 2020. There are outstanding evolutionary questions on the recent emergence of human coronavirus SARS-CoV-2 including the role of reservoir species, the role of recombination and its time of divergence from animal viruses. We find that the sarbecoviruses—the viral subgenus containing SARS-CoV and SARS-CoV-2—undergo frequent recombination and exhibit spatially structured genetic diversity on a regional scale in China. SARS-CoV-2 itself is not a recombinant of any sarbecoviruses detected to date, and its receptor-binding motif, important for specificity to human ACE2

receptors, appears to be an ancestral trait shared with bat viruses and not one acquired recently via recombination. To employ phylogenetic dating methods, recombinant regions of a 68-genome sarbecovirus alignment were removed with three independent methods. Bayesian evolutionary rate and divergence date estimates were shown to be consistent for these three approaches and for two different prior specifications of evolutionary rates based on HCoV-OC43 and MERS-CoV. Divergence dates between SARS-CoV-2 and the bat sarbecovirus reservoir were estimated as 1948 (95% highest posterior density (HPD): 1879–1999), 1969 (95% HPD: 1930–2000) and 1982 (95% HPD: 1948–2009), indicating that the lineage giving rise to SARS-CoV-2 has been circulating unnoticed in bats for decades. Details: https://www.nature.com/articles/s41564-020-0771-4

2. **How does SARS-CoV-2 cause COVID-19?** *Science*. 2020. Viruses enter cells and initiate infection by binding to their cognate cell surface receptors. The expression and distribution of viral entry receptors therefore regulates their tropism, determining the tissues that are infected and thus disease pathogenesis. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the third human coronavirus known to co-opt the peptidase angiotensin-converting enzyme 2 (ACE2) for cell entry. The interaction between SARS-CoV-2 and ACE2 is critical to determining both tissue tropism and progression from early SARS-CoV-2 infection to severe coronavirus disease 2019 (COVID-19). Understanding the cellular basis of SARS-CoV-2 infection could reveal treatments that prevent the development of severe disease, and thus reduce mortality. Although there are huge efforts to understand and treat severe COVID-19, it would be preferable to prevent the development and progression of clinical disease. How might this be achieved? Vaccine candidates are mainly aimed at eliciting neutralizing antibodies, to prevent the binding of spike to ACE2. The same rationale underpins the use of passive immunization, with convalescent plasma or monoclonal antibodies, or the administration of recombinant, soluble ACE2. Alternatively, antiviral drugs may be used to target essential viral enzymes such as the RNA-dependent RNA polymerase. Experience from other infections, such as influenza, emphasizes that treatment with antiviral agents is most effective when administered as early as possible in infection. Therefore, it is essential to identify individuals with early SARS-CoV-2 infection who are at high risk of progression to severe disease, and test antiviral therapies to prevent viral entry and replication. It should not be too difficult to identify these “at risk” patients who are in danger of progressing to severe disease through contact tracing and testing, even prior to symptom onset. Conversely, delaying candidate antiviral treatment until patients are hospitalized with severe lung injury may be too late, and combination with immune modulation is likely to be required. Details: https://science.sciencemag.org/content/369/6503/510

3. **The recovery platform**. *The New England Journal of Medicine*. 2020. In a platform trial, patients with a single disease are randomly assigned to a group of different therapies on the basis of a decision algorithm to determine whether any therapy has benefit. The principle underpinning such trials allows for the execution of efficient, less expensive designs by enrolling populations quickly and collecting minimal data to answer more than one question. These are sensible principles and, when successful, result in trials that provide clear answers to several questions in a timely and efficient way. In using this approach, investigators designed the RECOVERY trial involving hospitalized patients with coronavirus disease 2019 (Covid-19) in the United Kingdom to assess the efficacy of different treatments using a single end point: mortality within 28 days after randomization; preliminary results are now reported in the Journal. A total of 11,303 patients were randomly assigned to one of four treatment groups (dexamethasone, hydroxychloroquine, lopinavir–ritonavir, or azithromycin) or to usual care. Patients could undergo further randomization to receive either no additional treatment or convalescent plasma, and those with progressive Covid-19 could be randomly assigned to receive no additional treatment or tocilizumab. What lessons do we take from the outcomes of the 6425 patients who were assigned to receive dexamethasone or usual care in the RECOVERY trial? First, broad populations of patients with Covid-19, along with multiple hospitals and trial coordinators, can be rapidly deployed in a trial. No doubt the swift enrollment in the RECOVERY trial was due to the nature of the pandemic, but the rapidity of trial design, logistics, coordination, and execution are the work of the investigators. Second, minimal data collection with the use of a single online follow-up form as well as routine health care data and national registry data can provide meaningful outcomes. A well-established public health care system probably played a large role in the data availability. Third, dexamethasone showed promise for reducing short-term mortality relative to usual care. Fourth, the benefits of dexamethasone may be restricted to the sickest of Covid-19 patients, those who had been placed on mechanical ventilation at the time of randomization. Are the findings from the RECOVERY trial clinically directive? In the total sample, the age-adjusted rate ratio of mortality for dexamethasone relative to usual care was 0.83 (95% confidence interval [CI], 0.75 to 0.93; P<0.001), with an absolute mortality benefit for dexamethasone of 2.8 percentage points. However, the adjusted rate ratio of mortality benefit among patients who were receiving mechanical ventilation was 0.64 (95% CI, 0.51 to 0.81), an absolute mortality reduction of 12.1 percentage points. Although there were no standardized criteria regarding who received mechanical ventilation, this finding is probably robust and may be helpful in guiding clinical care. The platform design for RECOVERY has some limitations. Decisions that were made on removing or adding therapies are difficult in the best of circumstances and even more so in the context of the Covid-19 pandemic. Prespecification of rules for making these decisions is fundamental in platform trials, but this was not the case in RECOVERY. The

possibility of chance should not be discounted, since the more analyses that are undertaken, the more likely an apparent benefit is due to chance. A data monitoring committee viewed unblinded results from five interim analyses overall and in several important subgroups. The platform used the same control group as a comparator for each of the four remaining drugs and convalescent plasma that were randomly assigned. If by chance patients in the control group had particularly poor outcomes, several treatments may have appeared to be better than they would if each treatment had independent controls. The investigators elected not to randomize patients within hospitals owing to a concern about blinding. Randomization with the use of permuted blocks within hospitals would have offered protection to maintain the blind. Hospital practice tendencies, such as the choice of patients for mechanical ventilation, may have influenced the effect of dexamethasone and the other randomized therapies. Fidelity to the scientific method is a major safeguard and a key determinant of the validity of the results of an investigation. In the era of Covid-19, the need for answers has generated enormous pressures across the research enterprise, from designing and conducting studies to reporting and vetting the results. Kudos to the RECOVERY investigators and trial participants for the rapid enrollment in the trial during a pandemic that has transformed lives worldwide. The results represent an important step in the fight against one aspect of the disease and undoubtedly will have an effect on practice. However, the methodologic caveats raised here are important to other investigators who are developing and revising treatment protocols in hospitals and to the broader research community struggling to produce reliable results in an efficient way, even in the face of a pandemic. Details: https://www.nejm.org/doi/full/10.1056/NEJMe2025674#article_references

4. **Clinical trial analysis of 2019-nCoV therapy registered in China.** *Journal of Medical Virology*. 2020. So far, there is a lack of effective drugs for the new coronavirus pneumonia. With more and more patients diagnosed, China has carried out more than 100 clinical studies of new coronavirus infection, including antiviral drugs, antimalarial drugs, glucocorticoids, plasma therapy, virus vaccine, and other Western drugs, while Chinese medicine research accounted for half of the studies. Most of the trials were initiated by investigators and the study period would last for 1 to 11 months. The primary endpoints included symptom improvement and virus nucleic acid turning negative, but the optimal endpoint has not been determined. Although the final results of studies will take a long time to complete, the interim research data may provide some help for the current urgent demand for drug treatment. Compared with that of during SARS period in 2003, China has the stronger capability to carry out clinical trials of new drugs in emergency period. Details: https://doi.org/10.1002/jmv.25733

5. **Chinese herbal experience for the 2019 novel coronavirus**. *Critical Care*. 2020. The novel coronavirus (COVID-19) has spread rapidly and become a severe global threat, with a reported acute respiratory distress syndrome (ARDS) incidence up to 40%. According to a large survey, more than 14% patients were transferred to the intensive care unit care (ICU), and among those who received invasive mechanical ventilation, the mortality was as high as 88.1%. Here we presented the data from a single ICU of Tianyou hospital in Wuhan, and according our experience, the overall mortality decreased in patients receiving Chinese herb therapy. From January 11, 2020, to March 17, 2020, a total of 37 patients confirmed with COVID-19 infection were admitted to ICU, of whom seven patients were transferred to other hospitals and were excluded from this analysis. The general treatment regimens included glucocorticoids, antibiotics, hydroxychloroquine, and arbidol; however, the overall mortality rate remains as high as 78.1%. Chinese herb was applied in these patients since Feb 17. Thus, a total of nine patients received Chinese herbal therapy during the whole disease course (admitted to ICU after Feb 17), five patients received Chinese herbal therapy for a period of the whole disease course, and the rest fourteen patients had not received Chinese herbal therapy. Despite with limited sample size, the mortality rate decreased significantly after applying Chinese herbal to these patients (4/9 vs. 5/5 vs. 14/16, $p = 0.033$), especially in patients who received Chinese herbal therapy during the whole disease course. Further, these patients were also divided into two groups according to whether they had used Chinese herbal; a decreased trend of mortality was also observed (9/14 vs. 14/16, $p = 0.134$). We understand our finding is unstable due to the limited sample size and potential cofounders. However, in China, Chinese herbal therapy has been fully applied to patients with COVID-19 infection in the middle stage of this epidemic and the effect is positive. The following content is the main Chinese herbal formulas for these nine patients: Formula 1: Xinren, Shigao, Gualuo, Dahuang, Mahuang, Tinglizi, Taoren, Caoguo, Binglang, Cangshu, Jinyinhua, Lianqiao, Hongjingtian. Formula 2: Fuzhi, Shengjiang, Huangqi, Renshen, Xinren, Shigao, Gualuo, Dahuang, Mahuang, Tinglizi, Taoren, Caoguo, Binglang, Cangshu, Gancao. Details: https://ccforum.biomedcentral.com/articles/10.1186/s13054-020-03170-4

6. **Absorbed plant MIR2911 in honeysuckle decoction inhibits SARS-CoV-2 replication and accelerates the negative conversion of infected patients**. *Cell Discovery*. 2020. The Coronavirus disease 2019 (COVID-19) pandemic is one of the most serious global public health crises to date. As of July 12, 2020, more than 12.6 million cases of COVID-19 infection with 0.56 million deaths were confirmed worldwide. Since there are no effective therapeutics to treat severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2, the causative virus of COVID-19) infection so far, the pandemic is rapidly spreading worldwide. It is urgent to develop effective therapies, not only to treat infected patients but also to control the

pandemic. Our previous studies have demonstrated that a plant microRNA, MIR2911, which is enriched in honeysuckle decoction (HD), directly targets influenza A viruses (IAV), including H1N1, H5N1, and H7N9 subtypes by binding to their mRNA and blocking protein translation. Oral administration of HD can prevent IAV infection and reduce H5N1-induced mouse death. Subsequent studies have shown that MIR2911 also directly inhibits the replication of various viruses in addition to IAVs. Upon dietary uptake, these microRNAs self-assemble into exosomes and are then secreted into the circulation and delivered into target tissues or specific cells, including the liver, lung, spleen, pancreas, and T cells. Given the unique GC-enriched nucleotide composition of MIR2911 (GGCCGGGGGACGGACUGGGA) and after we analyzed the genome sequence of SARS-CoV-2, it is most likely that the virus genome contains MIR2911-binding sites and that MIR2911 can inhibit SARS-CoV-2 replication directly. In the present study, we assessed the inhibitory effect of absorbed MIR2911 in HD on SARS-CoV-2 replication and conducted a clinical study to investigate the efficacy of HD in COVID-19 patients. To assess the antiviral effect of MIR2911 in HD on COVID-19 patients, we conducted a clinical study. Seventy-five moderate type COVID-19 patients who received routine antiviral therapy (RT) at Nanjing Second Hospital from January 2020 to March 2020 were enrolled in this study. Patients were divided into two groups based on additional treatment with MIR2911 in HD (MIR2911+) or traditional Chinese medicine (TCM) mixture (MIR2911–) in addition to RT. The primary endpoint was the negative conversion rate on the 7th day from the first treatment. There were 6 and 69 patients in the MIR2911+ and MIR2911– groups, respectively. The negative conversion rate on the 7th day in the MIR2911+ group was 83.3%, which was dramatically improved compared with that of patients treated with MIR2911– TCM (26.1%, P = 0.004). The time taken to become SARS-CoV-2 PCR-negative (TTN) also favored patients treated with HD-MIR2911 (median 4.0 vs. 12.0 days, HR 0.28, 95% CI 0.12–0.67, P = 0.005). The median TTN of male patients in MIR2911+ (1 case) and MIR2911– (38 cases) are 5.0 days and 11.0 days (HR 0.003, 95% CI 0.000018–0.52, P = 0.027), respectively. The median TTN of female patients in MIR2911+ (5 cases) and MIR2911– (31 cases) groups are 3.0 days and 12.0 days (HR 0.15, 95% CI 0.031–0.68, P = 0.014), respectively. HD has been used to treat viral infections for a thousand years in China. Previous studies have demonstrated that MIR2911 (0.06–0.18 pmol/day) in 1–3 ml HD significantly inhibits influenza virus replication in 20 g mouse. In addition to the Pharmacopoeia of the People's Republic of China, we chose 30 g dried honeysuckle (MIR 2911 level: 10.5 pmol) per day for use. Our results demonstrate that 30 g dried honeysuckle is safe for use and has sufficient antiviral function. On the other hand, the data that MIR2911 (~60 fM) in exosomes significantly inhibits virus replication not only confirms the extra-high antiviral activity of MIR2911 (compared with that of remdesivir: 3.7 μM and Chloroquine: 10 μM) but also provides a novel strategy that

using serum exosomes collected from healthy donor offers the most similar condition in vivo to assess the efficacy of potential drugs in vitro. In summary, our results suggest that absorbed plant MIR2911 in HD inhibits SARS-CoV-2 replication and accelerates the negative conversion of infected patients. HD treatment might greatly help cure infected patients and stop the COVID-19 pandemic. Details: https://www.nature.com/articles/s41421-020-00197-3

Recommended Reading

1. **Untapped resources for medical research.** *Science*. 2020. A therapeutic solution to the coronavirus disease 2019 (COVID-19) pandemic is urgently needed, but new drug discovery and development are lengthy processes. Pharmaceuticals derived from plants and fungi remain important in our armory against numerous diseases, yet much of plant and fungal biodiversity remains unexplored for drug discovery. Of about 350,000 known plant species, 7% have medicinal uses, and the wider potential of the world's flora to yield new medicines has been discussed by conservation biologists for decades. We urgently need a comprehensive scientific study of biodiversity to inspire, accelerate, and innovate medicinal discovery. Acquiring usable plant and fungal material is resource-consuming, but a partial solution lies in specimens already housed in herbaria, botanic gardens, and fungal biological resource centers. Herbaria host about 380 million specimens from all described plant species, and botanic gardens maintain about one-third of all known land plant species. Fungal collections currently host about 860,000 strains worldwide. These collections are invaluable resources representing unparalleled chemical diversity. Evolutionary relationships inferred from DNA could be used to guide selection of species with medicinal potential. Just a few milligrams from specimens enable comprehensive chemical profiling, uncovering new chemical entities that share chemical or physical characteristics with drug molecules, potentially with novel modes of action. Artificial intelligence and emerging technologies could reveal compounds with mechanistic effects relevant to diseases threatening humanity. Furthermore, collections are increasingly used to generate genomic data, which could be used to identify members of gene families known to be involved in the synthesis of useful compounds. Investing in a new era of large-scale exploration of therapeutic candidates from nature could help humanity prepare for future health challenges. Scientists, governments, and other stakeholders must establish functional and equitable agreements to ensure that this work complies with the Nagoya Protocol and associated access and benefit sharing legislation and reflects the value and origins of specimens collected during the colonial era. It is also critical that benefits are shared with the nations and Indigenous peoples from where these resources derive. Details: https://science.sciencemag.org/content/369/6505/781

2. **Complementary therapies in Parkinson disease: A review of acupuncture, Tai Chi, Qi Gong, yoga, and cannabis.** *Neurotherapeutics.* 2020. Parkinson disease (PD) is a progressive neurodegenerative condition characterized by bradykinesia, rigidity, resting tremor, and postural instability. Non-motor symptoms, including pain, fatigue, insomnia, anxiety, and depression to name a few, are increasingly recognized and often just as disabling at motor symptoms. The mainstay of treatment is dopamine replacement; however, the beneficial effects tend to wane over time with disease progression, and patients often experience motor fluctuations and medication side effects. The lack of a disease-modifying intervention and the shortcomings of traditional symptomatic medications have led many patients to pursue complementary therapies to alleviate motor and non-motor symptoms associated with PD. The term complementary implies that the therapy is used along with conventional medicine and may include supplements, manipulative treatments (chiropractic, massage), exercise-based programs, and mind–body practices. As these practices become more widespread in Western medicine, there is a growing interest in evaluating their effects on a number of medical conditions, PD included. In this review, we provide an update on clinical trials that have evaluated the effectiveness of complementary treatments for patients with PD, specifically focusing on acupuncture, Tai Chi, Qi Gong, yoga, and cannabis. Details: https://link.springer.com/article/10.1007/s13311-020-00900-y

3. **Somatotopic organization and intensity dependence in driving distinct NPY-expressing sympathetic pathways by electroacupuncture.** *Neuron.* 2020. The neuroanatomical basis behind acupuncture practice is still poorly understood. Here, we used intersectional genetic strategy to ablate NPY+ noradrenergic neurons and/or adrenal chromaffin cells. Using endotoxin-induced systemic inflammation as a model, we found that electroacupuncture stimulation (ES) drives sympathetic pathways in somatotopy- and intensity-dependent manners. Low-intensity ES at hindlimb regions drives the vagal-adrenal axis, producing anti-inflammatory effects that depend on NPY+ adrenal chromaffin cells. High-intensity ES at the abdomen activates NPY+ splenic noradrenergic neurons via the spinal-sympathetic axis; these neurons engage incoherent feedforward regulatory loops via activation of distinct adrenergic receptors (ARs), and their ES-evoked activation produces either anti- or pro-inflammatory effects due to disease-state-dependent changes in AR profiles. The revelation of somatotopic organization and intensity dependency in driving distinct autonomic pathways could form a road map for optimizing stimulation parameters to improve both efficacy and safety in using acupuncture as a therapeutic modality. Details: https://www.sciencedirect.com/science/article/pii/S0896627320305328

4. **The ARRIVE guidelines 2.0: Updated guidelines for reporting animal research.** *PLOS Biology.* 2020. Reproducible science requires transparent reporting. The ARRIVE guidelines (Animal Research: Reporting of In Vivo Experiments) were originally developed in 2010 to improve the reporting of animal research. They consist of a checklist of information to include in publications describing in vivo experiments to enable others to scrutinise the work adequately, evaluate its methodological rigour, and reproduce the methods and results. Despite considerable levels of endorsement by funders and journals over the years, adherence to the guidelines has been inconsistent,

and the anticipated improvements in the quality of reporting in animal research publications have not been achieved. Here, we introduce ARRIVE 2.0. The guidelines have been updated and information reorganised to facilitate their use in practice. We used a Delphi exercise to prioritise and divide the items of the guidelines into 2 sets, the "ARRIVE Essential 10," which constitutes the minimum requirement, and the "Recommended Set," which describes the research context. This division facilitates improved reporting of animal research by supporting a stepwise approach to implementation. This helps journal editors and reviewers verify that the most important items are being reported in manuscripts. We have also developed the accompanying Explanation and Elaboration (E&E) document, which serves (1) to explain the rationale behind each item in the guidelines, (2) to clarify key concepts, and (3) to provide illustrative examples. We aim, through these changes, to help ensure that researchers, reviewers, and journal editors are better equipped to improve the rigour and transparency of the scientific process and thus reproducibility. Details: https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000410

Special Features

1. **International Conference of the Modernization of Chinese Medicine & Health Products (ICMCM 2020) Goes Virtual: Chinese Medicines for Infectious Diseases – Product Development & Commercialization.**

In view of the latest epidemic situation, the Hong Kong Special Administrative Region Government has recently tightened various disease prevention and control measures and extended entry restrictions for incoming visitors until further notice. These restrictions mean that overseas speakers and participants will have great difficulty joining the International Conference of the Modernization of Chinese Medicine & Health Products (ICMCM) scheduled to be held on 13-14 August 2020.

Please visit https://event.hktdc.com/fair/icmcm-en/s/12658-General_Information/International-Conference-of-the-Modernization-of-Chinese-Medicine-and-Health-Products/ImportantNotice.html and https://event.hktdc.com/fair/icmcm-en/s/7300-For_Visitor/International-Conference-of-the-Modernization-of-Chinese-Medicine-and-Health-Products/eNews.html for more information.

2. **Message to Editors of GP-TCM RA Newsletter: Research Opportunities in TCD Ireland** (From: Dr Helen Sheridan, F.R.S.C, F.T.C.D. Associate Professor of Natural Product Chemistry & Academic Director of NatPro. School of Pharmacy and

Pharmaceutical Sciences. Trinity College Dublin. Dublin 2, Ireland. Tel: 353 -1-8962828)

We have an exciting funding opportunity in Ireland, linked to the Eu Marie Curie Post Doc awards. This is linked to a 'Career fit' programme, and the awardees work with University PI's/industry/Enterprise Ireland and an Enterprise Ireland Centre. I have recently established NatPro, a Natural Product Research Centre at Trinity College Dublin. I would be grateful if you could circulate the following to the GP-TCM network, and encourage wider circulation. We have amongst others, one Marie Curie career fit fellow in place and one CSC-Ireland PhD student. The natPro Centre was founded as a direct result of a €6M grant to carry out research on 'Nature's Pharmacy'. Project one concentrates on bioactive plants from bogland species. We are also working on marine based species, and are aligned with several industries.

This flyer also covers a workshop to be held in Europe as part of the Climate-Kic funding programme. We are collaborators on a European Grant looking at Biomass and the circular economy. One of the partners in this group is Carlsberg. A lot of the techniques being used in the centre are those we have developed around natural products and TCM. There are lots of European programmes that would be suited to international post doctors and I would be very grateful if you could circulate these opportunities.

For more information, please visit

http://healthsciences.tcd.ie/pls/pharmacy/staff.detail?uname=hsheridn

http://www.pharmacy.tcd.ie/research/natural_products.php

Invitation from the Official Journal of GP-TCM RA

1. WJTCM Call for papers: Pharmacology and Toxicology of Herbal Medicine.

The special issue on *Pharmacology and Toxicology of Herbal Medicine* focuses on the biological effects and mechanisms of herbal medicine. It has a broad scope, covering basic research to clinical studies regarding pharmacology and toxicology.

We cordially invite researchers and experts to contribute original research articles as well as reviews on pharmacology and toxicology of herbal medicine.

Potential topics include but are not limited to:

a. Bioactive principles from herbal medicine,
b. Biological, pharmacological activities and mechanisms of herbal medicine,
c. Genomics, proteomics, metabolomics, pharmacoinformatics studies on herbal medicine,
d. Toxicology of herbal medicine.

Authors can follow the author instructions and submit their manuscripts via the Manuscript System at: https://mc03.manuscriptcentral.com/wjtcm

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January 30, 2021

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April 30, 2021

2. WJTCM Call for papers: Systems Biology and Metabolomics of Traditional Chinese Medicine

Special Issue on

Systems Biology and Metabolomics of Traditional Chinese Medicine

CALL FOR PAPERS

Guest Editor
Prof. Xi-jun Wang

Guest Editor
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Prof. Toshiaki Makino

Traditional Chinese Medicines (TCMs) are evidenced to confer therapeutic actions by largely interacting with dysregulated multi-layers molecules that underlie diseases, which can be defined as the holistic characteristics of TCMs to treat different diseases.

The fact is that systems biology, and metabolomics have the robust-capacity to better understand the holistic characteristics by globally deciphering the complex interactions between TCMs and diseases associated with dysregulated molecules. Currently, they are widely used to address many key questions in TCMs involving chemical characterization, therapeutic efficacy, toxicology and metabolic features, etc.

We invite the scholars in the niches to contribute research articles, reviews, and perspectives to this special issue.

Potential topics include but are not limited to:
a. metabolomics of TCMs
b. multiple omics of TCMs
c. network pharmacology of TCMs
d. systems biology of TCMs

Authors can submit their manuscripts via the Manuscript System at https://mc03.manuscriptcentral.com/wjtcm

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May. 30, 2021

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October 30, 2021

3. WJTCM Call for papers: Processing of Chinese Medicinal Materials (Zhongyao Paozhi)

Special Issue on
Processing of Chinese Medicinal Materials (Zhongyao Paozhi)

CALL FOR PAPERS

Guest Editor
Prof. Tu-lin Lu

Guest Editor
Prof. Zhi-ling Yu

Guest Editor
Prof. Yuan-shiun Chang

In traditional Chinese medicine (TCM) practice, one of the distinctive features is the use of processed Chinese medicinal materials (Yinpian). It is Zhongyao Paozhi, a unique pharmaceutical technique, that transforms raw Chinese medical materials into Yinpian. Zhongyao Paozhi plays a pivotal role in guaranteeing the clinical efficacy and safety of TCM therapies.

We invite researchers home and abroad to contribute original research articles as well as reviews on the topic of Zhongyao Paozhi.

Potential topics include but are not limited to:

a. Scientific basis of Zhongyao Paozhi.
b. Intelligentization of Zhongyao Paozhi.
c. Techniques of Zhongyao Paozhi.
d. Quality standards of adjuvant materials for Zhongyao Paozhi.
e. Quality markers of Yinpian.
f. Quality standards of Yinpian.

Authors can follow the author instructions and submit their manuscripts via the Manuscript System at: https://mc03.manuscriptcentral.com/wjtcm.

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Deadline for submission
October 30, 2020

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December 25, 2020

4. WJTCM Call for papers: Biosynthesis-Driven Quality Design of Materia Medica

World Journal of Traditional Chinese Medicine (WJTCM)

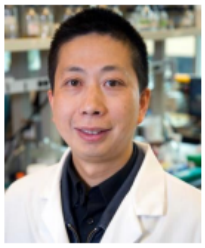
The official journal of WFCMS and GP-TCM

Special Issue on

Biosynthesis-Driven Quality Design of Materia Medica

CALL FOR PAPERS

Guest Editor
Prof. Wan-Sheng Chen



Guest Editor
Prof. Ji-Xun Zhan

Guest Editor
Prof. Shu-Juan Zhao

Biosynthesis and metabolic engineering together with molecular breeding provides an attractive approach to enhance the yield of effective components in medicinal plants and thus to improve or design the quality of Chinese Materia Medica, which is a great motivation for the sustainable development of the entire supply chain of traditional Chinese medicines.

We invite researchers home and abroad to contribute original research articles as well as reviews on the topic of biosynthesis-driven quality design of Chinese Materia Medica and other herbs.

Potential topics include but not limited to:

a. Elucidation and mapping of biosynthetic pathways of the effective components.

b. Metabolic engineering or regulation for the improvement of herbal quality.

c. Progress in understanding the biosynthesis of effective components.

d. Application of molecular breeding technology to medicinal plants.

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Authors can submit their manuscripts via the Manuscript System at https://mc03.manuscriptcentral.com/wjtcm.

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5. WJTCM Call for papers: Qi Deficiency and Blood Stasis

World Journal of Traditional Chinese Medicine (WJTCM)

The official journal of WFCMS and GP-TCM

Special Issue on

Qi Deficiency and Blood Stasis

CALL FOR PAPERS

Guest Editor
Prof. Jing-Yan Han

Guest Editor
Prof. Jian-Xun Liu

Guest Editor
Prof. Jing-Yuan Mao

Guest Editor
Prof. Ming-Jun Zhu

Qi deficiency and blood stasis is a common feature in coronary heart disease, cardiac hypertrophy, myocardial ischemia-reperfusion injury and heart failure, for which there is a lack of effective prevention and treatment methods in modern medicine. Some traditional Chinese medicine (TCM) has shown beneficial effect on heart diseases in clinic, and increasing clinical and basic studies have been carried out devoting to the mechanism behand these medicines, particularly focusing on their potential of tonifying Qi and promoting blood circulation, as well as the scientific essence of the Qi deficiency and Blood Stasis. In order to exchange the latest research results in this field, we have organized special issues of Qi deficiency and blood stasis, tonifying Qi and promoting blood circulation. Experts from this field are welcome to contribute original research articles or reviews.

Potential topics include but not limit to:

a. Reviews on Qi deficiency and blood stasis, tonifying Qi and promoting blood circulation

b. Clinical studies regarding Qi deficiency and blood stasis and tonifying Qi and promoting blood circulation

c. Basic studies regarding Qi deficiency and Blood Stasis and tonifying Qi and promoting blood circulation

d. Pharmacological mechanisms of tonifying Qi and promoting blood circulation

Authors can submit their manuscripts via the Manuscript System at https://mc03.manuscriptcentral.com/wjtcm.

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Monthly Chinese Materia Medica Highlights

Christina loosestrife (*Lysimachia christinae,* Primulaceae, 金钱草/过路黄, left) and snowbell-leaved tick clover (*Desmodium styracifolium,* Fabaceae, 广金钱草, right)

The dried whole plant of *Lysimachia christinae* (lysimachiae herba, *jinqiancao*) and the dried aerial part of *Desmodium styracifolium* (desmodii styracifolii herba, *guangjinqiancao*) are common Chinese medicinals. The former is primarily produced in southwest region from wild resource. The latter is mainly produced in Lingnan region from wild and/or cultivated resource. Having similar functions, *jinqiancao* and/or *guangjinqiancao* drain dampness, reduce jaundice, promote urination, free strangury, and expel gallstones and/or urinary tract stones.

The botanical origin of Chinese medicinal *jinqiancao* has long been confusing. At least 7 plants from different families are medicinally used in the name of *jinqiancao* in different regions of China. A solution provided by the current Chinese Pharmacopeia to such multiple botanical origins is that *jinqiancao* (lysimachiae herba) and *guangjinqiancao* (desmodii styracifolii herba) have been officially listed as separate entries.

金钱草/过路黄	广金钱草
报春花里性为凉	豆科植物岭南生
茎弱平铺半米长	灌木身坚立草坪
涧水穿岩行遇阻	若是穿岩逢野外
岂能袖手立河旁	水流敢向远山行

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