Pharmacology of Chinese herbal medicine

Owing to the multi-component, multiple-target, multi-pharmacology and low toxicity characteristics, Chinese herbal medicines (CHMs) have attracted increasing attention in recent decades. Indeed, CHMs have been used for the treatment of different diseases in China for thousands of years. To study how CHMs work and to elucidate their underlying mechanisms of action remain an important subject in modern Chinese medicine research.

The special series entitled "Pharmacology of Chinese Herbal Medicine" is a case in point in this research area. It aims to provide recent updates on the pharmacology of CHMs in the treatment of different diseases.

The zebrafish closely resembles the human genome, and is a useful tool for investigating the efficacy and toxicity of drugs. Ella Man-Wai Un and colleagues under the supervision of Professor Simon Lee at the University of Macau used zebrafish to investigate the cardiotoxicity of cinnabar, a naturally occurring mercuric sulfide. They found that cinnabar could induce cardiac damage and locomotor disorders in zebrafish larvae. The authors remind that more attention should be paid to the potential toxicity of cinnabar, especially when it is used in clinical practice for a long period of time.

Alzheimer's disease (AD), is the most common form of dementia, accounting for 50–70% of dementia patients worldwide. Yu-Xuan Kan and colleagues under the supervision of Professor Min Li reviewed the neuroprotective activities of icariin in rodent models of AD. Their findings showed that icariin alleviated cognitive impairment induced by amyloid beta (Aβ)-induced rats via improving the synaptic plasticity, inhibiting apoptosis and oxidative stress through regulating BDNF/TrkB/Akt pathway. Icariin also ameliorated the cognitive deficits of APP/PS1 transgenic mice via reducing the Aβ deposits and inhibiting inflammation. In addition, icariin improved spatial memory impairment in senescence-accelerated mouse prone 8 (SAMP8) mice and 5×FAD transgenic mice. These data demonstrated that icariin a promising agent worthy of further development into an anti-AD drug.

CHMs have been used since time immortal to treat various infectious diseases in China for thousands of years. Juan Zhang and her co-authors reviewed 15 CM formulae used for the treatment of COVID-19, including 7 oral formulae and 8 injection fluids in China. The main constituents, active ingredients, the efficacy and action mechanisms of these CM formulae in preclinical and clinical study were comprehensively summarized. The results of this review collectively attest that Chinese medicine is a valuable therapeutic option for the prevention and treatment of COVID-19.

Valuable Chinese medicines play important roles in the maintenance of health and treatment of diseases in China. Wenhui Zhang and co-author under the supervision of Professor Man Yuan reviewed the clinical studies of 8 typical well-known and valuable herbal medicines including *Cordyceps sinensis*, *Crocus sativus*, *Ganoderma lucidum*, *Collocalia esculenta*, *Panax ginseng*, *Colla corii asini*, *Panax notoginseng* and *Dendrobium officinale*. This review provides valuable clinical application information of these 8 typical valuable herbal medicines to the readers.

We hope that readers will find the contents of this special series interesting and stimulating.

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