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Editorial

Chinese herbal medicines will illuminate the post-epidemic era

In less than 20 years since the beginning of 21th century, there have been many major outbreaks of SARS, avian influenza, H1N1 flu, Ebola virus, and COVID-19 in the world one after another. These epidemics have caused huge losses of human life and property. Meanwhile, tumors, diabetes, cardiovascular and cerebrovascular diseases, mental diseases and diseases with unknown etiology that were rare in the past have now become common diseases in society. Coupled with the outbreak of major epidemics, they have posed a huge threat to human health and even survival. How to minimize and/or eliminate these threats? The traditional application and modern research of traditional Chinese medicine (TCM) give us a lot of inspiration.

This issue has ushered in several excellent papers to continuously spotlight the exciting progress of Chinese herbal medicines in human health and diseases. Both *Rosa* and *Tetrastigma* belong to the Eudicots clade Rosids, which possess astounding biodiversity and chemodiversity, followed by highly diverse bioactivities. Their traditional uses and pharmacological activities have been elaborated in two comprehensive reviews (Wang et al., 2022; Zhang et al., 2022a); extracts and compounds of both genera showed the following activities: Antineoplastic and anti-cancer, anti-inflammatory, antioxidant, hepatoprotective, blood sugar regulatory/antidiabetic, antibacterial, antiviral, and cardiovascular protection, among others. Possibly due to the distinct chemical composition, these genera also have some differences in bioactivities, e.g., flavonoids of *Rosa* displayed the nervous system protection, *Rosa* also had the anti-aging and hypolipidemic properties, while *Tetrastigma* showed the analgesic activity. The studies of these pharmacological activities are booming (Gu et al., 2022; Zhang et al., 2022b), as they are aimed at the current common and frequently occurring diseases, including epidemic and pandemic diseases.

Promisingly, both *Rosa* and *Tetrastigma* had no toxic effect in human subjects, which is especially validated by their long-term uses in folk medicine. Notwithstanding, the drug metabolism and pharmacokinetic studies of both genera, as well as other taxonomic groups with abundant medicinal phytometabolites, should be strengthened to further expound the absorption, distribution, metabolism, excretion and toxicity attributes of botanical extracts and phytometabolites; Q-markers of herbal products (Liu, 2021; Liu et al., 2018) derived from them should also be developed to maximize their health-promoting and therapeutic effects.

The specialized metabolites of medicinal plants induced by ecological/environmental factors vary greatly, but meanwhile the specific biosynthetic pathways and related phytometabolites, and even therapeutic efficacy, may have some phylogenetic signals, which is suggested by pharmacophylogeny investigations (Hao et al., 2022). The metabolomic studies of medicinal genera should be further expanded to collect compound information as completely as possible, so as to analyze the correlation between specialized metabolites and molecular phylogeny qualitatively and quantitatively. After superimposing phylogenetic background, the dominance of a specific type of phytometabolites could be found in the specific part of phylogenetic tree, and the evolutionary trajectory of chemodiversity could be revealed, which has important guiding significance for the discovery and development of new/alternative phytomedicine resources. Many phytometabolites are phylogenetically conserved, and their abundance in different taxonomic groups is highly variable; e.g., indole alkaloids are reported in *Tetrastigma* instead of *Rosa* (Wang et al., 2022; Zhang et al., 2022a), the ursane-type triterpenoids are abundant in the latter rather than the former, while diterpenoids are trivial in both genera. In addition, the correlation between geographical distributions and therapeutic compounds should also be taken into account to assess the resource value of any taxonomic groups. We could find that some local species which were lately diverged have more diverse specialized metabolites as compared with widespread species firstly diverged, or vice versa. The genetic background and environmental pressure jointly shape the unique metabolome of each taxonomic group. With the explosive increase of the identified compounds in recent years (Gu et al., 2022), we are more confident in the systematic study of variation pattern of chemodiversity in the taxonomic group of interest in the light of evolution. These studies will promote the vitality of TCM supply chain and the sustainable development of Chinese herbal medicine industry.

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