A traditional Chinese medicine could help treat COVID-19 symptoms

By Susha Cheriyedath, M.Sc. Jan 22 2021

The novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first detected in Wuhan, China, in December 2019, causing the coronavirus disease 2019 (COVID-19) pandemic.

COVID-19 is a highly transmissible disease that has spread to over 191 countries and territories around the world. To date, 97.61 million cases have been confirmed and over 2 million people have lost their lives.

Whole-genome sequencing and phylogenetic analysis indicate that SARS-CoV-2 is related to the SARS bat virus. However, the main and intermediate routes SARS-CoV-2's jump to humans remains unclear; researchers have continued to explore what, when and how this zoonosis occurred. Meanwhile, clinical trials are ongoing to find effective antiviral drugs or prophylactic vaccines for COVID-19.

A team of researchers in China – at Guangzhou University of Chinese Medicine and Yunnan University of Chinese Medicine – recently explored the therapeutic properties of Yinqiao powder in treating COVID-19 symptoms. Their findings were recently published in *Phytotherapy Research*.

Study: Exploring the treatment of COVID-19 with Yinqiao powder based on network pharmacology. Image Credit: Dragon Images / Shutterstock

Can traditional Chinese medicine help treat COVID-19 symptoms?

Traditional Chinese medicine (TCM) has a comprehensive system that plays a key role in the prevention and treatment of infectious diseases. Several provinces in China have been following TCM-based prevention and treatment plans for COVID-19, with remarkable results.

> *"After more than 2,000 years of development, traditional Chinese medicine (TCM) has formed a comprehensive and unique system from disease diagnosis to prognosis, which plays an important role in the prevention and treatment of human infectious diseases."*

Based on big data analysis, it was found that Yinqiao powder is the basic formulation used to treat the early stages of COVID-19. According to pharmacological studies, Yinqiao powder has an antitussive and expectorant effect, alleviates acute lung injury, improves lung function, relieves pulmonary

fibrosis, improves immune response to viruses, and eases the adverse reactions of modern drugs.

Active ingredients in Yinqiao powder and their key functions

The active ingredients in Yinqiao powder were identified using high-performance liquid chromatography analysis are rutin and hesperidin. Rutin binds to the main protease (3CLpro) of SARS-CoV-2 with more affinity than drugs such as remdesivir, chloroquine, and hydroxychloroquine. Studies show that rutin may inhibit SARS-CoV-2 by downregulating interleukin-6 (IL-6).

Hesperidin, on the other hand, has been found to have an inhibitory effect on human angiotensin-converting enzyme 2 (ACE2), GRP78, TMPRSS2, and AT1R receptors and hence may be effective in the treatment of COVID-19. Although some bio-active substances are being investigated for their ability to treat COVID-19, in-depth studies of the ability of Yinqiao powder to treat COVID-19 are sparse.

Exploring the active ingredients and potential mechanisms of Yinqiao powder in COVID-19 treatment

The researchers recently used several techniques to analyze the active ingredients, targets, and possible mechanisms of Yinqiao powder in COVID-19 treatment. They used techniques such as target selection and DisGeNET scoring, protein–protein interaction network construction, drug–ingredient–gene network construction, molecular docking, and surface plasmon resonance (SPR) analysis, gene tissue analysis, geneontology (GO) functional analysis, and Kyoto encyclopedia of genes and genomes (KEGG) pathway analysis.

The researchers also predicted the therapeutic impact of Yinqiao powder with the help of TCManti-COVID-19 (TCMATCOV). Yinqiao powder has an intervention score of 20.16.

> *“In our study, 30 ingredients of Yinqiao powder were screened from the TCMSP database based on the OB and DL, and five ingredients, namely hesperetin, eriodictyol, luteolin, quercetin, and naringenin,*

> *were verified by LC-MS analysis."*

Luteolin, eriodictyol, quercetin, and naringenin were the other effective active ingredients present in Yinqiao powder that act against COVID-19. The hub-proteins in Yinqiao powder were IL-6, tumor necrosis factor (TNF), mitogen-activated protein kinase 3 (MAPK3), and tumor protein P53 (TP53). Drug–ingredient–gene target network analysis revealed that drugs such as Jinyinhua, Jingjiesui, Lianqiao, Bohe, Jiegeng, and Gancao have the ability to improve the symptoms of COVID-19 patients.

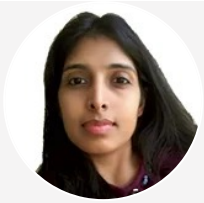
Drug–ingredient–gene target network analysis revealed that Jinyinhua, Lianqiao, Jingjiesui, Jiegeng, Bohe, and Gancao have potential anti-COVID-19 effects. Some of these drugs have been confirmed to have obvious advantages in improving the clinical symptoms of COVID-19 patients

According to the authors, the potential mechanisms by which Yinqiao powder can help treat COVID-19 are the TNF signaling pathway, Toll-like receptor signaling pathway, T-cell receptor signaling pathway, and MAPK signaling pathway. They believe that this study offers a new perspective for finding potential drugs for treating COVID-19.

> *"Although these signaling pathways were related to the occurrence and development of COVID-19, there is currently no experiment to further verify the specific role of Yinqiao powder against COVID-19 in these signaling pathways."*

Journal reference:

- Lin, Haixiong, Xiaotong Wang, Minyi Liu, Minling Huang, Zhen Shen, Junjie Feng, Huijun Yang, Zige Li Junyan Gao and Xiaopeng Ye. (2021) Exploring the treatment of COVID-19 with Yinqiao powder based on network pharmacology. *Phytotherapy Research*. https://doi.org/10.1002/ptr.7012, https://onlinelibrary.wiley.com/doi/10.1002/ptr.7012.



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Susha has a Bachelor of Science (B.Sc.) degree in Chemistry and Master of Science (M.Sc) degree in Biochemistry from the University of Calicut, India. She always had a keen interest in medical and health science. As part of her masters degree, she specialized in Biochemistry, with an emphasis on Microbiology, Physiology, Biotechnology, and Nutrition. In her spare time, she loves to cook up a storm in the kitchen with her super-messy baking experiments.