

Development of Anti-SARS-CoV-2 Agents from Natural Products

Liu-Cheng Li, Hong-Mei Fang and Lian-Di Kan*

Department of Pharmacy, Sir Run Run Shaw Hospital, School of Medicine, Zhejiang University, Hangzhou, China

***Corresponding Author:** Lian-Di Kan, Department of Pharmacy, Sir Run Run Shaw Hospital, School of Medicine, Zhejiang University, Hangzhou, China

Received: May 01, 2020; **Published:** December 31, 2020

Coronavirus (COVID-19) is an infectious disease caused by severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2, or 2019-nCoV), and has quickly spread around the globe [1-3]. It is the newly emerged zoonotic virus causing pandemic death and economic loss [4]. Till May 1, 2020, over 3,300,000 people have been confirmed infected and more than 230,000 people have died during this severe viral attack. There are a lot of drug trials going on, however, the specific anti-SARS-CoV-2 agents or vaccines were scarce. Developing effective treatments remains a daunting task.

In the clinical treatments for COVID-19, anti-infectious, anti-proinflammatory cytokines, as well as nonspecific antiviral therapies were the basic strategies [5-7]. To save more infected people, the clinical practice have been partly based on illuminating the existing broad-spectrum anti-viral natural products as drug repurposing for COVID-19 therapy. Natural products-derived drugs are important alternative therapies in treating infectious diseases and have been the subjects of intense investigations for thousands of years [8,9]. Recently, growing oral natural products-derived drugs has been confirmed effective against SARS-CoV-2 in different types of COVID-19 patients, or exhibited potential benefits in COVID-19 cases by promoting the relief of symptoms, preventing the infection, and alleviating organ injuries [9-13].

The reported potential candidates from oral natural products-derived drugs for COVID-19 treatment included Shufeng Jiedu capsule [12], Lianhua Qingwen granule [13,14], Qingfei Paidu tang [15], FeiDuQing prescription [16], Huopuxialing decoction [17], ShuangHuangLian oral liquid [18] and so forth. YuPingFeng prescription is an another classical complex prescription composed of *Astragalus membranaceus* (Fisch.) Bunge. (Huangqi), *Atractylodes macrocephala* Koidz. (Baizhu), *Saposhnikovia divaricata* (Trucz.) Schischk. (Fangfeng) (3: 1: 1) [8]. It was demonstrated that the total glycoside and polysaccharides from YuPingFeng have immunoregulatory, anti-inflammatory and anti-fibrotic activities during lung injury [19-21]. Recent evidence also proved that the core active compounds in YuPingFeng could target SARS-CoV-2 receptor based on network pharmacology and molecular docking analysis [22]. It revealed that YuPingFeng may be effective to prevent COVID-19, but it needs further in-depth studies and clinical data.

In view of the increasing number of infected people and death due to COVID-19, it is urgent to dig effective anti-SARS-CoV-2 agents, such as the development from the natural products. The clearest point is that if the existing natural products-derived drugs were proved effective in COVID-19, it would save much time and may then help to rescue more patients in time. Here, we briefly introduced the emerging role of the natural products in COVID-19 treatment. However, these results were based on the laboratory investigations or included few clinical cases. In order to conquer the nightmarish COVID-19, further efforts should also commit to the discovery of potential effective drugs on the market or the agents confirmed owning antiviral activities from the natural products, especially by the well-designed clinical randomized controlled trials.

Conflicts of Interest

None of the authors has any conflicts of interest to declare.

Acknowledgments

This study was supported by the National Natural Science Foundation of China (Grant no. 81503129), the Zhejiang Provincial Natural Science Foundation of China (Grant no. LYY19H280006), the Clinical Research Projects of Zhejiang Medical Association (Grant no. 2019ZYC-A85), and the Scientific Research Projects of Hospital Pharmacy of Zhejiang Pharmaceutical Association (Grant no. 2017ZYY07). The authors have no other relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript apart from those disclosed.

Bibliography

1. Zhu N., *et al.* "A Novel Coronavirus from Patients with Pneumonia in China, 2019". *The New England Journal of Medicine* 382 (2020): 727-733.
2. Wang C., *et al.* "A novel coronavirus outbreak of global health concern". *The Lancet* 395 (2020): 470-473.
3. Robert-A Ollar. "Urgent Need for Polymerase Chain Reaction Protocols to be Adapted for Use in Small or Rural Hospitals to Expand Abilities to Test for Coronavirus COVID-19". *EC Pulmonology and Respiratory Medicine* 9.5 (2020): 10-12.
4. Osama O Ibrahim. "Coronavirus SARS-CoV-2 is the newly emerged zoonotic virus causing pandemic death and economic loss". *EC Pulmonology and Respiratory Medicine* 9 (2020): 65-75.
5. Ravindra K Kotak and Jigisha R Kotak. "Novel Corona Virus COVID-19; Symptoms, Testing, Treatment, Prevention, Effect of Temperature and its Negative and Positive Impacts on the World: A Review". *EC Pulmonology and Respiratory Medicine* 9 (2020): 61-64.
6. Yang CX., *et al.* "Immune imbalance mechanism and intervention strategy in patients with coronavirus disease 2019 (COVID-19)". *Chinese Pharmacological Bulletin* 36 (2020): 445-453.
7. Heba Aboelnaga. "Cytokine Storm in nCOVID-19". *EC Pulmonology and Respiratory Medicine* 9 (2020): 1.
8. Li LC and Kan LD. "Traditional Chinese medicine for pulmonary fibrosis therapy: Progress and future prospects". *Journal of Ethnopharmacology* 198 (2017): 45-63.
9. Liu Y., *et al.* "Literature analysis of Chinese patent medicine treatment in the observation period of Clinical Management of Corona Virus Disease 2019 (trial 6th edition)". *Clinical Medication Journal* 18 (2020): 62-66.
10. Xu DY., *et al.* "Mechanism of Qingfeipaidu Decoction on COVID-19 based on network pharmacology". *Pharmacology and Clinics of Chinese Materia Medica* 36 (2020): 26-32.
11. Wang Z., *et al.* "Clinical characteristics and therapeutic procedure for four cases with 2019 novel coronavirus pneumonia receiving combined Chinese and Western medicine treatment". *Bio Science Trends* 14 (2020): 64-68.
12. Qu XK., *et al.* "A retrospective study on the treatment of COVID-19 by Shufeng Jiedu Capsule combined with abidor". *Chinese Traditional and Herbal Drugs* 51 (2020): 1167-1170.
13. Wang FC., *et al.* "Clinical efficacy and mechanism of Lianhua Qingwen Granule on COVID-19 based on network pharmacology research". *Pharmacology and Clinics of Chinese Materia Medica* (2020).

14. Cheng DZ and Li Y. "Clinical effectiveness and case analysis in 54 NCP patients treated with Lanhuaqingwen granules". *World Chinese Medicine* 15 (2020): 150-154.
15. Zhang YM., et al. "One case of severe COVID-19 cured by Qingfei Paidu Tang combined with western medicine". *Tianjin Journal of Traditional Chinese Medicine* (2020).
16. Liu Q., et al. "Exploration on active formulations of Feiduqing for treatment of COVID-19 based on network pharmacology and molecular docking". *Chinese Traditional and Herbal Drugs* 51 (2020): 1713-1722.
17. Xie YZ., et al. "Study on the molecular mechanism of Huopuxialing Decoction in treating Corona Virus Disease base on network pharmacology". *Journal of Chinese Medicinal Materials* (2020).
18. Ni L., et al. "Combination of western medicine and Chinese traditional patent medicine in treating a family case of COVID-19 in Wuhan". *Frontier of Medicine* (2020).
19. Li L., et al. "Total extract of Yupingfeng attenuates bleomycin-induced pulmonary fibrosis in rats". *Phytomedicine* 22 (2015): 111-119.
20. Cui W., et al. "Total glycosides of Yupingfeng protects against bleomycin-induced pulmonary fibrosis in rats associated with reduced high mobility group box 1 activation and epithelial-mesenchymal transition". *Inflammation Research* 64 (2015): 953-961.
21. Xu L., et al. "Total polysaccharide of Yupingfeng protects against bleomycin-induced pulmonary fibrosis via inhibiting transforming growth factor- β 1-mediated type I collagen abnormal deposition in rats". *Journal of Pharmacy and Pharmacology* 66 (2014): 1786-1795.
22. Huang LL., et al. "Study on active compounds of Yupingfeng San in preventing and treating COVID-19 based on network pharmacology and molecular docking". *Pharmacology and Clinics of Chinese Materia Medica* (2020).

Volume 10 Issue 1 January 2021

© All rights reserved by Lian-Di Kan., et al.