

Review Article

The Roles of traditional Chinese Medicine for the Treatment of COVID-19

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Abstract

In the COVID-19 pandemic, Traditional Chinese Medicine (TCM) has played an important role in clinical treatment. The National Health Commission of China has organized medical and TCM experts to develop seven versions of the Diagnosis and Treatment Protocol of COVID-19, among which several TCM recipes have been recommended for the prevention, treatment and rehabilitation of novel coronavirus pneumonia patients. Preliminary, clinical evidences have suggested that TCM combined with the conventional medicines in COVID-19 treatment can improve the clinical cure rate and reduce the probability of mild infections turning into severe or critical conditions. This article summarizes the researches related to the treatment of COVID-19 with TCM, and analyzes the applications of TCM in the prevention and treatment of COVID-19.

Keywords: Traditional Chinese Medicine (TCM); Covid-19; Pneumonia

Introduction

Since the first COVID-19 patient was identified in December 2019, China has reported a total of 84,522 confirmed cases, of which

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79,738 have been cured and 4,645 have died [1]. As of May 22, 2020, the number of confirmed cases worldwide has exceeded 5 million, resulting in more than 330,000 deaths. In the efforts for curing the disease, many potentially effective drugs, traditional Chinese medicine (TCM) recipes and other treatments methods have been proposed by various scientific research institutes and clinicians, and some of these treatment methods have been used bedside or clinically used or in clinical trials. In addition to conventional symptomatic therapy, antiviral therapy, interferon therapy and hormone therapy, TCM has also played a significant role in the treatment of the COVID -19 [2]. TCM has been used for thousands of years and has been practically proved to be effective both in curing and preventing diseases [3,4]. As of May 22, 2020, there have been 656 clinical trials for COVID-19 registered on the official website of the Chinese clinical trial registry (Chi CTR), among which there were 98 TCM related clinical trials. TCM has played an important role in the whole process of fighting the pandemic, including prevention, treatment and rehabilitation [5]. In all regions of China except Hubei Province, 96.37% of the total confirmed cases were treated by TCM, and 91.05% in Hubei.

Summary of Officially Issued TCM Treatment Recommendations for the treatment of COVID-19

The latest version of the Diagnosis and Treatment Protocol of COVID-19 by the National Health Commission of China has recommended to use TCM to treat COVID-19 patients [6]. Huoxiang Zhengqi capsules, Jinhua Qinggan granules, Lianhua Qingwen capsules (LH) and Shufeng Jiedu capsules are recommended for patients during medical observation period. Qingfei Paidu Decoction (QPD) are recommended for confirmed cases. For severe and critical patients, Xi Yan Ping Injection, Xuebijing injection, Reduning injection, Tanreqing injection, Xingnaojing injection, Shenfu injection, Shengmai injection, and Shenmai injection are recommended. Besides, TCM injections can be used together with TCM decoction (Table 1).

There are few reports of the TCM-based treatment of COVID-19, particularly the showing direct clinical evidence. There is also a lack of rigorous randomized controlled clinical trials on the clinical efficacies of TCM and the treatment outcomes. In the possible event of a future outbreak of coronavirus infections, the clinical information and expert experience of TCM-based COVID-19 treatment may offer valuable clues to the potential treatments of the future coronavirus infections. Therefore, we provide more detailed information about the TCMs recommended for the treatment of COVID-19 [7].

QPD is strongly recommended, meaning that as the decoction can be used in almost all patients in most cases. The prescription is composed of 21 Chinese herbs: , they are Ephedrae Herba, Glycyrrhizae Radix, Armeniacae Semen, Gypsum fibrosum, Cinnamomi Ramulus, Alismatis Rhizoma, Polyporus, AtractylodismacrocephalaeRhizoma, Poria, Bupleuri Radix, Scutellariae Radix, Pinellinae Rhizoma Praeparatum, Zingiber is Rhizom are cens, Asteris Radix, FarfaraeFlos, Belamcandae Rhizoma, Asari Radix et Rhizoma, Dioscoreae Rhizoma, Aurantii Fructus immaturus, Citireticulatae Pericarpium, Pogostemonis Herba.

Period of Disease	Symptom	RecommendedTCM
Medical observation period	Fatigue with gastrointestinal discomfort	Huoxiang Zhengqi Capsule Jinhua Qinggan Granule, Lianhua Qingwen Capsule (Granule), Shufeng Jiedu Capsule (Granule) Qingfei Paidu Decoction Qingfei Paidu Decoction Qingfei Paidu Decoction, Huashi Baidu Formula, Xiyanning injection, Xuebijing injection, Reduning injection, Tanreqing injection, and Xingnaojing injection Xuebijing injection, Reduning injection, Tanreqing injection, Xingnaojing injection, Shenfu injection, Shengmai injection, and Shenmai injection.
	Fatigue with fever	
Mild case		
Moderate case		
Severe case		
Clinical treatment period	Critical case	

Table 1: TCM recommended by 7th editions Guidelines of Diagnosis and Treatment for COVID-19.

It is mainly used to treat the external symptoms of COVID-19. Its main function focuses on symptomatic treatment. At the same time, it can supplement the nutrients needed by the human body and ensure the normal operation of the human immune system and enhance its ability to fight viruses. There are 15 kinds of Chinese herbs in this prescription, which can treat the symptoms of cough, accounting for 71%; 7 kinds of Chinese medicine have the effectiveness in treating cough, vomiting, abdominal distension and other digestive tract symptoms; And respiratory and digestive tract symptoms are the main symptoms of COVID-19 [8]. The results of network pharmacology analysis showed that the active compounds extracted from QPD were helpful in the recovery of different disease progression stages during the treatment of covid-19 with TCM [9].

Another TCM that has been strongly recommended is LH. LH is a TCM for the treatment of respiratory diseases and is the only medicine approved for the treatment of SARS and influenza which consisted and consists on of Forsythia, Honeysuckle, ephedra, bitter almond, gypsum, Banlangen, Mianma Guanzhu, Houttuynia, patchouli, Rhubarb, Rhodiola, Menthol, licorice. The 7th Trial Edition of the “Novel Coronavirus Pneumonia (COVID-19) Diagnosis and Treatment Guidelines in China” recommends the use of LH to treat fever, cough and fatigue caused by mild and general type of COVID-19. T, the course of treatment is 7 to 10 days [10]. A Recent study has demonstrated that LH exerts anti-coronavirus activity by inhibiting virus replication, and reducing cytokine release of host cells, which supported the clinical application of LH combined with existing therapeutic methods in COVID-19 [11].

Application of Artificial intelligence (AI) technology for TCM Repurposing against COVID-19

Artificial intelligence and big data have played a very highly useful role in the repurposing of TCM as well as other drugs against the COVID-19 epidemic. In general, pharmaceutical companies and research institutes recognize the important role of artificial intelligence in drug discovery. Denghai Zhang et al. found that up to 13 kinds of TCM have potential anti-2019-nCoV activity and 2 or more of these 13 compounds were found in 125 Chinese herbs by AI technology [12]. Zeheng Wang, et al. found that Chaichenjian, Fangfengtongsheng wan, Zhongqifangzi, Shenfuzhushey, Xiangchuan tang, Chaihubanxia tang are all recommended using ontology-based side-effect prediction framework and Artificial Neural Network-based deep learning method [13].

Effect of TCM in clinical uses and clinical trials

Yuxia Cui et al. have reported a 55-day-old confirmed case with multiple organ damage and rapid disease changes. They used TCM LH combined with interferon α -1b, amoxicillin potassium clavulanate, reduced glutathione and ursodeoxycholic acid to treat this

case, then the patient’s clinical condition gradually improved [14]. A multicenter, prospective, randomized controlled clinical trial verified that LH capsules had a favorable safety profile for the treatment of Covid-19, and provided the evidence regarding the antiviral effects of LH capsules [15].

However, there are also some concerns about the treatment of covid-19 with TCM, particularly with the debate that TCM may cause complications such as interstitial pneumonia [16]. These adverse effects are mainly due to the dual pro- and anti-inflammatory of specific regulators targeted by these traditional drugs. Besides, the clinical research evidence of integrated traditional Chinese and western medicine in the treatment of covid-19 is still insufficient, mainly manifested in small sample size, lack of control group and diversification of treatment schemes [17]. Therefore, the design of large sample size and standardized randomized controlled trial (RCT) will provide more convincing scientific evidence to demonstrate the superiority of TCM in treating novel coronavirus pneumonia [5,16].

Conclusion

In summary, TCM has its own unique advantages in the prevention, treatment and rehabilitation of COVID-19 patients. It can rapidly improve the symptoms of patients in the treatment of mild diseases, reduce the probability of mild infections turning into severe or critical conditions, and achieve the goals of shortening the course of disease, improving the cure rate and reducing mortality, so as to curb the development of COVID-19 pandemic. Nonetheless, more comprehensive studies are needed for the further investigations of the advantages and disadvantages of TCM on COVID-19 patients, and to strengthen the research and monitoring of potential adverse effects of TCM in the treatment of COVID-19 and other potential infections

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References

- Zhu N, Zhang D, Wang W, Li X, Yang B, et al. (2020) A Novel Coronavirus from Patients with Pneumonia in China, 2019. N Engl J Med 382: 727-733.
- Ren JL, Zhang AH, Wang XJ (2020) Traditional Chinese medicine for COVID-19 treatment. Pharmacol Res 155: 104743.

3. Needham J, Gwei Djen L (1962) Hygiene and preventive medicine in ancient China. *J Hist Med Allied Sci* 17: 429-478.
4. Liu J, Manheimer E, Shi Y, Gluud C (2004) Chinese herbal medicine for severe acute respiratory syndrome: A systematic review and meta-analysis. *J Altern Complement Med* 10: 1041-1051.
5. Wang Y, Zeng X, Zhao Y, Chen W, Chen YZ (2020) The pros and cons of traditional Chinese medicines in the treatment of COVID-19. *Pharmacological Research* 157: 104873.
6. Jin YH, Cai L, Cheng ZS, Cheng H, Deng T, et al. (2020) A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). *Military Medical Research* 7: 4.
7. Ho LTF, Chan KKH, Chung VCH, Leung TH (2020) Highlights of traditional Chinese medicine frontline expert advice in the China national guideline for COVID-19. *Eur J Integr Med* 36: 101116.
8. Wang D, Hu B, Hu C, Zhu F, Liu X, et al. (2020) Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA* 323: 1061-1069.
9. Luo E, Zhang D, Luo H, Liu B, Zhao K, et al. (2020) Treatment efficacy analysis of traditional Chinese medicine for novel coronavirus pneumonia (COVID-19): An empirical study from Wuhan, Hubei Province, China. *Chinese Medicine* 15: 34.
10. Xie LX (2020) Interpretation of the 7th edition of the “diagnosis and treatment guidelines of coronavirus disease 2019 in China”: Progress and challenges. *Chronic Dis Transl Med* 6: 75-78.
11. Runfeng L, Yunlong H, Jicheng H, Weiqi P, Qin Hai M, et al. (2020) Lianhuaqingwen exerts anti-viral and anti-inflammatory activity against novel coronavirus (SARS-CoV-2). *Pharmacol Res* 156: 104761.
12. Zhang DH, Wu K, Zhang X, Deng SQ, Peng B (2020) In silico screening of Chinese herbal medicines with the potential to directly inhibit 2019 novel coronavirus. *Journal of Integrative Medicine* 18: 152-158.
13. Wang Z, Li L, Yan J, Yao Y, Lanyu L, et al. (2020) Impact of meteorological factors on the COVID-19 transmission: A multi-city study in China. *Science of The Total Environment* 726: 138513.
14. Zha Y, Zhang X, Wang R, Ye X, Liu K, et al. (2020) A 55-Day-Old Female Infant Infected With 2019 Novel Coronavirus Disease: Presenting With Pneumonia, Liver Injury, and Heart Damage. *The Journal of Infectious Diseases* 221: 1775-1781.
15. Hu K, Guan W, Bi Y, Zhang W, Li L, et al. (2020) Efficacy and safety of Lianhuaqingwen capsules, a repurposed Chinese herb, in patients with coronavirus disease 2019: A multicenter, prospective, randomized controlled trial. *Phytomedicine* 2020: 153242.
16. Gray PE, Belessis Y (2020) The use of Traditional Chinese Medicines to treat SARS-CoV-2 may cause more harm than good. *Pharmacol Res* 156: 104776.
17. Luo H, Tang QL, Shang YX, Liang SB, Yang M, et al. (2020) Can Chinese Medicine Be Used for Prevention of Corona Virus Disease 2019 (COVID-19)? A Review of Historical Classics, Research Evidence and Current Prevention Programs. *Chin J Integr Med* 26: 243-250.



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