

Traditional Chinese Medicine in the treatment of Covid-19

Zhaoyi Li *

The University of Wisconsin-Madison, Madison, USA

* Corresponding Author Email: zli2427@wisc.edu

Abstract. The survival and advancement of humans have been gravely challenged by the COVID-19 virus. All countries are doing their best to control the epidemic and protect the safety of human beings and the world. Regrettably, no specific vaccine or drug has yet received approval in order to treat it. Surprisingly, traditional Chinese medicine (TCM) has shown indubitable clinical benefits in this pandemic. Traditional Chinese medicine is a precious crystallization of wisdom summed up by ancient Chinese people from generation to generation. Traditional Chinese medicine is made from different kinds of natural herbs through various formulas and formulas to make different medicines to treat diseases. Combining the experience of ancestors, modern scientists have concluded different TCM methods to treat patients who have COVID-19 symptoms. Numerous credible clinical studies have examined the beneficial and efficient treatment benefits of patients at different COVID-19 stages treated with traditional Chinese medicine. The unique coronavirus pneumonia pandemic was prevented and controlled with the help of TCM, which has also greatly promoted the academic development of TCM. It also strengthens the ties between the people of the world. We also prepare for future pandemics.

Keywords: Traditional Chinese Medicine, COVID-19, Treatment, Human Wellbeing.

1. Introduction

The severest public health disaster that humanity has faced in the past century is the result of COVID-19, the SARS-CoV-2 virus, outbreak and spread, which causes severe respiratory disease [1]. Globally, as of August 2022, about 500 hundred millions confirmed cases of COVID-19 have been reported, with approximately 6 hundred millions deaths from pathology (data from WHO) (data from WHO). High concentrations of aerosols, respiratory droplets, and occasionally feces or urine are all ways that a person can contract SARS-CoV-2 from another [2]. The respiratory system is primarily impacted in individuals with clinical SARS-CoV-2 illness [3]. However, there are a number of additional issues that may develop, including swelling, lymphocytopenia, high D-dimer levels, elevated fibrin breakdown, endotheliitis, vasoconstriction, and hypercoagulability. In addition, organs can significantly be affected. The virus attaches to vascular endothelial cells and other tissues with ACE2 receptors, which have a significant impact on human health [4]. In the ongoing battle against infectious diseases for millennia, a particular theoretical framework has been built for traditional Chinese medicine and amassed a wealth of practical knowledge [5]. It has achieved remarkable results in the treatment for various stages of the disease in China. To demonstrate a thorough knowledge of TCM's anti-COVID-19 and raise awareness of the significant role of TCM for the diseases, the therapeutic efficacy, and fundamental theory, are extensively documented and addressed, as well as the pharmacological mechanisms in this review [6].

2. History

One of the oldest medical systems in the world is traditional Chinese medicine. It is a priceless and valuable experience for ancient Chinese for over 5000 years. It is a method of healing that is founded on the Chinese idea that nature and people are inextricably linked. Its theories cover a variety of topics, including techniques for diagnosis and symptom-complex categorization, as well as qi, blood, and bodily fluids; yin and yang; zang-fu; the Five Elements; channels and collaterals; the Five Elements [7]. TCM makes distinctions between various symptom categories and takes a holistic approach to treatment. Traditional Chinese Medication (TCM) employs a number of treatment

modalities, including herbal medicine, qi gong, moxibustion, tuina massage, and acupuncture, to assist the body to heal itself naturally [8]. This article focuses on herbal medicine, in other words, decoction that is used to treat COVID-19.

There are many pandemics that happened in China and people come up with and recorded the evidence of TCM as an effective way to treat the disease. Considerable evidence has been found in these extraordinary ancient books that have provided an adequate guideline, in "Plain Questions, Tricking Law Lun", the author wrote: "the five epidemics arrive, all are easily infected, regardless of size, and the symptoms are similar...". Treatise on Febrile Diseases and Miscellaneous Diseases stated: "The Yu clan has more than 200 people, and since the Jian'an period, there have been no ten rens, and two-thirds of them died, and typhoid fever ranks seven out of ten..." and the mortality rate was extremely high cause by infectious disease during that time. "Treatise on Febrile Diseases" based on pulse syndrome differentiation, summarizes and analyzes the syndromes of exogenous heat and venereal diseases, including infectious diseases, using the theory of six meridians, identifies the nature and outcome of the disease, and comprehensively applies the methods of sweating, vomiting, lowering, and clearing.

3. The causes

By the end of the Ming Dynasty, famines, plagues, and wars continued, just as Wu Youxing wrote in "The Preface to the Warm Epidemic", "The epidemic is prevalent in Shandong, Zhejiang, and the north and south. It may even be contagious to the whole door." And in the book, he proposed for the first time that "warm plague is a disease, not wind, not cold, not heat, not damp, but a different kind of feeling between heaven and earth", clearly pointing out that the plague is a disease. The same can be obtained. COVID-19 is caused by Li qi. This hostile qi considers an evil qithat damage and destroys yuan qi. Youxing Wu proposed that the pathogenic route "enters from the mouth and nose", which is a pioneer in pointing out that the transmission route of infectious diseases is the digestive tract and respiratory tract that exactly confirms the transmission route of COVID-19 prevailing nowadays [9].

4. The methods of treating covid 19

The prerequisite for TCM to effectively cure any ailment is treating patients as an organic whole. Although the large intestine and the lungs have both outside and interior connections, COVID-19 is mostly found in the lungs. Treatment should focus on the extraordinarily strong relationship between the spleen, stomach, and lungs [10]. More significantly, TCM also values liver damage brought on by COVID-19 [11]. It was shown that the SARS pandemic triggered the ACE2 receptor leading to blood clotting issue. This stydy demonstated that the connection between the heart and lungs should also be taken into consideration [12]. Additionally, in TCM, the disease can be divided into four stages: the early, the advanced, the critical and the recovery stage [13].

5. Prevention

Using traditional Chinese medicine, could predict the pandemic. Combining the six qi of the ground and the five motions of the sky, the ancient Chinese science of "five movements and six qi" may predict the effect of natural climate change to human organs work [13]. The "3-year epidemic genesis" theory also asserts that in approximately 3 years, an outbreak will occur if the climate's operation and movement are unusual [13]. Second, TCM also implements prevention using decoction. Third, prevention of infection among medical staff is extremely important. Due to poor protection, frontline medical professionals are more susceptible to COVID-19 [14]. Medical staff members consume one to two decoctions at TCM hospitals or hospitals that employ TCM therapeutic procedures of *Artemisia argyi* or *Atractylodes lanceolata* daily and burn them to stop the line of transmission [13].

According to TCM, COVID-19 is an "epidemic sickness." The majority of COVID-19's clinical symptoms include fever, exhaustion, tightness in the chest, epistaxis, loose stools or diarrhea, oily coating, sliding pulse, etc [15]. This coincides with the symptoms of epidemic disease. On the basis of inheriting the theory of TCM treatment of infectious diseases, such as "The Treatise on Warm Epidemic Diseases" and Wansu Liu proposed in his "Plain Questions about Mysterious Diseases" that "the six qi are all from cremation", innovating the pathogenesis theory of warm and hot disease, and created the treatment method of "Xin Liang Jie Xiu" and "Emergency Accumulation of Yin"., scientists leading my Dr.Zhu came up with the treatment called Truncation and Reverse "Resolving Both Exterior and Interior". Advocating the "Resolving Both Exterior and Interior" by dissolving dampness and removing toxins on the surface and clearing away heat and reducing dampness and removing toxins. Moreover, propose to use the down methods as soon as possible, so that the evil air will go away. one of the eight laws in TCM. It refers to the use of drugs with the functions of laxative, chasing, and moisturizing to channel stool, eliminate stagnation, wash away excess heat, chase water and drinking, and accumulate. Also known as pass under.

Through the implementation of the "Resolving Both Exterior and Interior" method for the handling of simple and obvious COVID-19 in designated hospitals such as Wuhan Leishenshan Hospital, Huangshi City Infectious Disease Hospital of Hubei Province, and Shanghai New International Expo Center Fangcai Hospital, a multi-center, randomized, controlled prospective study", a total of 279 patients were included, and 4,200 patients with mild COVID-19 in some Fangcang shelter hospitals such as the Shanghai New International Expo Center. The results have shown that it can shorten the nucleic acid conversion time of mild and common patients with new coronary pneumonia, effectively blocking the transformation of COVID-19 into severe and critical diseases, and no patients have turned into severe or critical diseases.

6. Recommended Chinese patent medicines for different stages of COVID-19 treatment

The basic and core concept of Traditional Chinese Medicine is treating disease as whole instead of only focus on one specific organ or systems. Chinese medicine consists of many kinds of herbs. There are also many different combinations. The most common and fundamental one is "three medicines and three formulas". There are three phases of pathogenesis of COVID-19 affecting human body, meanwhile, mild, moderate, severe, and critical are clear disease stages of TCM treatment. With the formula, characteristic shown in different stages of the virus make the TCM give full play to its strengths in treatment. The two primary patterns of mild stage are lung damp-heat accumulation and cold-damp constraint, which require the dispersal of the lungs, the removal of pathogens, and the use of scent to clear the turbidity [1]. The epidemic poison obstructs the lung, the important patterns in the severe stage are qi and yin burning, co-treating the lung and intestines, and venting lung qi. In the crucial stage, which necessitates the need to strengthen qi, prevent fatigue, cool blood, nourish yin, and restore consciousness, internal obstruction and outside desertion are the essential patterns [1].

There are more than 18 TCMs that are advised for the virus, encompassing discrete illness phases of mild to severe, and spanning the period of medical observation through the period of clinical therapy. The three Chinese patents are Xuebijing Injection, Lianhua Qingwen Capsules (granules), and Jinhua Qinggan Granules that are most frequently advised, and those are the three TCM formulations [1].

For phase one SARS-CoV-2 proliferation and expansion are its defining characteristics symptoms such as fever, coughing, tiredness, etc. Rheum officinale, Polygonum multiflorum, and Caulis polygoni multiflori, three Polygonaceae-family medicinal herbs that are often utilized in China, were discovered to block the possibility that the host may be protected against viral incursion by the interaction between the Severe acute respiratory Spikes proteins and ACE2. In the infection, spike protein can bind with ACE2. emodin from Yaoyong Dahuang can block it, whereas Hesperidin from

Citrus aurantium was anticipated to inhibit the bonding. In addition, 2140 substances were evaluated digitally using pharmacophoric characteristics leading to the discovery of geniposide from *Gardenia jasminoides* (Zhizi). Geniposide is even more effective than the typical inhibitor of camostat mesylate at concentrating on the TMPRSS2 catalytically active residues have a 14.69 electrostatic potential score [1]. Seven identified tanshinones from Danshen, such as rosmariquinone, cryptotanshinone, tanshinone I, dihydrotanshinone I, and tanshinone IIA and IIB, significantly inhibited the activity of both the 3CLpro and PLpro proteases. Lyu states that further testing is needed to determine whether these TCM components can be used to treat COVID-19. Further research should be done on the promising leads' pharmacokinetic characteristics, which encompass ingesting, dispersing, metabolizing, and excreting (ADME).

For phase two which consider as TCM technique provides benefits in modulating cytokine storm and immunological response in many ways. In Huh-7 cells infected with SARS-CoV-2 -10, Lianhua Qingwen and Liushen capsules not only prevented viral multiplication but Tnf - alpha, IL-6, as well as other top player mediators, were reduced. Lianhua Qingwen Capsule's capacity to cure lung injury via regulating inflammatory response and cytokine storm is another benefit. The main ingredient in the mix, Maxing Shigan decoction, has the ability to control cytokine storm, protect the lung's alveolar-capillary barrier, and alleviate pulmonary edema. The main components of Qingfei Paidu Decoction, baicalin, glycyrrhizin, hesperidin, have multiple immunomodulatory, anti-inflammatory and lung injury effects by concentrating on TNF-, IL-6, IL-10, and CCL2 proteins. Additionally, baicalin, one of the constituents in Qingfei Paidu Decoction, may prevent blood clotting. The essential ingredient of Qingfei Dayuan Granules, has the ability to produce anti-inflammatory and immunomodulatory effects. Formononetin, isoflavones, and kaempferol are some of its constituents. Marine not only prevents host cell death and inflammation but also lessens lung tissue damage and pulmonary index. Increased percentages of T cells and B cells were observed in blood of mice with human coronavirus pneumonia and the common cold, and a decreased viral load in the lung.

For phase three: A serious lung ailment called ARDS exists which caused low blood oxygen. Over 100 TCM natural ingredients may be beneficial and may have potential anti-inflammatory, anti-oxidative stress, and anti-fibrotic effects on lung function in light of the enormous demand for acute lung damage and ARDS treatment in COVID-19. classified and condensed. It is classified into flavonoids (like luteolin and baicalein), alkaloids (like berberine and matrine), terpenes (like yarrowin and andrographolide), polyphenols (like and honokiol and curcumin), quinones (like emodin and shikonin), and other substances based on their chemical structures (eg, osthole, imperatorin). Xuebijing injection is certified for the treatment of Coagulation disorders. Controlling crucial enzymes, ion channels, G protein-coupled receptors, and transporters, as well as the sensory system, nervous system, circulatory system, and digestive system, Qingfei Paidu Decoction has a protective impact on several organs.19 eligible randomized controlled trials, such as Danshen injection, Reduning injection, etc. were the subject of a thorough review and meta-analysis. Injections are adjunctive therapy for the treatment of ALI with enormous potential benefit. /Acute respiratory distress syndrome. It is proved that Tanreqing injection has the effect of improving lung injury.

Based on clinical evidence, TCM treatment of COVID-19 is beneficial to 1) relieve common symptoms include weariness, fatigue, expectoration, diarrhea, and fever 2) treat common symptoms include diarrhea, myalgia, shortness of breath, weariness, dry mouth, sore throat, and cough; lessen the time it takes for a viral nucleic acid to become positive and the recovery and progression of symptoms 3) Control laboratory measurements of parameters related to inflammation. The effect of TMC is applied in clinical experiments in different provinces in China. TCM was used to treat more than 60000 confirmed cases as of February 17, making up 85.20 percent of all cases [13]. 1016 patients in Hunan province who had been diagnosed joined in the process; 981 of them received TCM treatment, and 779 patients (95.76%) were discharged from their care as a result of their treatment, making up 96.56% of the total; 233 patients were hospitalized. TCM was used to treat all 233 of the patients with 100% efficiency. Wang et al. report the examination of 98 COVID-19 patients who received Qingfei Paidu decoction. The overall effective rate, recovery rate, and substantial

effectiveness rate for the Qingfei Paidu decoction therapy were 92.09%, 41.13%, and 26.92% respectively after 9 days of treatment. Moreover, the patient's rent was recovered and they were discharged after a COVID-19 case in Changchun was treated for a week with a combination of TCM and Western therapy. It has been discovered that oseltamivir and Jinhua Qinggan granules have comparable anti-H1N1 efficacy. Jinhua Qinggan granules helped the patients recover more quickly and test coronavirus-free more than two days sooner than patients who did not take the granules. The conversion rate to severe disease was lower in patients taking the capsules compared to patients taking Arbidol alone (14.29% vs. 23.65%, $p = 0.002$) [16]. Qingfei Paidu decoction has effective to treat the virus.

7. Conclusions

The crucial takeaways from China's COVID-19 conflict are that it is the right and wise choice to adhere to integrative medicine. Despite the fact that a lot of research supports TCM's ability to cure COVID-19, there are still some questions regarding the efficiency of TCM due to a lack of in-depth understanding. To provide more trustworthy data for the use of TCM, further randomized controlled studies with large sample volumes, rigorous design, great accuracy, and clinical safety should be conducted. There is little doubt that TCM has contributed immeasurably to this war as a result of the unceasing efforts of individuals all around the world, throughout the first stage of COVID-19 and its effective containment. However, it hasn't been fully eradicated yet. Even though more clinical experiments should be done to further examine the ingredients and validity of TCM. TCM should be carried forward and widely used to treat patients in other countries and control the epidemic.

References

- [1] Lyu M, et al. Traditional Chinese medicine in COVID-19. *Acta Pharm Sin B*. 2021 Nov;11(11):3337-3363.
- [2] Lyu M, et al. Traditional Chinese medicine in COVID-19. *Acta Pharm Sin B*. 2021 Nov;11(11):3337-3363.
- [3] Samara, A.A.; et al. COVID-19 Severity and Mortality after Vaccination against SARS-CoV-2 in Central Greece. *J. Pers.Med.*2022,12,1423.
- [4] Jain U. Effect of COVID-19 on the Organs. *Cureus*. 2020 Aug 3;12(8): e9540.
- [5] Shen L, et al. Comparative Study of Traditional Chinese Medicine and Western Medicine in the Treatment of Coronavirus. *Chinese Medicine and Culture*. 2020 Oct;3(4):201–4.
- [6] Lyu M, et al. Traditional Chinese medicine in COVID-19. *Acta Pharm Sin B*. 2021 Nov;11(11):3337-3363.
- [7] Yu L, et al. Systematic review and meta-analysis of randomized controlled trials assessing the impact of Baduanjin exercise on cognition and memory in patients with mild cognitive impairment. *Clinical Rehabilitation*. 2021;35(4):492-505.
- [8] KEJI, C., et al. (2003). The integration of traditional Chinese medicine and Western medicine. *European Review*, 11(2), 225-235.
- [9] Fang Bangjiang, et al. Based on TCM Epidemiological Theory "Truncation and Torsion Method" for the Treatment of New Coronary Pneumonia Theory and Practice of [J]. *Journal of Shaanxi University of Traditional Chinese Medicine*, 2022, 45(04): 1-7.
- [10] Ding R.C., et al. Diagnosis and treatment of COVID-19 from spleen and stomach. *Acta Chin. Med*. 2020;7.
- [11] Chai X., et al. Specific ACE2 expression in cholangiocytes may cause liver damage after 2019-nCoV infection. *bioRxiv*. 2020
- [12] Xian N.X., et al. Study on treatment from heart for severe patients based on etiology and pathogenesis transmission of Corona Virus Disease 2019. *Chin. Arch. Traditional Chin. Med*. 2020

- [13] Zhao Z, et al. Prevention and treatment of COVID-19 using Traditional Chinese Medicine: A review. *Phytomedicine*. 2021 May; 85:153308.
- [14] Nguyen LH, et al. Risk of COVID-19 among frontline healthcare workers and the general community: a prospective cohort study. *medRxiv*. 2020 May 25:2020.04.29.20084111.
- [15] Fang-Guo L, et al. Discussion on Etiology and Pathogenesis of Corona Virus Disease 2019 from “Cold-dampness and Insidious Dryness”. *Digital Chinese Medicine*. 2020 Mar;3(1):50–4.
- [16] Fan SJ, et al. Treatment efficacy of Lianhua Qingwen capsules for early-stage COVID-19. *Am J Transl Res*. 2022 Feb 15;14(2):1332-1338.