

## **How to deal with Omicron - Traditional Chinese Medicine - enhance human immunity !**

### **Abstract**

COVID-19 has been known as the part of “epidemic disease” in TCM. The reason is that the human body feels the external toxin and pathogen. The pathogenesis is mainly “wet, heat, poison, stasis, deficiency” and the lesions are the principal in the spleen, lungs and stomach. The preprint made available through the Lancet on 29 December compared COVID-19 cases in the Gauteng province during the second wave (41 046 cases), third wave (33 423), and fourth wave (133 551). It found that around 4.9% of people with COVID were admitted to hospital during the fourth wave, compared with the second (18.9%) and third (13.7%) waves ( $P < 0.001$ ). The paper also reported that 28.8% of admissions in the fourth wave were for severe disease, much lower than in the second (60.1%) and third (66.9%) waves ( $P < 0.001$ ). The current global epidemic situation is frustrating. In the absence of effective vaccines and targeted therapies for the treatment of COVID-19, this unique system of TCM has opened a new avenue to fight the novel pandemic.

**Keywords:** pandemic, COVID-19, epidemic disease, therapies

### **Introduction**

The global number of confirmed COVID-19 pandemic cases is currently striking record levels as Omicron spreads, which has around 50 mutations contrast to the original SARS-CoV-2 virus. The Omicron variant is smashing infection across 70 countries, including China. A number of articles in Nature and Cell report the immune evasion characteristics of Omicron and call it as the great escape artist. There is still no effective antiviral drugs, Traditional Chinese Medicine (TCD) is playing a vital role in the global fight against Omicron by boosting human immunity, and the demand for TCD has increased substantially. The Chinese method has been proven successful<sup>[1-2]</sup>.

The COVID-19 pandemic has brought tremendous impact on human life all over the world in 2019. As of 7 p.m., February 5, 2022 , Beijing time, 391,389,079 patients were diagnosed with COVID-19 and the death toll was 5,727,384(Data came from the Center for Systems Science and Engineering at Johns Hopkins University)(Fig 1). On 24 November 2021, a new SARS-CoV-2 variant B.1.1.529/BA.1 was reported, which caused a great unrest worldwide.Omicron was first detected in a specimen collected in Botswana on 9 November 2021. The Technical Advisory Group on SARS-CoV-2 Virus Evolution of WHO designated B.1.1.529 as the fifth variant of concern (VOC), and named it Omicron on 26th November<sup>[3]</sup>.



**Fig.1** The map of COVID-19 pandemic.

Omicron is the most rampant in the world, spreading rapidly in five continents around the world, Estimates build on Institute for Health Metrics and Evaluation models suggest that on January 17, 2022 there were 125 million omicron infections a day in the world, which is more than ten times the peak of the Delta wave in April, 2021. COVID-19 will continue but the end of the pandemic is near Authorities in South Africa announced on 30 December that the country already had passed its Omicron peak without a major spike in deaths. The receptor-binding domain (RBD) of spike protein plays a critical role in viral infection, it has been a key target of vaccines and antibody drugs. Therefore, the study of Omicron's 15 RBD mutations can lead to meaningful understanding of Omicron's infectivity, vaccine breakthrough, and antibody resistance. Our study reveal that Omicron is about 10 times more infectious than the original virus or about 2.8 times as infectious as the Delta variant. Using the

structures of 185 known antibody–RBD complexes, we prove that Omicron’s vaccine-escape capability is near 14 times as high as that of the Delta variant<sup>[4]</sup>.

The UK government report said that people in England who were infected with Omicron were about half as liable to require hospitalization or emergency care as were those infected with Delta on 31 December, 2021. But the number of people who have acquired immune protection against COVID-19 through vaccination, infection or both has grown over time, making it difficult to determine whether Omicron substantially causes milder disease than do earlier variants. Omicron’s course of infection could also have implications for children, says Audrey John, a specialist in paediatric infectious disease at the Children’s Hospital of Philadelphia in Pennsylvania. Due to small nasal passages and babies breathe only through their noses, it make upper respiratory conditions more serious for children than for adults, John says. However, she has not seen data suggesting an increase in the numbers of young children hospitalized for severe infection of the upper respiratory tract<sup>[5]</sup>.

There are indications Omicron can incur dehydration from fever, vomiting, diarrhea and can exacerbate other health issues such as diabetes. Such cases need less intensive care, but can still crush hospitals. “I’m hearing story after story after story of hospitals that are packed, health care workers that are infected, that can’t do their job,” says Maria van Kerkhove, an epidemiologist at the WHO. How severe Omicron is in people who are “immunologically naïve”—neither vaccinated nor previously infected—remains an open question. They are now a minority in most countries, but they too could increase the hospital burden if they get seriously ill. Deaths in Ghana, Ivory Coast, and Madagascar, where vaccination rates are low, are increasing sharply as COVID-19 cases surge<sup>[6]</sup>.

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second (60.1%) and third (66.9%) waves( $P<0.001$ ). Patients admitted in the Omicron dominated fourth wave were also 73% less likely to have severe disease than patients admitted during the Delta dominated third wave (adjusted odds ratio 0.27 (95% confidence interval 0.25 to 0.31))<sup>[7]</sup>. Immune escape, vaccine effect of Omicron is still under observation and research, no special treatment methods.

COVID-19 has been known as the part of “epidemic disease” in TCM. The reason is that the human body feels the external toxin and pathogen. The pathogenesis is mainly “wet, heat, poison, stasis, deficiency” and the lesions are the principal in the spleen, lungs and stomach. Chinese herbalists have accumulated rich experience and played an key role in the fight against the disease for thousands of years. The General Office of the National Health Commission(NHC) of China and the Office of the State Administration of TCM issued “Diagnosis and Treatment of Pneumonia Caused by Novel Coronavirus Infection”, which embodies the characteristics and advantages of TCM in the prevention and treatment of pneumonia<sup>[8]</sup>.

On Jan 22, 2020, the NHC of China firstly recommended TCM for the priority treatment of COVID-19 and included four syndromes and corresponding formulae in the Diagnosis and Treatment Protocol for COVID-19 (Trial Version 3). Subsequently, in Trial Version 8(Apr 14,2021), the prototype of Huashi Baidu Formula was gradually developed for treating the syndrome of pestilent toxin blocking lung. Simultaneously, the ingredients of Xuanfei Baidu Formula were applied to treat the syndrome of lung with dampness toxin retention. Based on numerous clinical therapeutic evidence, NHC published the composition of Qingfei Paidu Decoction, which was used in the treatment of COVID-19 patients from mild to critical stages<sup>[9]</sup>.

The combination of nature and human in TCM can improve human immunity as a whole, and TCM for COVID-19 and omicron has been widely used in China from the new coronavirus to omicron, which has been clinically verified. It is a useful method to improve human immunity in the treatment of COVID-19 and Omicron. TCM not only has a long history against the epidemic diseases but also plays a significant role in combating COVID-19. As of March 30, 2020, the TCM therapies were involved in 74 886 confirmed cases, 92% of the total confirmed cases. In the TCM-oriented

makeshift hospital led by Zhang Boli, an academician of the Chinese Academy of Engineering and honorary president of Tianjin University of Chinese Medicine, no patients developed into severe conditions after receiving comprehensive TCM therapies (Chinese herbal medicine, massage, Guasha/scraping, point application, and exercise of Taiji/Baduanjin). He said at a press conference on epidemic prevention and control in Tianjin on January 11, 2022 that TCM treatment will play a bigger role in this round of treatment Omicron. He pointed out that the proportion of fever patients in this round of epidemic is not high, and the temperature is not high, traditional Chinese medicine is effective. According to the new situation, the medicine was adjusted to promote lung and relieve the surface and clear away heat. Tianjin just announced the "new TCM prevention and treatment plan for COVID-19" to deal with the Omicron variant strain<sup>[10]</sup>.

Xuedong An et al reveal the mechanism of TCM improve the immunity of patients with COVID-19. Patients with COVID-19 often show specific immune function abnormalities, including activation of immune invisibility, paralysis, and memory. Compared to SARS-CoV, SARS-CoV-2 may cause a weak immune response or "immune stealth", which prolongs the patient's recovery process. For patients with COVID-19 and immune abnormalities, TCM can directly regulate the immune system and indirectly regulate the immune response by regulating cytokines. The cyclopeptide astin C, isolated from *Aster tataricus* L. f., can specifically inhibit the immune-related adaptor protein STING (stimulator of interferon genes), thereby regulating the immune response. The rich triterpenoids in *Glycyrrhiza uralensis* Fisch., *Dioscorea oppositifolia* L., *Poria cocos* Wolf, and *Polyporus* can be used as steroid hormones to regulate the activity of the mammalian immune system. Kaempferol and methanone can also directly aid in treating COVID-19 through the immune response. Maxing Shigan decoction regulates immune processes, such as white blood cell activation, T cell differentiation, and acute response, and tends to limit pro-inflammatory cytokines and control myeloid cells through the above-mentioned cell differentiation molecules. Da Yuan Yin can regulate the activation of T and B cells in IL-6 and C-C motif chemokine 2 to transmit information

and exert an immune response<sup>[11]</sup>.

On the basis of available clinical data, TCM has shown four clinical advantages in COVID-19 treatment. First, for mild or moderate cases, it could significantly shorten the negative conversion time of SARS-CoV-2 nucleic acid, the median duration of fever, and the time to defervescence as well as reduce the occurrence of severe or critically ill conditions. Second, for severe or critically ill cases, Chinese medicine injection could stabilize the oxygen saturation, inhibit inflammatory reaction, decrease exudative lesions, block or contain cytokine storm, and reduce the use of supportive care and antibiotics. Third, for patients in the convalescent period, it could improve symptoms, speed up the recovery, alleviate pulmonary inflammation, decrease adhesion, and help with functional recovery of damaged organs. Lastly, it could substantially reduce the cost of treatment<sup>[12]</sup>.

The Omicron variant spreads more easily than the original virus that causes COVID-19 and the Delta variant. CDC expects that anyone with Omicron infection can spread the virus to others, even if they are vaccinated or don't have symptoms. Persons infected with the Omicron variant can present with symptoms similar to previous variants. The presence and severity of symptoms can be affected by COVID-19 vaccination status, the presence of other health conditions, age, and history of prior infection. Omicron infection generally causes less severe disease than infection with prior variants. Preliminary data suggest that Omicron may cause more mild disease, although some people may still have severe disease, need hospitalization, and could die from the infection with this variant. Even if only a small percentage of people with Omicron infection need hospitalization, the large volume of cases could overwhelm the healthcare system which is why it's important to take steps to protect yourself. Against Omicron, wear a mask and quarantine one meter. Wash your hands. Homologous and heterologous booster vaccines had an acceptable safety profile and were immunogenic in adults who had completed a primary Covid-19 vaccine regimen at least 12 weeks earlier. We also have Chinese medicine. Because Chinese medicine has proven effective against Omicron. In particular, the clinical application in Tianjin has proved that TCM has a positive role in fighting virus

infection<sup>[13]</sup>.

Three formulae and three medicines have proven to be effective in patients afflicted with Omicron, and recommended for use in the prevention and control of the epidemic globally, including Jinhua Qinggan granules, Lianhua Qingwen capsules, Xuebijing injection, Qingfei Paidu decoction, Huashi Baidu decoction, and Xuanfei Baidu decoction. Lianhua Qingwen as a routine treatment led to a rapid improvement of fever, fatigue, cough, tightness in the chest, and poor appetite, and lowered the incidences of mild and moderate cases from turning severe <sup>[14-15]</sup>. Meanwhile, it was found that Lianhua Qingwen could inhibit the replication of SARS-CoV-2, affect the viral morphology, and exert anti-inflammatory activity in vitro<sup>[16]</sup>. Jinhua Qinggan cannot only improve common clinical symptoms in patients, but can also alleviate their psychological anxiety <sup>[17]</sup>. Studies suggest that the active components in Jinhua Qinggan regulate multiple signaling pathways via binding to ACE2 and consequently act on targets such as PTGS2, HSP90AB1, HSP90AA1, PTGS1, and NCOA2 and thus help prevent COVID-19 <sup>[18]</sup>. In the treatment of severe and critical cases, clinical studies showed that the combined use of Xuebijing injection and western medicine improved the recovery and discharge rate of COVID-19 patients and reduced the incidence of severely ill patients from worsening to critically ill. Experimental research indicates that this formulation exhibits antiviral effects in vitro. Results suggest that this formulation can significantly inhibit inflammatory factors induced by SARS-CoV-2 infections. Apart from reducing inflammatory reactions and preventing cytokine storms, Xuebijing also exhibited antithrombotic functions, which could prevent vascular embolism caused by COVID-19. Huashi Baidu decoction can be effective as a multi-target comprehensive treatment regimen in SARS-CoV-2-positive patients and can significantly shorten the time to nucleic acid turning to negative. In addition, it can reduce the average length of hospitalization and significantly improve clinical symptoms, which can be detected using physical and chemical examination methods, as well as pulmonary CT imaging studies. Additionally, Huashi Baidu could reduce the viral load in lung tissue by 30% in a mouse model. Qingfei Paidu decoction resolved fever, cough, and fatigue, rapidly and

effectively, and also improved the outcome of lung pathogenesis in patients exhibiting severe symptoms of COVID-19. The changes in lung pathogenesis was confirmed via imaging studies. Xuanfei Baidu formula effectively shortens the improvement time of clinical symptoms and temperature spikes. It also reduces the average length of hospitalization and prevents the worsening of symptoms in mild- and moderate category of patients to a certain extent. This formulation was useful in developing immunity, reducing inflammation, combating viral infection by reducing viral protein transcription, regulating hepatobiliary metabolism, and restoring the energy and metabolism balance <sup>[19-20]</sup>.

## Conclusions

The outbreak of COVID-19 for more than two years, TCM has been useful as a branch of alternative medicine to provide several strategies in combatting this lethal disease owing to its ancient and seasoned anti-epidemic history and a unique system of healing. The TCM modality was indicated as the first-line of therapy for COVID-19 patients exhibiting mild and moderate symptoms. A large number of clinical data and observations showed that the active use of the TCM modality had effectively prevented the spread of COVID-19 in China, thereby indicating the advantage of China's unique medical system. The current global epidemic situation is frustrating. In the absence of effective vaccines and targeted therapies for the treatment of COVID-19, this unique system of TCM has opened a new avenue to fight the novel pandemic. It is an effective and feasible method to use TCM to enhance immunity to help eliminate Omicron.

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