

Analysis of the biochemical and pathological mechanisms of botanicals in the treatment of COVID-19

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[Abstract] COVID-19, which originated in 2019, triggered a global pandemic in 2020. In the treatment of COVID-19, botanicals have achieved certain effects. My research found that the physiological mechanism of botanicals in the treatment of COVID-19 is that the alkaloids contained in plants can correct the PH value in blood and body fluids, maintain acid-base balance, and thereby inhibit the reproduction of COVID-19 and fungi. The pathological mechanism is that the invasion of COVID-19 will induce the proliferation of *Candida albicans* in the human body and cause acute leukemia. When *Candida albicans* proliferate in large numbers, it will destroy tissue cells, hinder the gas exchange in the blood, cause a large amount of carbon dioxide to stay, and cause the pH of body fluids and blood to be acidic. The alkaloids contained in plants can biochemically combine the hydrogen ions in body fluids and blood to reduce the concentration of hydrogen ions in body fluids and blood, thereby reaching acid-base balance and inhibiting the inflammatory response of *Candida albicans*.

[Keywords] COVID-19, *Candida*, Leukemia, Alkaloids, Acid-base balance, Acidosis

The necessary condition for the normal life activities of various tissues and cells of the human body is the relatively constant internal environment, and the relatively constant hydrogen ion concentration in body fluids is an important condition for the constant internal environment. However, in the normal life activities of tissue cells, a large number of acidic substances (such as carbonic acid, phosphoric acid, sulfuric acid and other organic acids, etc.) and a small number of alkaline substances (such as HCO_3^- and NH_3 , etc.) will be continuously produced. In addition, a certain amount of acidic and alkaline substances enters the body with food. Acidic substances can release H^+ to increase the H^+ concentration of body fluids, and alkaline substances can combine with H^+ to reduce the H^+ concentration of body fluids. Therefore, the relatively constant H^+ concentration in body fluids always changes constantly, but this change only occurs in a very small range. The PH value of normal human blood is always maintained between 7.35 and 7.45. The reason is that the body It has a fairly complete mechanism for regulating H^+ concentration in body fluids. This process of maintaining the H^+ concentration of body fluids in a relatively constant range of the body is called acid-base balance.

H^+ in body fluids can be divided into two categories according to the source and production process: one is respiratory hydrogen ion, and the other is metabolic hydrogen ion. Respiratory H^+ is the synthesis of carbonic acid H_2CO_3 from CO_2 and water produced in the process of human gas exchange and release H^+ . Under normal circumstances, carbonic acid that produces respiratory H^+ can become gaseous CO_2 through breathing, which is excreted from the lungs, so carbonic acid is called volatile acid. However, when the body is in a disease state, such as the

invasion of COVID-19, it multiplies in the lungs and causes acute inflammation and edema in the lungs, and produces a large amount of sputum that blocks the bronchioles and alveolar ducts of the lungs, making it impossible to exchange oxygen and carbon dioxide smoothly. The retained CO₂ and the water in the sputum synthesize carbonic acid H₂CO₃ and release H⁺, making the sputum acidic, causing hypoxic respiratory acidosis.

Metabolic H⁺ mainly comes from the catabolism of exogenous food protein and endogenous tissue protein. Metabolic H⁺ can only be excreted in urine through the kidneys. Metabolic H⁺ is also called fixed acid. Therefore, when renal function is impaired, it is easy to cause high uric acid and acidosis. For example, acute leukemia is prone to uric acid nephropathy. This is because *Candida albicans* rapidly destroys tissue cells, blocking the exchange of oxygen and carbon dioxide in the blood, resulting in an increase in the concentration of uric acid in the blood and urine. Uric acid forms crystals in the renal corpuscles, leading to Obstructive kidney damage, severe cases can lead to acute renal failure.

COVID-19 patients also suffer from lung, liver, spleen, and kidney damage. Damage to the lungs leads to obstruction of the respiratory tract, obstruction of gas exchange, difficulty in breathing, and inability to excrete CO₂ in the lungs, leading to hypoxic respiratory acidosis. Damage to the liver and spleen can also cause a large amount of carbon dioxide to stay in the gastrointestinal tract, causing symptoms such as high gastric acid, gastrointestinal bloating, and constipation. Therefore, respiratory H⁺ is mainly excreted from the lungs, followed by the gastrointestinal tract.

Many COVID-19 patients showed symptoms of renal insufficiency, and CT scans showed that 100% of patients had kidney imaging abnormalities. This is also because the invasion of COVID-19 will cause *Candida albicans* in the body to multiply and induce acute kidney injury. Under the double destruction of COVID-19 and *Candida albicans*, the red blood cells in the blood are severely damaged, which hinders the exchange of oxygen and carbon dioxide in the blood, resulting in acidic pH in the blood and increased uric acid concentration in the urine.

Leukemia is a malignant tumor disease caused by bone marrow hematopoietic stem cells. Leukemia cells invade and replace normal bone marrow tissues, and enter the peripheral blood in large quantities, causing a significant increase in the number of white blood cells in the peripheral blood. Leukemia cells entering the blood can invade and destroy other organs or tissues such as liver, spleen, lymph nodes and other organs or tissues, forming corresponding Invasive lesions of *Candida albicans*. Leukemia patients often die from *Candida albicans* infection.

Cellular immunity has always been considered to be dominant in the fight against *Candida albicans* infection. Long-term clinical observations have found that the vast majority of invasive *Candida* infections occur in individuals with deficient cellular immune function, and AIDS patients are prone to oral *Candida albicans* infection. Humoral immunity is the main component of the body's immune defense system, but the role of humoral immunity in the

fight against *Candida albicans* infection has always been a topic of debate. Some experiments have denied the protective effect of humoral immunity against *Candida albicans* infection. For example, in patients with leukemia who died of *Candida albicans* infection, the titer of anti-*Candida albicans* antibodies in the serum was significantly increased, and the deficiency of B lymphocytes had little effect on the production of *Candida albicans* protective immunity. [3]

Candida albicans is a conditioned pathogen and a resident parasitic fungus in the human respiratory, gastrointestinal, and genitourinary systems. White blood cells are also normally present in the blood or tissues. When triggers appear, they will all exhibit inflammatory reactions. Leukemia patients have significantly increased white blood cells, and leukemia patients often die from *Candida albicans* infection.

My research on the shapes of *Candida albicans* and white blood cells found that their shapes are similar. They are all nucleated single cells. *Candida albicans* cells are spherical, and when *Candida albicans* invades tissues, the shape is also spherical with filamentous spikes.

The function of white blood cells is to defend and participate in the body's response to invading foreign bodies. Leukocytes are generally spherical in the blood, but deformed to varying degrees in the tissues. The exuded leukocytes protrude pseudopods at the junction of endothelial cells, and the shape under the microscope is also like a spherical shape with filamentous spikes. The exuded white blood cells are called inflammatory cells and cause inflammation infiltration. It can be concluded from the invention of penicillin that mold has the effect of phagocytosis of other bacteria, and humoral immunity can inhibit other bacteria, but it has no inhibitory effect on *Candida albicans* infection. The mycelial *Candida* form and the white blood cells with pseudopods also resemble coronaviruses, so I think the white blood cells belong to the *Candida* family.

I think the world of germs also has characteristics similar to that of a kingdom. The host is their territory and the blood vessels are urban traffic roads. The fungus is the ruling class, and *Candida albicans* is the king. The various white blood cells in the blood are like a Legion of *Candida*. When foreign bacteria invade, in order to maintain its dominance, *Candida albicans* in the body will spontaneously organize forces to resist the invaders, which is called "rejection reaction" or "immune response." When the invading bacteria are more severe, the two sides will fight fiercely. This is the immune overreaction, which leads to the proliferation of white blood cells (*Candida albicans*) in the blood, and a large number of *Candida* infections cause severe damage to the host and even death. In the early stage of COVID-19 invasion, the COVID-19 virus content is the highest in the body. As the disease progresses, especially when symptoms of acidosis appear, the content of COVID-19 in the body will gradually decrease, while *Candida albicans* is in an acidic environment. The lower body content will increase, and *Candida albicans* dominates in the late stage.

Therefore, I believe that the pharmacological mechanism of botanicals in the treatment of COVID-19 and its complications is that the alkaloids, volatile oils, and polysaccharides contained

in plants have antiviral and antifungal effects, among which alkaloids are the most important chemical components, namely It can maintain the acid-base balance of body fluids and blood, and can also kill or inhibit the excessive immune response of invading viruses and *Candida albicans*. Because the alkaloids contained in different plants have characteristics and different targeting effects, a variety of plant combination drugs can act synergistically on COVID-19 that invades different parts, and can also synergistically inhibit their own immune overreaction or inhibit white blood cells, the inflammatory infiltration of *Candida albicans* quells the war between the two sides, thereby achieving the purpose of treatment.

It has been agreed that *Aspergillus* is a powerful carcinogen, and there are still many controversies about the carcinogenic factor of *Candida*. The Italian oncologist and the author of *Cancer is a Fungus*, Dr. Tulio Simoncini, he believes that cancer is a fungal disease, cancer is a fungal infection caused by *Candida*. Especially the different histological reactions caused by *Candida albicans*. I very much agree with his point of view, because many chronic diseases and cancers are chronic invasive inflammation of *Candida albicans*. When the invading germs are severe, the two sides fight fiercely, and the patient will die quickly. But when *Candida* wins and the excessive immune response is controlled, the patient will enter various chronic disease states, but the host will eventually die due to chronic systemic disseminated infection of *Candida*.

Candida albicans is acid and alkalophilic. *Candida albicans* cannot survive in an alkaline environment and can reproduce rapidly in an acidic environment. Baking soda (sodium bicarbonate) is one of the cheap and effective weapons against *Candida*. Dr. Tullio Simoncini used the injection of sodium bicarbonate to destroy the tumor. Aflatoxin can be quickly decomposed in a strong alkaline solution with pH 9-10, that is, it can inhibit or kill *Aspergillus flavus* in a strong alkaline solution with pH 9-10.

In biomedicine, acid and alkali are defined as: Any chemical substance that can release H^+ is called acid, anyway, any chemical substance that can accept H^+ is called alkali. Under ordinary dietary conditions, the production of acidic substances in a normal human body far exceeds that of alkaline substances. Alkaloids in the human body are mainly derived from alkaloids contained in plants, such as organic acid salts in vegetables and fruits. The organic anions in these salts can be decomposed into CO_2 and H_2O in cells, and H^+ is consumed in the process. Produce HCO^- , and alkalinize body fluids.

The prior art has proved that most of the alkaloids contained in plants are alkaline ($pH > 7$), and most of the alkaloids are crystalline. Alkaloids are all nitrogen-containing organic compounds, and most of them have complex ring structures. Nitrogen is mostly contained in the ring. The alkalinity of alkaloids is related to the structure type of alkaloids. Many scholars have found that the pharmacological activities of alkaloids include anti-tumor effects. For example, pinellia alkaloids have anti-tumor and phlegm-reducing effects, and the aconitine contained in aconite is an important medicine for treating kidney disease. We know that the PH value of normal people's blood is weakly alkaline, while patients with advanced cancer are prone to acidosis.

Their blood's PH value is relatively acidic or uric acid is relatively high. The blood PH value can be corrected by taking alkaline foods or medicines. The pH value of urine or urine makes the PH value of blood or body fluids in a weakly alkaline state to reach acid-base balance, thereby inhibiting or killing *Candida albicans*. Of course, the intake of alkaloids must also be controlled. Excessive intake will cause alkalosis. Therefore, the combination of multiple alkaloids and small doses has obvious advantages compared with single alkaloids, which can not only improve the overall efficacy, but also reduce side effects such as alkalosis.

Reference

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