



# The Method of Combining Internal and External Treatment of Ulcerative Colitis in Chinese Medicine

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## Abstract

### Keywords

- ▶ ulcerative colitis
- ▶ combining internal and external treatment
- ▶ Chinese herbal medicine
- ▶ seven carbon decoction
- ▶ Maodie tang
- ▶ oral administration of Chinese herbal medicine

Traditional Chinese medicine (TCM) believes that the main pathogenesis of ulcerative colitis is spleen deficiency; damp heat in the large intestine as the symptom, the treatment must be warming, clearing, eliminating, tonifying, astringing concurrently. From the concept of combining holism and the local treatment in TCM, idea of combining internal and external treatment is adopted. That is, the external treatment follows the therapeutic principle of using herbs with a bitter and cold nature to eliminate stagnation, and the seven carbon decoction, which can clear heat and dampness, cool the blood, and stop dysentery, is used as a rectal drip to retain the enema. Internal treatment follows the therapeutic principle of warmly tonifying and cultivating vital qi, with oral Chinese herbal medicine named Maodie Tang to strengthen the spleen and tonify the kidney, clearing heat and inducing dampness.

## Introduction

Ulcerative colitis (UC) is a chronic nonspecific inflammatory disease of the intestinal tract characterized by recurrent inflammation confined to the mucosal and submucosal layers of the colon, which generally does not extend beyond the left half of the colon and, in a minority of patients, throughout the entire colon. The clinical manifestations of UC mainly include diarrhea, pus, and blood stools, as well as abdominal pain of varying degrees and a sense of tenesmus. And it may be accompanied by extraintestinal manifestations such as peripheral arthritis and systemic manifestations such as anemia and wasting. According to the World Health Organization, the treatment of this disease is faced with many problems such as unknown etiology, chronic persistence, recurring episodes, difficulty in curing, and

the risk of cancer, so it is called one of the modern intractable diseases. Many epidemiological data indicate that the incidence of UC is on the rise globally, with higher rates in developed countries.<sup>1</sup> At present, in Western medicine, it is generally recognized that it depends on immunity, genetics, infection, intestinal microecology, and other multifactorial interactions resulting in persistent inflammatory damage to the intestinal mucosa.<sup>2</sup> Western medicine mainly uses 5-aminosalicylates, corticosteroids or immunosuppressants, and biological agents, but long-term use of these agents can cause certain toxic side effects and the overall effect is not good. Besides, treating only the symptoms but not the root cause of the disease is also prone to recurrent attacks of UC, difficult to cure, seriously affecting the quality of life of patients, bringing a heavy economic burden and mental

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burden to patients, families, and society. In contrast, traditional Chinese medicine (TCM) can reduce the recurrence rate, toxic side effects, and adverse reactions and improve the quality of life of patients with UC.<sup>3,4</sup> UC belongs to the category of lingering dysentery in TCM, which has been documented in the ancient and modern books. Nowadays, patients in the clinic are treated with internal and external methods through which satisfactory results have been achieved.

## The Pathogenesis of Ulcerative Colitis

The etiology and pathogenesis of UC have not yet been fully elucidated, and current research suggests that it is caused by the interaction of a variety of factors, including immunologic, genetic, environmental, psychosomatic, and intestinal microecological factors. The pathogenesis of UC is hypothesized to be the exposure of genetically susceptible populations to environmental factors that, with the participation of the intestinal flora, initiate the intestinal specific and non-specific immune system, which ultimately activates the immune response, causing an inflammatory process that results in an over-hyperactive intestinal immune response leading to intestinal mucosal injury. This excessive hyperactivity of the immune inflammatory response may be associated with impaired immune regulation and persistent stimulation by antigens.<sup>5</sup> Immunologically, multiple factors are thought to be involved in the pathogenesis of UC, and these factors may trigger a continuous chronic immune process in which antibodies, cytokines, and inflammatory mediators released by several effector cells, such as macrophages, T and B lymphocytes, and natural killer (NK) cells, causing tissue destruction and inflammatory lesions in the intestinal mucosa. Genetics suggests that there are significant racial differences and family aggregation in the development of the disease, which is more common in Caucasians, and studies on genetic susceptibility and genetic polymorphisms of UC are becoming a research hotspot. Studies of environmental causative factors suggest that the disease develops as a result of exogenous factors through the body's autoimmune response mechanisms, leading to persistent damage to the intestinal epithelium and tissue cells. In psychology, it is suggested that negative emotions such as depression and anxiety are aggravated by acting on the central-hypothalamic-brainstem-peripheral nervous system, leading to sympathetic excitation and gastrointestinal autonomic disorders.<sup>6</sup> The intestinal microecological aspects of UC patients are considered to be reduced intestinal flora diversity and dysbiosis, altered intestinal permeability, and damaged intestinal mucosa, leading to disrupted immune function.<sup>7</sup> According to TCM, this disease is closely related to the six exogenous factors, improper diet, disorder emotions, and congenital deficiencies. The pathogenesis is caused by deficiency of the spleen and kidney, failing to transport and transform, causing stagnation of qi in the large intestine and affecting the flow of blood, resulting in blood stasis due to qi stagnation, which turns into heat over time, or fighting with dampness heat, resulting in heat and flesh decay, and blood

not following the meridians and overflowing, and gradually becoming internal carbuncles and resulting in abdominal pain, diarrhea, mucus-purulent and bloody stools, and other symptoms. This disease is based on spleen deficiency, which is the root cause, throughout the disease, and dampness heat is the symptom. Although the disease is located in the large intestine, it involves the spleen, kidney, liver, and lung organs.<sup>8</sup> As *The Complete Works of [Zhang] Jing-yue (Jing Yue Quan Shu)* says, "The root cause of diarrhea is due to the spleen and stomach...When the spleen and stomach are injured, water becomes wet and food stagnates...and diarrhea occurs." This book also says, "In people with tenesmus, the disease occurs in the lowest part of the intestines, and the underlying cause is in the spleen and kidney." The TCM etiology and pathogenesis summarized above, such as the weakness of the spleen and kidney, failing to transport and transform, and the disharmony of qi movement are related to the genetic theory and autoimmune factors mentioned in Western medicine. TCM believes that the spleen is congenital and the kidney is acquired. Because of the insufficiency of the patient's innate essence and deficiency of kidney qi, this precisely leads to abnormal absorption of the spleen and stomach in the later life and disorders of the immune system, which leads to recurrence of the disease. As *The Complete Works of [Zhang] Jing-yue (Jing Yue Quan Shu)* says, "Diarrhea is caused by improper diet...because of the stagnation of the cold pathogen caused by eating raw and cold food." That is, what modern medicine calls dietary and allergic factors have exactly similar triggering effects on the disease, and some studies have suggested that the recurring condition of UC patients is related to a high-fat, high-protein diet or allergy to milk and other dairy products.<sup>9</sup> As *The Yellow Emperor's Inner Classic (Huang Di Nei Jing)* says: "When Qing qi is in the lower part of the body, diarrhea occurs...Diarrhea also occurs when interior dampness is excessive... In spring, it is damaged by the wind pathogen, and diarrhea occurs in summer." Other ancient scholars concluded that diarrhea occurs more often because of summer-heat pathogens and less often because of cold pathogen, and that all kinds of dysentery are always caused by the invasion of the gastrointestinal tract by the pathogens of dampness heat. The various pathological factors discussed above, such as dampness, heat, blood stasis, toxins, and other pathogens invading the body, lead to the formation of UC. This is similar to the changes in the microecology of the entire intestinal tract, as mentioned in Western medicine, which allows endogenous bacteria to be produced, releasing a variety of factors and generating a series of inflammatory responses. In addition, as the *Categorized Collection of Medical Formulas (Yi Fang Lei Ju)* says, "Diarrhea disease, due to the stomach and intestines being first deficient, so the six pathogens can enter the body from the outside, and the seven emotions be injured internally." TCM recognizes that the disease has a long duration and recurrent episodes and that the patient will be anxious and irritable, causing depression of liver qi, more stagnation of qi, wood depression overwhelming the earth, and the spleen failing to transport and transform. This is also linked to psychiatric factors, one of the etiologic factors discussed in

Western medicine, which trigger localized inflammation in the intestinal tract by affecting the secretion of the brain-gut peptide 5-hydroxytryptophan (5-HT), which in turn affects the brain-gut axis and the neurological-endocrine-immune system, leading to the dysregulation of inflammatory cytokines.<sup>10</sup>

### The Connotation of Internal and External Combined Treatment

TCM internal treatment is a method that requires the combination of the patient's symptoms and tongue and pulse signs to identify and treat the patient. In the process of diagnosis and treatment, the herbs and the dosage can be adjusted in time according to the changes in the patient's symptoms. At the same time, TCM internal treatment for UC has many advantages, which is the main method to treat UC.<sup>11</sup> Because UC symptoms are often chronic and persistent, they require long-lasting treatment. Spleen deficiency as the root cause and dampness heat as the symptom are the TCM pathogenesis of UC, so it is necessary to take warm tonic herbs to strengthen the spleen and bitter-cold herbs to clear the heat. However, overdosing and prolonged use of herbs with bitter and cold nature to treat UC will easily injure the spleen and stomach, causing the balance of yin and yang in the human body to be disrupted.<sup>12</sup> One of the characteristics of TCM is the combination of local and holistic treatment, using a combination of external and internal treatment to achieve the best results. External treatment is a prominent means of diagnosis and treatment in TCM, which works directly on the diseased area and has the characteristics of simplicity, convenience, inexpensiveness, and effectiveness. Compared with internal treatment methods, it has the advantage of difference in approaches but equally satisfactory in results and can supplement the internal treatment method. Liu explored the efficacy of herbal oral administration combined with enema in the treatment of UC; the results showed that the total effective rate of the combined treatment was 93.65%, and the recurrence rate of the study group was lower than that of the control group treated with mesalazine in the follow-up period of 6 months ( $p < 0.05$ ),<sup>13</sup> which suggested that herbal oral administration can exert the effects of anti-inflammation, detoxification, and enhancement of immune function, and the external use of enemas realizes the purposes of absorbing the inflammation, healing ulcer, and improving the microcirculation, and the combined use has a good clinical efficacy. Chen and Ma<sup>14</sup> explored the therapeutic effect of herbal oral administration combined with enema on UC, and the results showed that the symptomatic points of abdominal pain, diarrhea, purulent and bloody stools, and the levels of erythrocyte sedimentation rate, C-reactive protein, and interleukin (IL)-8 were significantly lower than those of the control group, and the total effective rate of the combined treatment was higher than that of the control group, which suggests that the treatment of herbal oral administration combined with enema from the removal of putrefaction and regeneration

of muscle, benefiting qi and activating the blood, and clearing the heat and dispelling the dampness can effectively alleviate the patients' clinical symptoms of abdominal pain, diarrhea, and blood in the stools and has fewer adverse reactions, which is of higher value for the application of the therapy. Feng et al<sup>15</sup> explored the effect of herbal oral administration combined enema on inflammatory factors in patients with UC, and the results showed that the integral expression of IL-6 and IL-10 was significantly reduced after combined treatment, which suggested that herbal oral administration combined enema treatment could effectively improve the balance of inflammatory cytokines and inflammatory inhibitory factors in patients and alleviate the inflammatory response of patients. As a consequence, it is advisable to advocate the combination of internal and external treatment of UC. In other words, it is advisable to adopt the treatment idea of taking Chinese herbs to strengthen the spleen and tonify the deficiency internally and using bitter-cold and dampness-drying herbs externally to drip into the rectum, so as to achieve the best therapeutic effect.

### Treatment Methods

#### External Using Bitter-Cold Herbs to Eliminate Stagnation

Chinese herbs retention enema is mainly used to push the medicine slowly into the intestinal cavity of the patient, but due to the large intestinal range and insufficient pressure, it is difficult for the medicine to reach the deeper part of the intestinal tract by way of pushing. With the development of medical technology, the rectal drip method is widely used in clinical practice. Compared with the traditional enema method, its operation is simple, patients are easy to accept, and can significantly expand the scope of medicine delivery, prolong the duration of action, and improve the efficacy.<sup>2</sup> At the same time, the speed of medicine delivery is controllable, and the uniform speed of the rectal environment (such as temperature and intestinal peristalsis frequency) does not change much, which ensures the continuity of medicine absorption in the rectum. And to a certain extent, it avoids the traditional enema method of an intestinal tube which is thicker, harder texture, more rough, and easy to damage the intestinal tract in the process of treatment, with safety.<sup>16</sup> Therefore, the external treatment method uses rectal drops in the treatment of UC, where the liquid absorbed through the rectal mucosa can promote blood circulation, improve tissue nutrition, reduce capillary permeability, reduce inflammatory exudation, help inhibit connective tissue proliferation, and promote the absorption of inflammatory masses and spasm relief; hence, the local lesions of the rectum and the surrounding tissues and organs of the lesions have a better therapeutic effect.<sup>17</sup> According to ancestral medicine, the lung and the large intestine are interior-exteriorly related. After the medicine is absorbed by the rectum, it is transmitted to the lung through the meridians and is distributed throughout the body through the propagation of the lung to achieve the purpose of treatment. Modern medical

research believes that the blood circulation of rectal mucosa is vigorous and has a strong absorption capacity. After the medicine is absorbed by rectal epithelial cells, it enters body circulation through three pathways: the first is through the middle rectal vein, the inferior vein, and the anal canal vein, by passing the liver and entering the large circulation directly; the second is through the superior rectal vein, through the portal vein into the liver after metabolism, and then circulates to the whole body; and third, after absorption through the rectal lymphatic system, it enters the blood circulation through the celiac plexus and thoracic duct.<sup>18</sup> All three routes do not pass through the stomach and small intestine, avoiding the influence and destructive effects of acid, alkali, and digestive enzymes on the medicine, reducing the stimulation of the medicine to the stomach and intestines, which can produce therapeutic and protective effects on the intestinal mucosa, thus relatively improving the bioavailability of the medicine.<sup>17</sup> In addition, the herbs usually need to be heated. The warm stimulation makes the blood vessels of the intestinal mucosa dilate rapidly, which promotes local blood and lymphatic circulation and improves the therapeutic effect. This shows that the rectal drip is beneficial to the therapeutic effect of the herbs. This facilitates the therapeutic effects of the medication.<sup>19</sup> In general, the advantages of the external treatment method of UC using rectal drops are that there are no gastrointestinal irritation and other toxic side effects; the dosage can be on the large side; the medicine concentration is high, localized medication; the intestinal wall absorbs the active ingredients of herbs faster than the internal use of the herbs; and the effect is direct. It is very helpful in promoting anti-inflammatory, analgesic, hemostatic, and ulcer healing, and it avoids the first-pass effect of medicine metabolism and reduces the waste of herbs.

Zhou et al<sup>20</sup> used the Chinese medicine enema method to treat 60 cases of UC; the observation group and the control group used the Chinese medicine rectal drip enema method and traditional retention enema method, respectively, and the results showed that the observation group's retention time of the herb in the intestines, the patient's satisfaction, and the clinical effect were better than that of the control group. Liu et al<sup>21</sup> compared mesalazine oral plus anal embolization treatment (control group) and Sophora elm charcoal formula retention enema treatment (treatment group) through a randomized controlled trial, the results showed that the efficacy of Sophora elm charcoal formula retention enema in the treatment of chronic UC can significantly improve the clinical symptoms compared with mesalazine, and there is no obvious adverse reaction. Duan<sup>22</sup> used TNBs/ethanol-induced preparation of the UC rat model for observation, the control group was given mesalazine enema solution, and the TCM group was given Jiawei Sanhuang Tang enema solution. After treatment, the serum expression levels of IL-1 $\beta$ , IL-6, and IL-17a in the TCM group of rats were significantly reduced ( $p < 0.05$ ), and the pathological damage of the colonic mucosa was significantly improved. It is believed that the enema of Jiawei Sanhuang Tang has a precise efficacy on TNBs/ethanol-induced UC in rats, and its mechanism of action may be through reducing the

activation of Caspase-1 and the synthesis of Gasdermin D, and then down-regulating the secretion of inflammatory factors, such as IL-1 $\beta$  and, thus, alleviating and improving the congestion and edema, ulcerations, and erosions of the colonic mucosa. It can be seen that the advantages of Chinese herbal soup rectal drip enema in clinical treatment are outstanding, which can shorten the time of symptom improvement, and has the advantages of high safety, economic convenience, easy operation, etc., which can significantly improve the cure rate and quality of life of UC patients.

External use of the Chinese herbal medicine rectal drip method is to clear heat and dampness, cool the blood, and stop dysentery as the treatment principle. The writer invented an enema of Chinese herbal medicine for treating UC (CN201510017822.5), which is made of seven kinds of Chinese herbal medicine fried with charcoal, named seven carbon decoction (SCD). It is composed of 30 g each of Jingjie Charcoal (*Schizonepetae Herba Carbonisata* Charcoal), Diyu Charcoal (*Sanguisorbae Radix* Charcoal), Huaihua Charcoal (*Sophoraeflos* Charcoal), Qiancao Charcoal (*Rubiae Radix et Rhizoma* Charcoal), Zonglyu Charcoal (*Trachycarpi Petiolus* Charcoal), Cebai Charcoal (*Platycladi Cacumen* Charcoal), and Oujie Charcoal (*Nelumbinis Rhizomatis Nodus* Charcoal). In this formula, Jingjie Charcoal (*Schizonepetae Herba Carbonisata* Charcoal), Zonglyu (*Trachycarpi Petiolus* Charcoal), and Qiancao Charcoal (*Rubiae Radix et Rhizoma* Charcoal) can stop bleeding by astringency; Diyu Charcoal (*Sanguisorbae Radix* Charcoal) and Cebai Charcoal (*Platycladi Cacumen* Charcoal) can cool the blood and stop bleeding, detoxify and eliminate swelling; Huaihua Charcoal (*Sophoraeflos* Charcoal) can cool the blood and stop bleeding; Oujie Charcoal (*Nelumbinis Rhizomatis Nodus* Charcoal) can astringently stop bleeding, clear heat, and remove blood stasis. The herbs are fried with charcoal and used externally to exert the function of clearing heat and cooling the blood, astringent, detoxifying and stopping bleeding.<sup>23</sup> Modern research pharmacology shows StE, the lipid-soluble hemostatic active ingredient in Jingjie Charcoal (*Schizonepetae Herba Carbonisata* Charcoal), has a rapid and strong hemostatic effect; the tannin, soluble calcium ions, and charcoal in Diyu Charcoal (*Sanguisorbae Radix* Charcoal) can achieve hemostasis through the action of three factors: coagulation factors, platelets, and blood vessel walls; the main components of Huaihua Charcoal (*Sophoraeflos* Charcoal), such as rutin, tannin, and Sophora saponin I and isorhamnetin-3-O-rutinoside, have hemostatic, anti-inflammatory, and anti-pathogenic microbial effects; the quinones, tannins, and trace elements in Qiancao Charcoal (*Rubiae Radix et Rhizoma* Charcoal) have pharmacological effects such as resolving blood stasis and stopping bleeding, anti-inflammation and analgesia, and the charcoal generated enhances its adsorption and astringent effects and promotes hemostasis; lignan-7-O-glucoside, lignan-7-O-rutinoside and tannin in Zonglyu Charcoal (*Trachycarpi Petiolus* Charcoal) have hemostatic effects; the quercetin, kaempferol and other components in Cebai Charcoal (*Platycladi Cacumen* Charcoal) have hemostatic, anti-inflammatory and antibacterial effects; the 3-epi Betulinic acid and tannin components of Oujie Charcoal

(*Nelumbinis Rhizomatis Nodus Charcoal*) have significant hemostatic effects. And according to TCM, “red will stop when it sees black.” Since the Chinese herbal medicine has the function of stopping bleeding after making charcoal, it can treat all kinds of blood symptoms. Modern scientific research has shown that the effects of charcoal production of Chinese herbal medicines are mainly due to the change of the material basis of its action after charcoal production, which can promote the blood coagulation process and anti-fibrinolysis process, reducing the vascular permeability and strengthening the vascular contraction response, which shortens the bleeding and clotting time and manifests as enhanced hemostatic effect, etc.<sup>24–31</sup> Therefore, producing charcoal from hemostatic herbs can improve the effectiveness of hemostasis. In addition, after producing charcoal, the solidifying effect of hemostatic herb becomes stronger, which can enhance the efficacy of treating red and white dysentery. SCD for the treatment of UC makes use of the efficacy of the herb in astringency and solidity, detoxification of decay, and astringency of sores and muscles, which has the effect of promoting the healing of mucous membrane and ulcers, relieving inflammation and symptoms of abdominal pain and diarrhea, with precise efficacy and no adverse reactions, and can be applied repeatedly.<sup>23</sup>

### **Taking Warm Tonics Internally to Cultivate the Vital Qi**

In the treatment of UC, the principle of internal TCM is to strengthen the spleen and benefit healthy qi and remove dampness, to tonify the vital qi and reduce adverse reactions. UC is characterized by a mixture of deficiency and excess, with spleen deficiency and damp heat as the main pathogenesis, with spleen and stomach qi deficiency as the root cause of the disease and damp heat as the symptom. As this disease lingers, it damages the kidney, resulting in the spleen and kidney deficiency.<sup>32</sup> Then, the treatment of this disease advocates strengthening the spleen and tonifying qi, taking into account the removal of dampness and clearing the intestines, and over time, warming the kidney, astringing the intestines, and stopping diarrhea. The writer treats this disease with the base formula of Maodie Tang (MT) with modification. MT is a herbal soup invented for the treatment of age-related UC (CN201510017822.5). In this formula, Roudoukou (*Myristicae Semen*) can warm the spleen and kidney and astringently stop diarrhea; Dingxiang (*Caryophylli Flos*) can warm the middle qi of the body and replenish yang to dispel cold; Muxiang (*Aucklandiae Radix*) can regulate the stomach and relieve pain; Mugua (*Chaenomeles Fructus*) can dredge liver and harmonize the stomach; the above four herbs together serve as the sovereign medicine; Taizishen (*Pseudostellariae Radix*), Hezi (*Chebulae Fructus*), Yingsuqiao (*Papaveris Pericarpium*), Baizhu (*Atractylodis Macrocephalae Rhizoma*), and Wubeizi (*Galla Chinensis*) can strengthen the spleen and astringe intestine to stop diarrhea, which together serve as the minister; Gegen (*Puerariae Lobatae Radix*), Huangqin (*Scutellariae Radix*), Huanglian (*Coptidis Rhizoma*), Machixian (*Portulacae Herba*), Zicao (*Arnebiae Radix*), and Yuxingcao (*Houttuyniae Herba*)

can clear heat and dampness, which together serve as the minister; Gancao (*Glycyrrhizae Radix et Rhizoma*), which harmonizes all herbs, serves as the adjunct. The whole formula works together to strengthen the spleen and tonify the kidney and clear heat and dampness.<sup>33</sup> Modern pharmacological research suggests that the Roudoukou (*Myristicae Semen*) extract produces a prostaglandin-like synthesis of inhibition and exerts anti-inflammatory effects through the central nervous system. Eugenol in the volatile oil of Dingxiang (*Caryophylli Flos*) may be involved in immunomodulation and anti-inflammatory activity through inhibition of the nuclear factor- $\kappa$ B (NF- $\kappa$ B) pathway. Muxiang (*Aucklandiae Radix*) extract has antidiarrheal and analgesic properties. Mugua (*Chaenomeles Fructus*) extract papain has a strong anti-inflammatory effect. Yingsuqiao (*Papaveris Pericarpium*) contained in poppy husk has a good analgesic effect and improves the symptoms of abdominal pain. Hezi (*Chebulae Fructus*) inhibits the gastrointestinal propulsion of the end-carbon method, which in turn induces a decrease in intestinal tube tension and reduces mucosal surface lubrication, achieving an antidiarrheal effect. Taizishen (*Pseudostellariae Radix*) and Baizhu (*Atractylodis Macrocephalae Rhizoma*) are known to enhance the body's immune function. The tannins in Wubeizi (*Galla Chinensis*) have an inhibitory effect on secretory diarrhea caused by enterotoxins. Puerarin in Gegen (*Puerariae Lobatae Radix*), baicalin in Huangqin (*Scutellariae Radix*), berberine hydrochloride in Huanglian (*Coptidis Rhizoma*), and glycyrrhetic acid in Gancao (*Glycyrrhizae Radix et Rhizoma*) were able to reduce the expression of the inflammatory factors TNF- $\alpha$  and IL-6, which worked together to achieve an anti-inflammatory and antidiarrheal effect. Arachidonic acid, which plays a major anti-inflammatory role in Machixian (*Portulacae Herba*), attenuates the inflammatory response by modulating the TLR4/NF- $\kappa$ B signaling pathway, among others. The comfrey pigments in Zicao (*Arnebiae Radix*) have strong antioxidant activity and anti-inflammatory effects. Flavonoids in Yuxingcao (*Houttuyniae Herba*) have significant anti-inflammatory and analgesic effects, and the aqueous extract of Yuxingcao (*Houttuyniae Herba*) can also improve the immune function of the body by regulating the expression of pro-inflammatory factors.<sup>34–41</sup> Pharmacological studies have shown that MT has a variety of effects such as anti-inflammatory and analgesic, antidiarrheal and dysentery, and enhancement of the body's immune function.

### **Case Presentations**

Ren, a 66-year-old male, came to hospital on September 11, 2020 with the chief complaint of intermittent bloody mucopurulent stools for 2 years, aggravated for 1 week. The symptoms at the time of admission were formed mucopurulent and bloody stools with more blood and less pus four to five stools per day, painfully swollen abdomen and discomfort, and a feeling of tenesmus during defecation, nausea, poor appetite, fatigue, and sleepiness. Colonoscopy and pathology showed rectal mucosa was seen to be eroded



and ulcerated. Pathology showed the formation of crypt abscess. Western diagnosis indicated UC (chronic recurrent type; rectal type; active; moderate; UCAI score 6). TCM diagnosis indicated dysentery with spleen and kidney deficiency pattern. TCM treatment was based on strengthening the spleen, tonifying the kidney, clearing heat, and removing dampness. This recipe was based on the formula of MT with modification. Herb composition was Roudoukou (*Myristicae Semen*) 20g, Muxiang (*Aucklandiae Radix*) 10g, Dingxiang (*Caryophylli flos*) 10g, Mugua (*Chaenomelis Fructus*) 10g, Taizhishen (*Pseudostellariae Radix*) 20g, Fried Baizhu (*Fried Atractylodis Macrocephalae Rhizoma*) 20g, Fuling (*Poria*) 20g, Fried Shanyao (*Fried Dioscoreae Rhizoma*) 20g, Machixian (*Portulacae Herba*) 20g, Zicao (*Arnebiae Radix*) 5g, Yuxingcao (*Houttuyniae Herba*) 5g, Gancao (*Glycyrrhizae Radix et Rhizoma*) 5g, Baijiangcao (*Herba Patriniae*) 30g. Administration: seven doses with water decoction, one dose a day, were divided into morning and evening (prepared by Chinese Medicine Decoction House of the First Affiliated Hospital of Henan University of Chinese Medicine). Second visit: after 7 days, the patient resorted to symptoms was significantly improved, and the original prescription continued to be treated.

After discharge from the hospital, the patient was advised to continue oral treatment with MT and the SCD enema to consolidate the treatment, the SCD was discontinued 3 weeks after discharge. Mesalazine (Sunflower Pharmaceutical Group Jiamusi Luling Pharmaceutical Co., Ltd., H19980148) was continued, 1g, taking orally three times a day. The condition remained stable.

Notes: This patient's disease belonged to the category of lingering dysentery in TCM. The TCM syndrome type was spleen and kidney deficiency. TCM treatment was based on strengthening the spleen and tonifying the kidney, clearing heat and removing dampness. The patient's body was weak due to exertion and diet, which damaged the spleen and stomach, and dampness heat generated in the body damaged the intestinal mucosa, causing deficiency in the body over time and sinking of the middle qi, resulting in anal swelling and a feeling of tenesmus. Spleen and stomach diseases can extend to the kidneys, which lead to internal dampness and turbidity, stagnation of the intestines, and obstruction of qi, resulting in abdominal pain. This recipe was based on the formula of MT with modification. In this formula, Roudoukou (*Myristicae Semen*) can warm the spleen and kidney, and astringently stop diarrhea; Dingxiang (*Caryophylli flos*) can warm the middle qi of the body and replenish yang to dispel cold; Muxiang (*Aucklandiae Radix*) can regulate the stomach and relieve the pain; Mugua (*Chaenomelis Fructus*) can dredge liver and harmonize the stomach; the above four herbs together serve as the sovereign medicine: Taizhishen (*Pseudostellariae Radix*), Baizhu (*Atractylodis Macrocephalae Rhizoma*), Fuling (*Poria*), and Shanyao (*Fried Yam*) can strengthen the spleen and tonify the middle qi, and aforementioned are the ministerial herbs. Machixian (*Portulacae Herba*), Zicao (*Arnebiae Radix*), and Yuxingcao (*Houttuyniae Herba*) can clear heat and dampness; Baijiangcao (*Herba*

*Patriniae*) can eliminate carbuncles and drain pus, stopping bleeding and relieving pain, these are also the ministerial herbs; Gancao (*Glycyrrhizae Radix et Rhizoma*) can harmonize all the herbs and it is the adjuvant herb. The whole formula works together to strengthen the spleen and tonify the kidney, and clear heat and dampness. In the external treatment of TCM, SCD mainly performs the function of clearing heat and cooling the blood, astringency, detoxifying, and stopping bleeding. On the one hand, utilizing the richness of the pelvic veins can reduce the stimulation of the herb to the gastric mucosa and improve the bioavailability of the herb, and on the other hand, it can increase the plasma concentration in the local circulation, promote the healing of the mucous membranes and the ulcers, and significantly alleviate the pus and blood stools, as well as the abdominal pain and other uncomfortable symptoms. Through the combination of internal and external treatments of TCM, it can better improve the symptoms of UC, achieving the purpose of treating both the symptoms and the root cause of the disease, and promoting the recovery of the disease.

## Conclusions

The main pathogenesis of UC is characterized by a mixture of deficiency and excess, with a mixture of cold and heat. Because of the need for persistent treatment, bitter-cold herbs injure the spleen and stomach, making it difficult for patients to tolerate treatment. The two treatment ideas are to use Chinese herbal medicine that strengthen the spleen and tonify deficiency to be taken internally and bitter-cold, dampness-drying herbs to be dripped into the rectum. It fully embodies the treatment principle of warming, clearing, eliminating, and tonifying in TCM, which is consistent with the pathogenesis of the disease. At the same time, it protects the spleen and stomach from injury and enhances the therapeutic effect.

### CRedit Authorship Contribution Statement

Q.D. was responsible for conceptualization, writing original draft, and writing review and editing. C.D. was responsible for methodology, writing review and editing. J. H. was responsible for resources, supervision, and writing review and editing.

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### Conflict of Interest

The authors declare no conflict of interest.

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