

# *A Proved Case of Diarrhea after Colon Cancer Operation Treated by Modified Gegen Qinlian Decoction*

Hu Saiyue<sup>1</sup>, Sun Sheng<sup>2,\*</sup>

<sup>1</sup>Chengde Medical College, Chengde, Hebei, 067000, China

<sup>2</sup>Chengde Hospital of Traditional Chinese Medicine, Chengde, Hebei, 067000, China

\*Corresponding author

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**Abstract:** This paper introduces a proven case of Gegen Qinlian Decoction in treating diarrhea after colon cancer surgery. Diarrhea after colon cancer surgery is one of the most common diseases after colon cancer surgery, and diarrhea quickly recurs, which brings great trouble to the daily lives of patients. From the perspective of traditional Chinese medicine, this disease is related to the viscera and meridians, especially the liver, spleen, and kidney. Spleen deficiency and excessive dampness can cause diarrhea; spleen deficiency and liver depression can cause qi disorder; spleen deficiency and kidney can cause severe illness. The author uses Gegen Qinlian Decoction to invigorate the spleen, promote diuresis, warm Yang, and promote blood circulation. It has achieved ideal results in treating diarrhea after colon cancer surgery. Now, the experience is summarized as follows to be shared with colleagues.

## 1. Introduction

Colon cancer (CC) is one of the most common malignant tumors of the digestive system, and its location is mainly in the rectum and the junction of the rectum and sigmoid colon. With the development of the economy and the improvement of people's material level, the incidence and mortality of this disease are increasing year by year, which seriously affects people's lives. Most of the disease has no obvious clinical symptoms in the early stage. When symptoms such as abdominal mass, abdominal pain, increased frequency of defecation, and changes in stool characteristics occur, the condition is likely to have progressed to the middle and advanced stages [1]. In modern medical treatment of this disease, surgery is usually the first treatment choice if the patient meets the surgical indications. Surgery can reach the disease site directly, remove the cancerous site, and then assist chemotherapy after surgery, which can improve the disease-free survival rate and overall survival rate of patients and reduce the risk of cancer recurrence and metastasis [2]. However, because the intestinal tract is susceptible to mechanical stimulation during surgery, postoperative patients will mainly experience symptoms of intestinal dysfunction, coupled with intestinal mucosal damage and intestinal nerve reflex disorders caused by mechanical stimulation of surgery, resulting in diarrhea after colorectal cancer surgery [3].

The author observed in clinical practice that Western medicine in the treatment of diarrhea after colon cancer surgery, often montmorillonite powder, Bifidobacterium Triple Viable Capsules, loperamide hydrochloride or antibiotics and other treatments, can quickly work, but easy to repeat

attacks after drug withdrawal. Antibiotics easily lead to intestinal flora imbalance, aggravating diarrhea [4]. In addition, it may sometimes be accompanied by specific adverse reactions (such as rash, nausea, and other symptoms). Traditional Chinese medicine (TCM) has a good effect on treating this disease, with low cost and fewer adverse reactions. In clinical application, syndrome differentiation and treatment can be performed according to individual conditions, and the clinical experience is summarized as follows to analyze the syndrome differentiation ideas and treatment experience for the treatment of diarrhea after colon cancer surgery.

## **2. TCM understanding of diarrhea after colon cancer surgery**

Traditional Chinese medicine (TCM) has no clear disease name corresponding to diarrhea after colon cancer surgery. Xu Xiaodong et al. [5] believe that the symptoms of diarrhea after colon cancer surgery are mainly manifested as increased frequency of defecation, thin feces, and even diarrhea such as watery feces, which can be attributed to the categories of "phlegm," "downside," and "diarrhea" in TCM according to its etiology, pathogenesis, and clinical manifestations.

## **3. Etiology and pathogenesis of diarrhea after colon cancer surgery**

Zhou Zhongying, a master of Chinese medicine [6], proposed that deficiency of vital qi and dysfunction of viscera are the root of the pathogenesis of cancer. Invasion of exogenous pathogens, unclean diet, emotional disorders, and deficiency of vital qi can cause cancer virus, which can be caused by pathological factors such as phlegm, blood stasis, and dampness.

Doctors in the past believe that the etiology of diarrhea after colon cancer surgery is nothing more than exogenous evil, improper diet, emotional internal injury, tiredness internal injury, and spleen and stomach weakness. The spleen is mainly responsible for transporting and transforming water and grains, while the stomach is mainly responsible for receiving water and grains, the two jointly play a role in Qi-movement. The large intestine is mainly responsible for transmitting waste, while the small intestine is responsible for distinguishing between clear and turbid substances, the two jointly play a role in the reabsorption of water. The external dampness causes damage to the spleen and stomach, spleen deficiency leads to dampness stagnation, which can lead to diarrhea. Dysfunction of the large and small intestines can affect the reabsorption of water, it can also cause diarrhea. Secondly, the emotional difficulties can lead to liver qi stagnation, damage to the spleen, which can also cause diarrhea.

Spleen is the acquired basis, according to the five lines of relationship, spleen depends on the warm function of the kidney, and kidney storing essence, the primary door fire failure, congenital basis, the elderly weak or long illness caused by spleen yang deficiency, spleen yang deficiency, can make the kidney qi deficiency, kidney yang deficiency, close the door is unfavorable, the disease. Lin Yina et al. believed that [7], in patients after colon cancer surgery, the primary pathogenesis is a deficiency of vital energy, which leads to the imbalance of viscera, spleen deficiency, and dampness, water and fluid, not cloth, resulting in qi stagnation and blood stasis; spleen deficiency and phlegm coagulation, inability to transport water and moisture, a variety of causes interact with each other, and develop this disease.

Therefore, the disease location of diarrhea after colon cancer surgery is mainly in the spleen, which is closely related to the liver, stomach, kidney, and large and small intestine. The pathogenesis is mainly spleen deficiency and dampness, liver depression and spleen deficiency, or spleen and kidney yang deficiency.

## 4. The characteristic formula for the treatment of diarrhea after colon cancer surgery

### 4.1. Composition of Gegen Qinlian Decoction

Treatise on Febrile Diseases records: "Sun disease, Guizhi syndrome, medical reverse, Li Sui more than. Gegen Scutellaria Huanglian Decoction is the main. "The original text shows that the exterior and interior puzzled, more than benefit, can be used Gegen Qinlian Decoction. Liu Yuzheng et al. [8] found that traditionally, this prescription has been used to treat body heat and benefit. Modern clinical treatment is generally used for ulcerative colitis, irritable bowel syndrome, bacillary dysentery, suppurative tonsillitis, and other Yangming heat.

According to the clinical characteristics of diarrhea after colon cancer surgery, the author treated this disease with Gegen Qinlian Decoction based on invigorating the spleen and Qi, clearing away heat and dampness. The specific prescription was as follows: Radix Puerariae 20 g, Radix Scutellariae 10 g, Rhizoma Coptidis 6 g, Pericarpium Citri Reticulatae 15 g, Radix Bupleuri 12 g, Radix Paeoniae Alba 15 g, Radix Atractylodis Macrocephalae 10 g, Radix Fangfeng 10 g, Radix Magnoliae 10 g, Fructus Mume 10 g 7 doses, one dose per day, decoction 300 ml, warm in the morning and evening. We can adjust the prescription according to the patient's condition, as follows: if the patient has symptoms of liver qi stagnation, we can add 10 grams of Chaihu and Yujin each. If the patient has symptoms of poor sleep, we can add 20 grams of Polygonum multiflorum and 20 grams of jujube seeds each. If the patient has symptoms of bloating, we can add 6 grams each of Magnolia officinalis, Fructus Aurantii immaturus, and Atractylodes macrocephala. If the patient has been suffering from the disease for a long time and the tongue is purple black with bruises and petechiae, we can add Red Peony and Peach Kernels.

### 4.2. Medication analysis

This prescription is based on Gegen Qinlian Decoction, derived from the Treatise on Miscellaneous Diseases of Typhoid Fever, and is commonly used for treating diarrhea.

Kudzu vine root is the monarch drug in the formula, sweet and spicy in taste, excellent in nature, Shengqing antidiarrheal, for the "treatment of spleen and stomach weakness diarrhea holy medicine"; Scutellaria baicalensis, Coptis chinensis bitter in taste, cold in nature, heat and dampness, "Shennong Ben Cao Jing" recorded that "Coptis chinensis can treat intestinal phlegm abdominal pain dysentery, Scutellaria baicalensis can remove red dysentery, heat storage bladder, ... hematochezia, blood leakage. ", the combination of the two drugs has a good effect on the treatment of intestinal symptoms such as hematochezia and diarrhea; Radix Glycyrrhizae is sweet in taste, flat in nature, relieving pain with urgency, and harmonizing various drugs; it plays a total of the functions of clearing away heat and dampness, and elevating yang to stop diarrhea. This prescription modifies Gegen Qinlian Decoction, takes the meaning of Tongxie Yao Fang, Atractylodes macrocephala Koidz in the formula is bitter and sweet in taste, warm in nature, invigorating the spleen and eliminating dampness, good treatment of spleen deficiency and dampness, dampness and turbidity resistance; Paeonia lactiflora Koidz bitter acid, slightly cold in nature, acid convergence liver yin, nourishing blood and softening the liver, urgent pain relief; tangerine peel, pungent in taste, warm in nature, feasible gas pain relief, invigorating the spleen and dampness; prevention of flavor Xinxiang, Xinneng powder liver depression, fragrance can soothe temper; cicada slough and wind medicine to take the meaning of "wind can win dampness", both are expelling wind drugs, and cicada slough is insect drugs, for flesh products, expelling wind power is more muscular, Ye cloud: "search meridians of rheumatism phlegm and blood stasis Magnolia officinalis is bitter in taste, warm in nature, can be dry and wet phlegm, the lower gas in addition to full; umberic acid, astringent, flat, astringent intestinal antidiarrheal.

Modern pharmacology has shown that Gegen Qinlian Decoction can relieve diarrhea symptoms

and reduce intestinal inflammation. The main active component of Kudzu vine root is puerarin [9], while puerarin has a significant effect in anti-inflammation, anti-oxidative stress, and protection of intestinal mucosa; baicalin is one of the essential flavonoids in *Scutellaria baicalensis*, which has the effects of reducing inflammatory response, anti-virus, antioxidant stress response, and antitumor [10,11]; *Coptis chinensis* contains berberine, which has antibacterial and antioxidant effects [12]. Glycyrrhizic acid is the main bioactive component of *Glycyrrhiza uralensis*, which is the primary source of sweet taste produced by *Glycyrrhiza uralensis* and has pharmacological effects such as antitumor, antibacterial, antiviral, anti-inflammatory, regulating immunity, antioxidant, anti-aging, and anti-fibrosis [13]. *Pericarpium Citri Reticulatae* has anti-inflammatory, antibacterial, hypolipidemic, antihypertensive, antioxidant, and hepatoprotective effects [14]. Saikosaponin, in the chemical constituents of *Bupleurum chinense*, has anti-inflammatory, antiviral, soothing, and antiepileptic effects [15]. *Atractylodes macrocephala* Koidz has anti-inflammatory, antitumor, antidepressant, and gastrointestinal function [16]. Paeoniflorin has anti-inflammatory, soothing, antitumor, and hepatoprotective effects [17]. Fangfeng has anti-inflammatory, antipyretic, and sedative effects [18]. *Cicada slough* has anti-infection, anticonvulsant and antitussive effects [19]. *Fructus mume* can be antibacterial, anti-inflammatory, anti-fatigue, and antiviral hepatitis [20]. Sun Dong [21], through the clinical observation of 80 cases of colon cancer patients after surgery, the results found that the incidence of diarrhea in the observation group (Gegen Qinlian Decoction combined with essential treatment) was significantly lower than the incidence of primary therapy in the control group, concluded that Gegen Qinlian Decoction treatment of diarrhea effect is quite rich. Wang Nan et al. [22] found through the study on the mechanism of action of intestinal flora in colon cancer model rats that Gegen Qinlian Decoction could effectively improve diarrhea, hematochezia, stool characteristics, and other symptoms, reduce LPS and inflammatory response, reduce intestinal flora values such as *Escherichia coli*, and reduce intestinal reactions by increasing Wnt/ $\beta$ -catenin pathway protein levels, to protect the intestinal tract. Zhou Fajia [23] observed the effect of Tongxieyaofang on diarrhea after colon cancer surgery through clinical and animal experiments and concluded that Tongxieyaofang treated diarrhea after colon cancer surgery by promoting the expression of AQP3 and AQP8 in the postoperative colonic mucosa.

## 5. Clinical medical records

This 54-year-old female patient came to our hospital for an initial diagnosis on January 28, 2023, due to "intermittent diarrhea after colon cancer surgery for more than three months and aggravation for one week." The patient had increased stool frequency 3-5 times a day due to no obvious inducement three months ago, unformed stool, often covered with mucus on the stool surface, without obvious blood samples or tarry stool. He visited a local tertiary care hospital, and a colonoscopy showed that the colonoscopy was successfully inserted 15 cm from the anus and a large irregular mass with an uneven surface. Diagnosis: Colonic mass. Pathology showed colon adenocarcinoma. The patient was admitted to the hospital for surgical treatment and received a conventional chemotherapy regimen (oxaliplatin plus capecitabine) after surgery. After chemotherapy, the patient occasionally had diarrhea, which was aggravated by mental stress. The diarrhea was about 3-4 times a day. On weekdays, she used oral montmorillonite powder and bifidobacterium capsules for treatment, and the frequency of diarrhea after she reduced medication than before. One week ago, the patient developed aggravated diarrhea after quarreling with his family, 4-6 times a day, and was not significantly relieved by taking montmorillonite powder and bifidobacterium capsules. Today, the patient came to our Department of Traditional Chinese Medicine for diagnosis and treatment to seek traditional Chinese medicine. Present. Physical examination showed a dark red tongue, yellowish greasy fur, and slippery pulse strings. Auxiliary examination: The blood routine, urine and stool

routine, and electrolytes showed no abnormality. TCM diagnosis: diarrhea (liver depression and spleen deficiency syndrome). The treatment is based on invigorating the spleen and dampness, soothing the liver, and invigorating the spleen. Self-made Gegen Qinlian modified treatment, the specific prescription is as follows: Gegen 20g, Scutellaria 10g, Coptis 6g, Citrus 15g, Bupleurum 12g, Fried Radix Paeoniae Alba 15g, Bran fried Atractylodes 10g, Fangfeng 10g, Magnolia 10g, Fructus Mume 10g, Cicada slough 6g, Radix Glycyrrhizae 6g. 7 doses, one dose per day, decoction 300 ml, warm in the morning and evening

On February 4, 2023, the patient visited our hospital for a second visit. After drug administration, diarrhea was improved 3-5 times per day, and abdominal pain was relieved than before. There was still dizziness, fatigue, loss of appetite, loose stools, and urination. The tongue was light red, the fur was yellowish and greasy, and the pulse strings were slippery. Based on the front, 10 g of Poria cocos and 30 g of white lentil were added for seven doses, and the method of administration was the same as before.

On February 11, 2023, the patient was diagnosed with diarrhea that significantly improved after medication, 2-3 times a day, without apparent abdominal pain, dizziness, or fatigue relieved before; the tongue was light red, the fur was slightly greasy, and the pulse string was slippery. The second diagnosis prescription was unchanged, with seven doses, and the method of medication was the same as before.

On March 6, 2022, the patient was followed up by a call; after drug withdrawal for two weeks, the patient had a normal appetite, diarrhea, and defecation 1-2 times a day, without abdominal pain, dizziness, or occasional fatigue. Considering that the patient was middle-aged and elderly, the gas consumption injury after colon cancer surgery was positive, and his fatigue may be a typical postoperative manifestation; it could be considered that the patient's symptoms were improved.

According to the statement, the patient had diarrhea after colon cancer surgery, which was aggravated after mental stress, combined with a dark red tongue, yellowish greasy fur, and slippery pulse string. He was diagnosed with diarrhea, liver depression, and spleen deficiency syndrome. At initial diagnosis, Gegen Qinlian Decoction combined with Tongxieyaofang was given for modified treatment. Gegen Qinlian Decoction can relieve diarrhea symptoms. The patient had aggravated diarrhea after mental stress. Combined with slippery pulse string, liver depression, and spleen deficiency were considered. The patient was given Tongxieyaofang to purge the liver and spleen, a symptomatic anti-diarrheal treatment. Bupleurum chinense was added to the formula to soothe the liver, relieve depression, and relieve emotional anxiety symptoms. The patient had more times of diarrhea and said Fructus Mume to stop diarrhea; Magnolia officinalis was dry and wet, and the two compatibilities complement each other. Cicada slough was added to the formula to take the meaning of wind energy to win dampness. The author observed in clinical practice that in diagnosing and treating patients with diarrhea, based on the original formula syndrome differentiation, the appropriate addition of 1-2 flavors of expelling wind drugs can significantly reduce diarrhea. At the second diagnosis, the patient still had dizziness and fatigue, which was considered to be after colon cancer surgery, injuring the spleen yang, the spleen did not rise clear, the clear qi did not rise, and the water valley essence did not transport, then dizziness and fatigue. Therefore, in the second diagnosis, we added Poria cocos and white beans. This has two meanings for the spleen: firstly, it can nourish the spleen and stomach, restore the spleen's function of generating clear qi and transport water and grain essence. This improved symptoms of dizziness and fatigue. Secondly, through inducing diuresis, these two traditional Chinese medicines reduced the water content in feces. It can promote bowel movements, thereby alleviate the symptoms of diarrhea in patients. The three diagnosis improves the patient's symptoms, so the effect was not better, and the patient continued to take a course of treatment.



## 6. Summary

Diarrhea after colon cancer surgery is a common disease of the digestive system, and its occurrence and development are affected by diet, emotions, daily life, exogenous pathogens, and other aspects. If not treated in time, resulting in deep disease, easy-to-repeat attacks, and protracted refractory, it quickly brings a profound impact on the patient's life. Traditional Chinese medicine (TCM) has unique advantages in the treatment of diarrhea after colon cancer surgery, such as outstanding efficacy and fewer side effects. In the treatment of this disease, Gegen Qinlian Decoction is used as the primary prescription, and the diagnosis and treatment ideas are: (1) Invigorating the spleen; (2) Eliminating dampness and reducing phlegm; (3) Being careful when using this product in severe cold and high temperatures.

In addition, in treating diarrhea after colon cancer surgery, in addition to the primary prescription, some insect drugs can also be added, such as scorpion, cicada slough, silkworm, etc. , in the treatment can be as effective as gong drum. On the one hand, the disease is mistreated and quickly enters the collaterals for a long time, so that the pathogenic factors are in-depth, lingering refractory, while insect drugs can better expel wind and meridians, relieve pain with urgency; on the other hand, insect drugs are flesh and blood sentimental products, which are primarily salty and spicy, Xin can enter the collaterals, salty can be soft and firm, in search of wind detoxification, qi and blood, with its unique advantages. From the perspective of TCM, adding insect drugs can expel wind, meridians, and spasmolysis; from modern pharmacology, insect drugs have better anti-analgesic and anti-inflammatory effects, so in clinical application, the effect is inevitable. Due to the high content of animal heterologous proteins in insect drugs, the addition of insect drugs in the clinical treatment of diarrhea patients after colon cancer surgery may cause allergic reactions such as rash, itching, dizziness, and headache, which should also be taken seriously.

## References

- [1] Wu Yongmei, Zou Qun, Luo Mo, et al. Effect of Jianpi Zhixie Decoction on gastrointestinal hormone levels and quality of life in patients with diarrhea after colon cancer surgery [J]. *Modern Journal of Integrated Traditional Chinese and Western Medicine*, 2021, 30 (12): 1291-1295.
- [2] Wang Tianyuan, Chen Xiaoqi, Chen Xinju, et al. Experience of Zheng Yuling in the treatment of diarrhea after postoperative chemotherapy for colon cancer [J]. *Chinese Folk Therapy*, 2020, 28 (04): 18-20.
- [3] Li Fangfei, He Lisha, Jia Chenhui, et al. Treatment of intestinal dysfunction after colorectal cancer surgery based on the theory of Qi rise and fall [J]. *Journal of Traditional Chinese Medicine*, 2014, 55 (16): 1423-1426.
- [4] Wu Yongmei, Zou Qun, Luo Mai, Zhang Jiewen, Li Wenjuan, Peng Mengying. Effect of Jianpi Zhixie Decoction on gastrointestinal hormone levels and quality of life in patients with diarrhea after colon cancer surgery [J]. *Modern Journal of Integrated Traditional Chinese and Western Medicine*, 2021, 30 (12): 1291-1295.
- [5] Xu Xiaodong, Chen Daquan. Application of Li Zhongzi 's Nine Methods of Treating Diarrhea [J]. *Jilin Traditional Chinese Medicine*, 2009, 29 (12): 1098-1099.
- [6] Cheng Haibo, Wu Mianhua. Professor Zhou Zhongying 's Academic Thought of Cancer Toxicity [J]. *Chinese Journal of Traditional Chinese Medicine*, 2010, 25 (06): 866-869.
- [7] Lin Yina, Yi Fan. Clinical efficacy of Juandu Xiaoliu Yin in the treatment of colon cancer and its effect on colon cancer cell metastasis [J]. *Chinese Folk Therapy*, 2022, 30 (07): 52-54.
- [8] Liu Yuzheng, Zhang Jun, Wang Yuesheng, et al. Discussion on Dose-related Issues of Gegen Qinlian Decoction [J]. *Chinese Journal of Experimental Pharmacy*, 2010, 16 (16): 216-218.
- [9] Dan Wenli, Zhao Xin, Lu Xingqi, et al. Application of network pharmacology and experimental validation in investigating therapeutic potential of puerarin for ulcerative colitis [J]. *Chinese Journal of Immunology*, 2024, 40(5): 1055-1063.
- [10] Wang Jinyan. Progress in the pharmacological action of *Scutellaria baicalensis* Georgi [J]. *Inner Mongolia Traditional Chinese Medicine*, 2020, 39 (02): 167-168.
- [11] Wang Lantao, Zhao Yuehua, Feng Xiaochen, et al. Research progress on the mechanism of baicalin in preventing and treating colitis [J]. *Modern Medicine and Clinical*, 2024, 39 (04): 1076-1080.
- [12] Chen Yang, Ma Jiayi, Zhang Jianrong, et al. Progress in the mechanism of action of alkaloids in *Coptis chinensis*

- against ulcerative colitis [J]. *Journal of Nanjing University of Traditional Chinese Medicine*, 2023, 39 (12): 1260-1266.
- [13] Deng Taomei, Peng Can, Peng Daiyin, Yu Nianjun, Chen Weidong, Wang Lei. Progress in Chemical Composition and Pharmacological Action of *Glycyrrhiza uralensis* and Discussion of Quality Markers [J]. *Chinese Journal of Traditional Chinese Medicine*, 2021, 46 (11): 2660-2676.
- [14] Luo Chunhua, Mo Sirui, Huang Jielian, Guanshui Qing. Progress in Pharmacological Action and Product Development of *Citrus sinensis* [J]. *Asia-Pacific Traditional Medicine*, 2023, 19 (09): 229-234.
- [15] Zhang Yaofeng. Progress in Pharmacological Action of Saikosaponin [J]. *Clinical Research of Traditional Chinese Medicine*, 2020, 12 (33): 120-121.
- [16] Gu Sihao, Kong Weisong, Zhang Tong, Yang Jun, Li Ling, Wang Bing. Chemical composition and pharmacological effects of *Atractylodes macrocephala* Koidz and progress in the clinical application of compound prescription [J]. *Chinese Journal of Traditional Chinese Medicine*, 2020, 38 (01): 69-73.
- [17] Liu Ping, Zhao Junchao, Li Riguang. Progress in Pharmacological Action and Mechanism of Paeoniflorin [J]. *Herald of Traditional Chinese Medicine*, 2023, 29 (08): 84-88.
- [18] Cao Sisi, Shi Lei, Sun Jialin, Meng Xiangcai. Progress in Chemical Composition and Pharmacological Action of Fangfeng [J]. *Modern Chinese Medicine Research and Practice*, 2021, 35 (01): 95-102.
- [19] Zhao Zijia, Zhou Guirong, Wang Yu, et al. Study on chemical constituents and pharmacological effects of *periostracum cicada* [J]. *Jilin Journal of Chinese Medicine*, 2017, 37(5):491-493.
- [20] Zhang Huayue, Li Qi, Fu Xiaoling. Progress in Chemical Composition and Pharmacological Action of *Fructus Mume* [J]. *Shanghai Journal of Traditional Chinese Medicine*, 2017, 51 (S1): 296-300.
- [21] Sun Dong. Modified Gegen Qinlian Decoction combined with chemotherapy to improve the immune function of postoperative patients with colon cancer of dampness-heat accumulation type [D]. *Shandong University of Traditional Chinese Medicine*, 2020.
- [22] Wang Nan, Fang Xinggang, Liao Sha, et al. Mechanism of Gegen Qinlian Decoction on Intestinal Flora in Colon Cancer Model Rats Based on Wnt/ $\beta$ -catenin Signaling Pathway [J]. *Journal of Liaoning University of Traditional Chinese Medicine*, 2023, 25 (02): 49-53.
- [23] Zhou Fajia. Clinical and Experimental Study on Tongxieyaofang in the Treatment of Diarrhea after Colon Cancer Surgery [D]. *Chengdu University of Traditional Chinese Medicine*, 2017.