

Research Progress and Reflections on Regulating Ulcerative Colitis Based on TCM Intestinal Fu-viscera Theory

Linke Hou¹, Jianping Hui^{2,*}

¹Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China

²Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang 712000, Shaanxi, China

*Correspondence Author

Abstract: *Ulcerative colitis (UC) is an inflammatory bowel disease characterised by mucosal inflammation. Its onset is associated with multiple factors, and the exact aetiology remains unclear. Meanwhile, with the accelerating pace of modern life, the incidence of ulcerative colitis is on a steady rise. The link between its onset and an imbalance in the gut microbiota has become a hot topic in modern medical research. The Traditional Chinese Medicine (TCM) 'Intestinal-Zang-Fu Theory', developed over millennia, has established core concepts such as 'the function of the Fu organs lies in their communication', 'the intestines and lungs are paired as exterior and interior', and 'the spleen and intestines function in unison', providing a unique diagnostic and therapeutic approach to gut microbiota regulation. This paper systematically reviews the core tenets of TCM's 'Intestinal-Zang-Fu Theory'. By integrating the characteristics of gut microbiota classification in ulcerative colitis (UC), it elucidates the theoretical basis for pattern differentiation and drug selection. It systematically analyses recent research progress in TCM's use of regulating gut microbiota metabolites to improve UC, thereby providing new insights and theoretical support for the integrated treatment of UC using both Western and Traditional Chinese Medicine, as well as serving as a reference for future related research.*

Keywords: Ulcerative colitis, Traditional Chinese Medicine theory of the intestines and viscera, Traditional Chinese Medicine, Syndrome distinction and treatment, Gut microbiota.

1. Introduction

Ulcerative colitis is a common chronic, non-specific inflammatory bowel disease. Lesions are predominantly concentrated in the mucosa and submucosal layers of the colon and rectum; pathologically, the condition is characterised by continuous, diffuse inflammatory damage to the colorectal mucosa [1]. In ancient medical texts, UC falls under the categories of 'intestinal dysentery', 'diarrhoea', 'loose stools', 'dysentery' and 'recurrent dysentery' in Traditional Chinese Medicine, and clinically manifests as intermittent episodes of diarrhoea, abdominal pain, and stools containing mucus, pus and blood [2]. The exact aetiology of UC remains unclear; however, its pathogenesis primarily involves disturbances in the intestinal microbiota, damage to the intestinal epithelium, immune dysregulation, genetic susceptibility and psychological factors. The condition is difficult to cure, prone to recurrence and has a high rate of malignant transformation; it is classified by the World Health Organisation as one of the intractable diseases [3]. This paper will elucidate the treatment of ulcerative colitis based on the regulation of the intestinal microbiota according to the Traditional Chinese Medicine (TCM) theory of the intestines and viscera, with the aim of providing new insights and theoretical support for integrated Chinese and Western medical treatment, as well as offering a reference direction for subsequent related research.

2. The Core Concepts of Traditional Chinese Medicine's 'Zang-Fu Theory' and Their Relationship to the Pathogenesis of Ulcerative Colitis

Within the theoretical framework of traditional Chinese

medicine, there is no direct modern-day equivalent for ulcerative colitis; clinically, it is often classified under the categories of dysentery, intestinal wind, visceral toxicity, and diarrhoea [4]. The primary site of this disease is the large intestine, and its pathogenesis is characterised by dysfunction of the intestinal organs and a pattern of 'deficiency at the root and excess at the branch'. In the TCM system of intestinal organs, the large intestine serves as the central hub; although the pathological changes are localised to the intestine, the onset and progression of the disease are closely related to functional disorders in multiple organs, including the liver, spleen, lung and kidney [4]. The body relies on the spleen and stomach to receive and transform food and drink, extracting their essence, whilst the intestines facilitate downward transmission and the excretion of waste products. Together, these form a complete physiological system comprising reception, transformation, transmission and excretion. Consequently, ulcerative colitis is frequently classified within TCM under the categories of 'intestinal disorders', 'dysentery' and 'diarrhoea' [4].

The Suwen: Linglan Midian Lun states: "The large intestine is the organ of transmission, from which transformation arises." The large intestine receives the metabolic waste remaining after the small intestine has separated the clear from the turbid, further reabsorbs excess fluid from the intestines, forms the residue into faeces, and expels it from the body; it is a crucial link in maintaining the smooth flow of qi throughout the viscera and the orderly rise and fall of qi mechanisms. When the large intestine's transport function is unimpeded, waste products can descend and be expelled normally; turbid qi within the body is able to descend; the qi mechanisms of the viscera throughout the body are harmonised; and physiological states tend towards stability; However, if the large intestine fails in its transport function and the descent

process is disrupted, waste products are prone to stagnating and accumulating within the intestines. Over time, this fosters the development of damp-heat and the accumulation of stagnant toxins, which obstruct the blood vessels of the intestinal meridians. This, in turn, triggers a series of typical symptoms such as abdominal pain, diarrhoea, abnormal bowel movements, and tenesmus. This is also a key pathogenic mechanism underlying the onset of ulcerative colitis in Traditional Chinese Medicine.

The renowned TCM practitioner Xu Jingfan, however, believed that spleen deficiency often leads to the accumulation of dampness; when the spleen and stomach fail in their functions of transformation and transportation, the internal generation of damp pathogenic factors becomes the key pathogenesis of ulcerative colitis [5]. According to *Yifang Leiju* (A Compendium of Medical Formulas), most cases of dysentery were caused by excessive eating, resulting in food stagnation in the intestines. The six fu organs function through unimpeded flow and descend naturally; they discharge without retention, and are solid without being distended. When the intestines and viscera are unobstructed, the flow of qi is harmonious, qi and blood circulate freely, and pathogenic toxins are expelled; when the qi of the viscera is stagnant, damp-heat, phlegm-turbidity and blood stasis obstruct the interior, becoming stagnant and transforming into heat, which corrodes the intestinal lining, forming ulcers and bloody, purulent stools—this constitutes the pathological basis of UC, characterised by ‘damp-heat and blood stasis toxins as the manifest symptoms’. Scholars from Wang Xili’s [6] team, based on the pathogenesis theory of phlegm and stasis in the lung and spleen, propose that spleen deficiency and loss of function, coupled with lung dysfunction, are the fundamental internal factors underlying the onset of ulcerative colitis. When external pathogens invade the body, they further exacerbate the deficiency of spleen and stomach qi and the stagnation of lung qi, leading to disruption in the ascending, descending, entering and exiting functions of qi throughout the body, which in turn induces blood stasis; simultaneously, the stagnation of lung qi causes dysfunction in its dispersing and clearing functions, whilst the deficiency of spleen qi impairs its transport and transformation functions, resulting in metabolic disorders in the distribution of body fluids, with water and dampness stagnating and coalescing into phlegm-turbidity. Phlegm-turbidity flows along the meridians and accumulates in the large intestine, ultimately forming a pathological state where phlegm and blood stasis obstruct and congest the intestinal collaterals. This causes the blood and flesh of the intestines to decay and the mucosa to rupture and erode, thereby triggering ulcerative colitis. While different medical practitioners hold varying views on the aetiology and pathogenesis of UC, these perspectives collectively provide a solid theoretical foundation for the use of Traditional Chinese Medicine to regulate the intestinal microbiota in the treatment of UC.

3. The Basis of Differential Diagnosis and Treatment According to Traditional Chinese Medicine Theory

From the perspective of Traditional Chinese Medicine theory, the root cause of ulcerative colitis is often attributed to a constitutional weakness in the spleen and stomach functions;

factors such as exposure to the six exogenous pathogens, improper or unhygienic diet, and emotional disturbances are significant external triggers of this condition. Although the disease is localised in the large intestine, its pathogenesis is closely linked to functional disorders of the spleen, liver, kidney and lung. The overall pathological mechanism is characterised by a pattern of ‘deficiency at the root and excess at the branch’, with key pathological factors including damp-heat, stasis-heat, fire-toxin, phlegm-turbidity, stagnation of qi and internal obstruction by blood stasis [7]. During the active phase of the disease, the pattern is predominantly one of excess, with the core pathogenesis being the accumulation of damp-heat pathogens in the intestines, leading to disharmony in the circulation of qi and blood; during the remission phase, the pattern is often a combination of deficiency and excess, with the primary pathogenesis being spleen-stomach qi deficiency, persistent dampness and turbidity, and impaired transport and transformation functions; Critically ill cases are often caused by rampant heat-toxin or internal accumulation of stasis-heat; whereas patients with a protracted course and recurrent episodes often experience prolonged and intractable illness due to the mutual entanglement of phlegm-turbidity and blood stasis, which obstructs the intestinal collaterals [8]. Based on the differentiation of patterns according to symptoms, tongue appearance and pulse, ‘chronic diarrhoea’ can be classified into the following seven types: damp-heat in the large intestine; rampant heat-toxin; spleen deficiency with retained dampness; intermingled cold and heat; liver qi stagnation with spleen deficiency; spleen-kidney yang deficiency; and deficiency of yin and blood [8].

In terms of treatment, the mechanisms of action of traditional Chinese medicine are relatively complex; whether used as single herbs or in compound formulations, they act on UC through multiple pathways. Research has found that the Yiyiyifuzi Baijiang San formula treats UC by regulating inflammatory immune factors, enhancing the function of the intestinal mucosal barrier, and inhibiting cell apoptosis [9]. Experimental research by Wang Yue et al. [10] indicates that formulas designed to tonify qi, clear toxins and resolve stasis can significantly improve the overall clinical manifestations in rats with ulcerative colitis by suppressing excessive immune responses and repairing the structure of the intestinal mucosal barrier.

Modern pharmacological research has confirmed that active components and monomeric substances from heat-clearing and detoxifying Chinese herbal medicines—such as baicalin, *Houttuynia cordata* polysaccharides, *Lonicera japonica* polysaccharides, and *Taraxacum officinale* polysaccharides—can regulate the structure of the intestinal microflora, maintain the stability of the intestinal microenvironment, promote the repair of the intestinal mucosal barrier, modulate the local immune status of the intestine, and alleviate intestinal inflammatory damage, thereby exerting a therapeutic effect on ulcerative colitis [11]. *Scutellaria baicalensis*, as a classic heat-clearing Chinese medicinal herb, possesses the effects of clearing heat and drying dampness, detoxifying and purging fire, and stopping bleeding and stabilising the pregnancy.

Yu Fengyan et al. [12] conducted a clinical observation study

and found that baicalin at a concentration of 40 $\mu\text{mol/L}$ significantly downregulated the expression levels of the IL-23R gene in patients with ulcerative colitis; simultaneously, baicalin also regulated the secretion of p-STAT4/STAT4, p-STAT6/STAT6 signalling proteins and related cytokines, thereby restoring the body's cellular immune balance and consequently alleviating intestinal inflammatory responses. Zhu Lei's team [13] further validated the therapeutic effects of baicalin on ulcerative colitis using animal models. This compound was found to inhibit abnormal immune activation in the intestine and reduce apoptosis in intestinal epithelial cells; its mechanism of action is thought to be closely related to the regulation of the PI4K/AKT signalling pathway. Coptis has a bitter and cold nature and is effective in clearing heat, drying dampness, purging fire and detoxifying; it is commonly used clinically for conditions such as dysentery with bloody stools caused by the accumulation of damp-heat. Experiments by Zhang Junhong et al [14] demonstrated that in rats with a model of ulcerative colitis treated with berberine, clinical manifestations in the digestive tract improved significantly and intestinal mucosal damage was repaired; the mechanism of action may be related to the downregulation of Toll-like receptor 2 (TLR2) expression in colonic tissue and the inhibition of the release of pro-inflammatory factors such as IL-9.

In addition to individual Chinese herbal medicines and their active constituents, classical TCM formulas have also demonstrated good efficacy in the clinical management of ulcerative colitis. Among these, Shaoyao Decoction originates from the *Su Wen: Collection of Principles of Disease Mechanisms, Qi Regulation and Life Preservation*. The formula comprises medicinal ingredients such as Paeonia lactiflora, Angelica sinensis, Coptis chinensis, Areca catechu, Aquilaria agallocha and Rheum palmatum, and possesses the functions of clearing heat and drying dampness, as well as regulating qi and harmonising blood; it is frequently employed in the clinical management of damp-heat dysentery. Scholars including Cao Hui [15] have confirmed through experimental studies that Shaoyao Decoction can significantly improve the macroscopic morphology and degree of pathological damage in the colonic tissue of rats with ulcerative colitis, whilst simultaneously enhancing the body's immune function; its mechanism of action is likely related to the downregulation of IL-1 β and TNF- α levels in serum and colonic tissue, and the upregulation of IL-4 content and protein expression levels. Clinical research conducted by Wang Wei et al. [16] have also conducted clinical studies that further corroborate the clinical value of Shaoyao Decoction in the management of ulcerative colitis. The use of a combined traditional Chinese and Western medicine regimen — comprising Shaoyao Decoction with modifications in conjunction with mesalazine—significantly improves the overall treatment efficacy rate and reduces serum levels of inflammatory markers such as IL-1, IL-8, TNF- α and C-reactive protein (CRP) in patients, without increasing the risk of adverse drug reactions.

Baitouweng Decoction is recorded in *Treatise on Cold Damage*. The formula consists of four herbal ingredients: Baitouweng, Huanglian, Huangbo and Qinpi. It has the effects of clearing heat and detoxifying, as well as cooling the blood and stopping diarrhoea, and is a representative formula for the

clinical treatment of heat-toxin dysentery. Dai Gao-zhong et al. [17] applied a modified Bai Tou Weng Decoction enema formulation to patients with active left-sided ulcerative colitis, whilst establishing a control group receiving sulphasalazine (SASP) retention enemas for comparative observation. The results showed that in both groups, the expression levels of IL-8 and NF- κ B mRNA in intestinal mucosal tissue decreased significantly after treatment compared with pre-treatment levels. Based on this, it is hypothesised that the modified Bai Tou Weng Decoction enema formula may exert its therapeutic effect on ulcerative colitis by inhibiting the abnormal expression of NF- κ B mRNA, thereby reducing the synthesis and release of the pro-inflammatory factor IL-8.

Li Zihui et al. [18] found through animal model experiments that Shenling Baizhu San effectively reduced the colonic histopathological damage score in rats with ulcerative colitis of the spleen deficiency with dampness-obstruction type, alleviated intestinal mucosal congestion and oedema, and reduced the formation of ulcerative lesions; simultaneously, it increased the activity of superoxide dismutase (SOD) in the rats' colonic tissue and reduced malondialdehyde (MDA) levels, thereby mitigating oxidative stress-induced damage.

Han Ying and colleagues [19] found through clinical observations that the Zhenren Yangzang Decoction can significantly alleviate various clinical symptoms in patients with mild to moderate active ulcerative colitis diagnosed with spleen-kidney yang deficiency, effectively reducing the Sutherland Disease Activity Index score, and yielding significant overall clinical treatment outcomes. The underlying mechanism by which this formula exerts its therapeutic effects may be closely related to its ability to reduce the levels of inflammatory cytokines such as IL-6, IL-8 and TNF- α in patients' serum.

For UC patients presenting with yin and blood deficiency, there are currently no clinical studies comparing the efficacy of Zhubache Wan combined with Siwu Tang (with modifications according to the patient's condition) with that of other medications; however, network pharmacology studies suggest that Siwu Tang may alleviate UC by inhibiting the Stat3 and NF- κ B signalling pathways, reducing the expression of inflammatory factors and promoting intestinal epithelial repair [20].

In patients with ulcerative colitis (UC) presenting with liver qi stagnation and spleen deficiency, the combination of the Tongxie Yaofang formula and Sini San, with modifications according to the patient's condition, administered in conjunction with mesalazine or sulphonylpyridine, resulted in improvements in the overall clinical response rate, Traditional Chinese Medicine syndrome scores, Hamilton Anxiety Scale scores and Hamilton Depression Scale scores, compared with the use of the Tongxie Yaofang formula and Sini San alone [21]. The Tongxie Yaofang formula activates the nerve growth factor/tropomyosin receptor kinase A (NGF/TrkA) signalling pathway in rat intestinal glial cells, regulates intestinal synaptic plasticity, and alleviates diarrhoea in rats with IBD [22]. and by modulating the NF- κ B/NLRP3 signalling pathway and macrophage polarisation, it alleviates symptoms in DSS-induced UC mice [23]. Sini San promotes the colonisation of Akkermansia muciniphila in the gut,

increases the production of mucin (MUC) 2, improves gut microbiota dysbiosis, and suppresses acute inflammatory responses [21], whilst modulating type I interferon-mediated inflammation, thereby alleviating UC symptoms.

In patients with ulcerative colitis (UC) presenting with a pattern of mixed cold and heat, the combined use of Wu Mei Wan—modified according to the specific syndrome—and sulphonylpyridine resulted in a higher overall clinical response rate than sulphonylpyridine alone [24]. Wu Mei Wan can regulate adenosylhomocysteine hydrolase (AHCY), inhibit inflammatory and oxidative stress responses, and improve symptoms in azomethane/DSS-induced UC mice and colon cancer mice [25].

4. The Intrinsic Compatibility Between Traditional Chinese Medicine's Theory of the Intestines and Viscera and the Gut Microbiome

Ulcerative colitis (UC) falls within the category of inflammatory bowel disease (IBD) and is a chronic, non-specific inflammatory condition of the intestine characterised by recurrent flare-ups. The human gut harbours a vast and diverse microbial community, numbering in the trillions, comprising primarily bacteria, fungi and various pathogenic microorganisms [26]. The gut microbiota and its metabolites not only contribute to the synthesis of short-chain fatty acids, certain vitamins and the body's energy substrates, but also play a key role in physiological processes such as maintaining the structural integrity of the intestinal mucosa and defending against the invasion of exogenous antigens, thereby helping to maintain the stability of the body's internal environment through nutrition, immune regulation and material metabolism [27]. Research has shown that patients with UC exhibit reduced gut microbiota diversity and an imbalance in microbial composition, with a shift in the equilibrium between potentially beneficial and potentially harmful bacteria. This leads to a decrease in the production of anti-inflammatory factors and an increase in pro-inflammatory factors; damage to the epithelial barrier function results in increased antigen uptake, thereby causing persistent immune activation [28]. Furthermore, changes in the colonisation levels of certain specific bacterial species play a significant role in the onset and progression of UC [29]. From the perspective of Traditional Chinese Medicine (TCM), the TCM theory of the viscera aligns with the concept of the gut microbiota. Although the two systems differ, they share a profound intrinsic unity across the physiological, pathological and therapeutic dimensions. In particular, the large intestine's process of 'transmitting' waste products relies on the fermentation and decomposition of food residues by the gut microbiota; when the microbiota is balanced, this 'transmission' proceeds normally and metabolic waste is promptly cleared. A robust spleen function corresponds to a balanced microbiota and a proliferation of beneficial bacteria. The TCM concept of a healthy state characterised by 'unimpeded organ qi' corresponds to a state of microecological balance in the gut microbiota, marked by structural stability, high diversity and normal metabolism.

5. UC and the Gut-axis Theory

"The lung and the large intestine are paired organs" is one of the core foundational theories of the Zang-Xiang theory in Traditional Chinese Medicine. The *Huangdi Neijing* (The Yellow Emperor's Inner Canon) clearly articulated the theoretical concept of the lung and large intestine being paired organs long ago. It also records that the Lung Meridian of the Hand-Taiyin descends to connect with the large intestine, whilst the Large Intestine Meridian of the Hand-Yangming descends into the Qubin region and connects with the lung; from the perspective of meridian pathways, this corroborates the close intrinsic relationship between the lung and the large intestine. The lung and large intestine share a common physiological origin in the foregut region of the endoderm; they possess similar tissue structures, share a mucosal immune system, and exhibit common inflammatory pathways. These findings also confirm the validity of the theory that "the lung and large intestine are paired organs" from a modern medical perspective. Analysed from the perspective of the "lung-gut axis", it can be argued that ulcerative colitis (UC) is a pathological outcome of dysregulation in the functional control of this axis. The *Essentials of the Medical Classics* states: "The reason the large intestine is able to transmit and conduct is that it is the zhu of the lung. When lung qi descends, it is thus able to transmit and conduct." The lung governs dispersion and descent, whilst the large intestine governs the transmission and transformation of waste products; the descent of lung qi disperses qi and distributes body fluids to promote the transmission and descent of the large intestine; when the qi of the large intestine descends smoothly, the viscera's qi flows freely, waste products are expelled, and this also aids the lungs in their clearing and descending functions. If the lungs fail to regulate properly, leading to abnormal fluid metabolism, the large intestine loses its ability to dry and transform, making it prone to symptoms such as persistent diarrhoea and dysentery; conversely, if the large intestine fails in its functions, affecting the rise and fall of qi, or if prolonged illness damages qi, this will also affect the lungs' dispersing and descending functions [30]. Patients with UC present with recurrent diarrhoea, mucoid, purulent and bloody stools, abdominal pain, and tenesmus, presenting a pattern of 'deficiency at the root and excess at the branch'. The 'deficiency at the root' refers to insufficiency of lung qi, resulting in impaired dispersing and descending functions and disrupted distribution of body fluids. As the lung governs the qi of the entire body, deficiency of lung qi leads to stagnation in the chest and impaired circulation of qi and blood, manifesting as diarrhoea and sticky stools. with symptoms that are recurrent, protracted and difficult to resolve. The 'excess' aspect manifests as damp-heat accumulating in the intestines, qi stagnation and blood stasis, and a failure of the large intestine to perform its functions; the disruption of the ascending and descending movements of qi leads to bloody and purulent stools, abdominal pain, and tenesmus [30]. It is therefore evident that treatment should be guided by the theoretical principles of 'the lung and large intestine being paired organs', 'treating the lung for intestinal disorders', and the 'lung-intestine axis'.

6. Conclusion

Traditional Chinese Medicine's 'Theory of the Intestines and Viscera' and modern gut microbiota theory have achieved a historic convergence in the prevention and treatment of ulcerative colitis. Guided by this theory, Traditional Chinese Medicine employs therapeutic approaches such as strengthening the spleen, clearing heat, unblocking the viscera and promoting blood circulation. By regulating microbial composition, modulating metabolic products, repairing the intestinal barrier and balancing the immune system—across these four dimensions—it disrupts the vicious cycle of UC through a multi-targeted, comprehensive approach, demonstrating holistic advantages that single-therapy Western medicine struggles to match. Currently, research in this field is at a critical juncture, transitioning from “phenomenological description” to “mechanistic elucidation” and from “empirical medicine” to “evidence-based medicine”. Future research will systematically elucidate the scientific principles underlying TCM's regulation of the gut microbiota, ultimately establishing a new integrated system for the prevention and treatment of UC that is theoretically sound, mechanistically clear, clinically effective, and safe and controllable. This will contribute Chinese wisdom and solutions to the global effort to overcome this intractable disease.

References

- [1] Shen Hong, Tang Zhipeng, Tang Xudong, et al. Clinical practice guideline of TCM for common digestive system diseases: Ulcerative colitis (Edition for primary physician) [J]. *China Journal of Traditional Chinese Medicine and Pharmacy*, 2019, 34(09): 4155-4160.
- [2] Chinese Society of Integrated Traditional Chinese and Western Medicine. Experts Consensus on Diagnosis and Treatment of Ulcerative Colitis by Integrative Medicine [J]. *Chinese Journal of Integrated Traditional and Western Medicine*, 2023, 43(01):5-11.
- [3] KOBAYASHI T, SIEGMUND B, LE BERRE C, et al. Ulcerative colitis[J]. *Nat Rev Dis Primers*, 2020, 6:74.
- [4] HU Yue, YE Bai. Research Progress of Mechanism of Chinese and Western Medicine Treating Ulcerative Colitis from Lung[J]. *Journal of Practical Traditional Chinese Internal Medicine*, 2020, 34(01): 1-4. DOI:10.13729/j.issn.1671-7813.Z20191228.
- [5] ZHANG Liangyu, LU Weimin. XU Jingfan's Experiences in Treating Ulcerative Colitis[J].*Journal of Traditional Chinese Medicine*, 2018, 59(23): 1993-1995. DOI:10.13288/j.11-2166/r.2018.23.004.
- [6] Wang X L, Peng Y H, Sun M Y, et al. Study on Treatment of Ulcerative Colitis from the Perspective of Lung-Spleen Phlegm and Stasis[J]. *Liaoning Journal of Traditional Chinese Medicine*, 2007, (06): 747-748. DOI:10.13192/j.ljtc.2007.06.47.wangxl.025.
- [7] YANG Wen-di, LI Wei, XU Bo-yang, JIA Xiao-yu, JIA Zhi-chun, XU Wei, et al. Exploration on the Etiology, Pathogenesis, and Advantages of Traditional Chinese Medicine Treatment of Ulcerative Colitis[J].*Journal of Shanxi Datong University(Natural Science Edition)*, 2023, 39(06): 92-95.
- [8] Zhang S S, Shen H, Zheng K, et al. Expert Consensus on Traditional Chinese Medicine Diagnosis and Treatment of Ulcerative Colitis (2017) [J]. *China Journal of Traditional Chinese Medicine and Pharmacy*, 2017, 32(08): 3585-3589.
- [9] MI Liuyue, ZHANG Shuangxi, CHEN Shuang, et al. Yiyi Fuzi Baijiangsan in Treatment of Ulcerative Colitis: A Review[J]. *Chinese Journal of Experimental Traditional Medical Formulae*, 2023, 29(10):254-263.
- [10] Wang Y, Cha A S. Effect of Yiqi Jiedu Huayu Formula on Intestinal Flora and Intestinal Epithelial NLRs/NF-κB Signaling Pathway in Ulcerative Colitis Rats[J]. *Lishizhen Medicine and Materia Medica Research*, 2022, 33(10): 2359-2361.
- [11] HUANG Maoguang, XIE Sheng, WANG Jinxin, et al. Chinese Medicine in Treatment of Ulcerative Colitis by Regulating Intestinal Flora: A Review[J]. *Chinese Journal of Experimental Traditional Medical Formulae*, 2024, 30(2):267-275.
- [12] Yu Fengyan, Huang Shaogang, Zhang Haiyan, et al. Effect of Baicalin on Signal Transduction and Activating Transcription Factor Expression in Ulcerative Colitis Patients[J].*Chinese Journal of Integrated Traditional and Western Medicine*, 2015, 35(04): 419-424.
- [13] Zhu Lei, Shen Hong, Gu Peiqing, et al. Effects of baicalin on the inflammation and apoptosis in ulcerative colitis rats relating to PI3K/AKT pathway[J].*China Journal of Traditional Chinese Medicine and Pharmacy*, 2017, 32(09):4001-4004.
- [14] ZHANG Junhong, LI Hongmei, HUANG Xue, et al. Therapeutic effect of berberine on ulcerative colitis rats and its mechanism[J].*Shandong Medical Journal*, 2019, 59(5):40-43.
- [15] CAO Hui, WU Dongsheng, ZHANG Yu, et al. Effects of Shaoyao Decoction on Colon Histopathological Changes and Immune Function in Ulcerative Colitis Model Rats[J].*Chinese Journal of Information on Traditional Chinese Medicine*, 2019, 26(6):59-63.
- [16] Wang Wei, Zhou Zhijun. An observation on clinical efficacy of paeoniae decoction add and subtract combined with mesalazine for treatment of ulcerative colitis[J]. *Chinese Journal of Integrated Traditional and Western Medicine in Intensive and Critical Care*, 2017, 24(3):239-242.
- [17] Dai Gaozhong, Chen Chen, Fan Xianjing, et al. Therapeutic Observation of Pulsatilla Enema Treatment on the Ulcerative Colitis and the Expression of NF-κB Mrna in Mucosa Cells[J]. *JOURNAL OF BASIC CHINESE MEDICINE*, 2017, 23(07): 970-972. DOI:10.19945/j.cnki.issn.1006-3250.2017.07.028.
- [18] Wang Xuemei. Effects of Shenling Baizhu Powder on serum MMP-2、MMP-9 in patients with ulcerative colitis[J]. *Global Traditional Chinese Medicine*, 2016, 9(04):398-401.
- [19] HAN Ying, ZHANG Yan, YANG De-fang, et al. Clinical efficacy of Dongbin organ-nourishing decoction in ulcerative colitis patients regarding disease activity and serum inflammatory cytokines[J].*Journal of Clinical and Experimental Medicine*, 2019, 18(9): 936-939.
- [20] WANG L, LIU Y, SHEN G, et al. Mechanisms of Si-Wu Decoction in the treatment of ulcerativecolitis revealed by network pharmacology and experimental verification[J]. *J Ethnopharmacol*, 2023, 317: 116847.

- [21] ZHANG S, ZHAO L, SHEN H, et al. International clinical practice guideline on the use of traditional Chinese medicine for ulcerative colitis by Board of Specialty Committee of Digestive System Disease of World Federation of Chinese Medicine Societies (2023) [J]. *Phytother Res*, 2023.
- [22] LU X, ZHANG S. How Tongxie-Yaofang Regulates Intestinal Synaptic Plasticity by Activating Enteric Glial Cells and NGF/TrkA Pathway in Diarrhea-Predominant Irritable Bowel Syndrome Rats [J]. *Drug Des Devel Ther*, 2023, 17: 2969-2983.
- [23] ZHANG H Y, ZENG H R, WEI H Z, et al. Tongxie-Yaofang formula regulated macrophage polarization to ameliorate DSS-induced colitis via NF- κ B/NLRP3 signaling pathway [J]. *Phytomedicine*, 2022, 107: 154455.
- [24] CAI Y, LI X, HAN Q, et al. Si-Ni-San improves experimental colitis by favoring Akkermensia colonization [J]. *J Ethnopharmacol*, 2023, 305: 116067.
- [25] WANG J, DING K, WANG Y, et al. Wumei Pill Ameliorates AOM/DSS-Induced Colitis-Associated Colon Cancer through Inhibition of Inflammation and Oxidative Stress by Regulating S-Adenosylhomocysteine Hydrolase- (AHCY-) Mediated Hedgehog Signaling in Mice [J]. *Oxid Med Cell Longev*, 2022, 2022: 4061713.
- [26] GLASSNER K L, ABRAHAM B P, QUIGLEY E. The microbiome and inflammatory bowel disease [J]. *J Allergy Clin Immunol*, 2020, 145(1): 16-27.
- [27] KATAOKA K. The intestinal microbiota and its role in human health and disease [J]. *J Med Invest*, 2016, 63(1-2): 27-37.
- [28] ALSHEHRI D, SAADAH O, MOSLI M, et al. Dysbiosis of gut microbiota in inflammatory bowel disease: Current therapies and potential for microbiota-modulating therapeutic approaches [J]. *Bosn J Basic Med Sci*, 2021, 21(3): 270-283.
- [29] LIU B, YE D, YANG H, et al. Two-Sample Mendelian Randomization Analysis Investigates Causal Associations Between Gut Microbial Genera and Inflammatory Bowel Disease, and Specificity Causal Associations in Ulcerative Colitis or Crohn's Disease [J]. *Front Immunol*, 2022, 13: 921546.
- [30] LUO Ruijuan, LIU Yuedong, TAO Hongwu, et al. Explore the Pathogenesis of Ulcerative Colitis Based on the Theory of "Lung-intestinal Axis" [J]. *Journal of Liaoning University of Traditional Chinese Medicine*, 2022, 24(08): 32-36.