

# Current Application Status and Evidence-Based Medicine Review of Herbal Medicine in the Treatment of Functional Dyspepsia in Internal Medicine with Integrated Traditional Chinese and Western Medicine

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**Abstract:** Functional Dyspepsia (FD) is a common functional gastrointestinal disorder in internal medicine, characterized by a protracted course and high recurrence rate, significantly affecting patients' quality of life. Western medical treatment primarily focuses on symptomatic relief, with limitations such as limited long-term efficacy and a high likelihood of adverse reactions. Traditional Chinese Medicine (TCM) herbal treatment for FD, based on syndrome differentiation and treatment, offers advantages of holistic regulation and fewer side effects. With the development of integrated traditional Chinese and Western medicine, the application of herbal medicine in FD treatment has gradually shifted from a single syndrome-based approach to a synergistic model of "herbal medicine + conventional Western medical regimen". This review summarizes the application of herbal medicine under the guidance of TCM theory, the practice of herbal medicine in integrated traditional Chinese and Western medical settings, and the grading and evaluation of evidence-based medicine. Through analysis, the aim is to further promote the standardized and evidence-based application of herbal medicine in the integrated treatment of FD.

**Keywords:** Functional Dyspepsia; Herbal medicine; Integrated traditional Chinese and Western medicine; Evidence-based medicine; Syndrome differentiation and treatment; Gastrointestinal disorders

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## 1. Introduction

Functional Dyspepsia (FD) refers to a group of clinical syndromes originating from the gastroduodenal region, lacking evidence of organic lesions, and primarily manifesting as postprandial fullness, early satiety, upper abdominal pain, or burning sensation <sup>[1]</sup>. Its diagnosis requires compliance with the Rome IV criteria and exclusion

of organic diseases such as peptic ulcers and gastric cancer. The pathogenesis of FD is complex, currently believed to be associated with gastrointestinal motility disorders, visceral hypersensitivity, intestinal dysbiosis, psychosomatic factors, and abnormal central nervous system regulation. A single factor is insufficient to fully explain its pathophysiological process <sup>[2]</sup>. Western medical treatment for FD primarily focuses on symptomatic treatment, with commonly used medications including proton pump inhibitors (PPIs), prokinetic drugs, *Helicobacter pylori* eradication drugs, and central nervous system regulators. However, clinical efficacy is limited, approximately 40% of patients respond poorly to PPIs, and long-term use may lead to adverse reactions such as intestinal dysbiosis and vitamin B12 deficiency. In Traditional Chinese Medicine (TCM), FD is classified under the categories of “distension and fullness”, “epigastric pain”, and “abdominal discomfort”, with the core pathogenesis being “dysfunction of the spleen and stomach and stagnation of Qi flow”. Treatment emphasizes “syndrome differentiation and treatment”, utilizing herbal remedies to regulate organ function and improve Qi circulation, offering the advantages of holistic regulation and fewer side effects. With the development of integrated traditional Chinese and Western medicine, the collaborative treatment model of “herbal remedies + conventional Western medical protocols” has gradually become a research hotspot in FD treatment. This approach leverages the rapid symptom relief characteristic of Western medicine while improving the patient’s overall physical condition and reducing recurrence rates through herbal remedies. However, there is currently a lack of systematic reviews on the current application status, strength of evidence-based research, and clinical standardization of herbal remedies in the integrated treatment of FD. Based on this, a comprehensive review of the current application status and evidence-based research on herbal remedies is necessary.

## 2. Current application status of herbal remedies in integrated traditional Chinese and Western medicine for FD treatment

### 2.1. Common syndromes of FD and corresponding herbal remedies guided by TCM theory

The core of TCM treatment for FD lies in “syndrome differentiation and medication according to the syndrome”. Common clinical syndromes include liver-stomach disharmony, spleen-stomach deficiency cold, spleen-stomach damp-heat, and food stagnation. The corresponding herbal remedies and formulas for each syndrome have clear theoretical foundations.

Liver-stomach disharmony is the most common syndrome in FD, often caused by emotional distress, liver Qi stagnation, and counterflow Qi affecting the stomach. The main symptoms include epigastric distension and pain, frequent belching, and exacerbation of symptoms with emotional fluctuations. Treatment follows the principle of “soothing the liver and regulating Qi, harmonizing the stomach and relieving pain”. The classic formula commonly used is Chaihu Shugan San (*Bupleurum*, *Cyperus rotundus*, *Aurantii fructus immaturus*, *Paeoniae radix alba*, *Ligusticum chuanxiong*, and *Glycyrrhizae radix preparata*), with clinical modifications often made: for pronounced belching, add *Citri sarcodactylis fructus* and *Inulae flos*; for acid reflux, add *Sepiae endoconcha* and *Concha ostreae calcinata*; for emotional depression, add *Albiziae cortex* and *Curcumae radix* <sup>[3]</sup>. Modern pharmacological studies have shown that saikosaponins in *Bupleurum* can regulate central neurotransmitters (such as serotonin and dopamine), alleviate anxiety, and improve gastrointestinal motility; volatile oil components in *Cyperus rotundus* can inhibit gastrointestinal smooth muscle spasms and relieve epigastric distension and pain.

The syndrome of spleen-stomach deficiency-cold is mostly caused by insufficient Yang Qi in the spleen and stomach, weak warming and nourishing ability, and abnormal transportation and transformation. Its main

symptoms include vague pain in the gastric region, preference for warmth and pressure, abdominal distension after eating, and loose stools. The treatment approach is to “warm the middle-jiao and invigorate the spleen, harmonize the stomach and relieve pain”. The representative formula is Fuzi Lizhong Pill (*Aconite*, ginseng, prepared ginger, licorice, and fried *Atractylodes macrocephala*)<sup>[4]</sup>. Among them, Fuzi Lizhong Pill has a strong ability to warm Yang and disperse cold, making it suitable for patients with obvious chills and cold extremities. Cinnamon and *Evodia rutaecarpa* can be added according to symptoms to enhance the warming Yang effect. Huangqi Jianzhong Pill, on the other hand, takes into account both tonifying Qi and building the middle-jiao to alleviate urgency, making it more suitable for patients with fatigue and vague pain in the gastric region. Those with poor appetite can add fried malt and endothelium *Corneum gigeriae galli* to aid transportation and transformation.

The syndrome of spleen-stomach damp-heat is caused by the accumulation of damp-heat in the middle-jiao, which obstructs the transportation and transformation function of the spleen and stomach<sup>[5]</sup>. Its main symptoms include burning sensation in the gastric region, bitter and sticky taste in the mouth, poor appetite, and sticky and uncomfortable stools. The treatment requires “clearing heat and resolving dampness, regulating Qi and harmonizing the middle-jiao”. Commonly used formulas include Lianpu Yin (coptis, magnolia bark, *Acorus gramineus*, *Pinellia ternata*, reed rhizome, gardenia, and fermented soybean) or Qingzhong Decoction (coptis, gardenia, *Pinellia ternata*, *Poria cocos*, tangerine peel, licorice, and *Alpinia katsumadai*)<sup>[6]</sup>. Berberine in coptis can inhibit the activity of *Helicobacter pylori* and reduce gastric mucosal inflammation; magnolol in magnolia bark can regulate gastrointestinal motility and relieve abdominal distension symptoms.

The syndrome of food stagnation is mostly caused by improper diet, overeating, and food accumulation in the gastric region. Its main symptoms include fullness in the gastric region, belching with foul odor and sour regurgitation, and loss of appetite. The treatment mainly focuses on “promoting digestion and removing food stagnation, harmonizing the stomach and reversing Qi”. The representative formula is Baohe Pill (hawthorn, medicated leaven, *Pinellia ternata*, *Poria cocos*, tangerine peel, *Forsythia suspensa*, and radish seed). If food accumulation is severe, *Citrus aurantium* and areca nut can be added. Hawthorn acid in hawthorn can promote fat digestion, and raphanin in radish seed can enhance gastrointestinal motility and accelerate the elimination of food accumulation.

## **2.2. Application scenarios of herbal medicine in the integrated traditional Chinese and Western medicine treatment of FD**

### **2.2.1. Combining herbal medicine with Western symptomatic drugs to enhance efficacy and reduce adverse reactions**

For the common symptoms of “upper abdominal pain and burning sensation” in FD patients, Western medicine often uses PPIs (such as omeprazole and rabeprazole). However, some patients may experience “PPI resistance” or side effects from long-term use. Clinical studies have shown that combining PPIs with herbal remedies for the “liver-stomach disharmony syndrome” (such as Chaihu Shugan San) can enhance the symptom relief rate through a dual mechanism of “inhibiting gastric acid secretion + regulating gastrointestinal motility”. Research by Chen Shiwan et al. found that in the treatment of FD in children, the combination of Chaihu Shugan San and omeprazole enteric-coated capsules can effectively improve gastrointestinal digestive function and increase gastric emptying rate<sup>[7]</sup>. For patients primarily experiencing “postprandial fullness and early satiety”, Western medicine commonly uses prokinetic drugs (such as mosapride) in combination with herbal remedies for the “spleen-stomach deficiency-cold syndrome” (such as Xiangsha Liujunzi Decoction) to further improve gastrointestinal motility:

Mosapride promotes acetylcholine release by stimulating 5-HT<sub>4</sub> receptors, while Xiangsha Liuqunzi Decoction synergistically enhances gastrointestinal smooth muscle contractility. Compared to the single-treatment group, patients in the combined treatment group showed more significant improvement in dyspepsia symptoms and more pronounced therapeutic effects [8].

### **2.2.2. Combination of herbal remedies and *Helicobacter pylori* eradication therapy to improve post-eradication FD symptoms**

*Helicobacter pylori* infection is a significant risk factor for FD, with approximately 60% of FD patients also having *Helicobacter pylori* infection. Although Western medical *Helicobacter pylori* eradication regimens (such as bismuth-based quadruple therapy) can eliminate *Helicobacter pylori*, FD symptoms persist in some patients after eradication. At this juncture, combining herbal remedies can alleviate symptoms by regulating the gastric mucosal microenvironment and improving gastrointestinal function.

A study indicates that the combination of bismuth-based quadruple therapy with Wenzhong Hewei Decoction (composed of roasted licorice, dried ginger, *Atractylodes macrocephala*, *Citrus aurantium*, costus root, white cardamom, tangerine peel, magnolia bark, *Amomum villosum*, *Codonopsis pilosula*, *Pinellia ternata*, and *Astragalus membranaceus*) for the treatment of *Helicobacter pylori* -positive FD achieved an eradication rate of 87.93% [9]. Mechanistic studies have shown that Wenzhong Hewei Decoction can promote the repair and regeneration of the gastric mucosa, regulate gastrointestinal motility and gastric acid secretion, assist chronic gastritis patients in improving dyspepsia and enhancing appetite, restore gastric mucosal function and gastrointestinal balance. Additionally, it can improve gastric mucosal microcirculation to accelerate its repair, regulate gastrointestinal motility and gastric acid, mitigate gastritis damage, and improve digestion and appetite in patients with chronic gastritis [10].

### **2.2.3. Combination of herbal remedies and non-pharmacological interventions to enhance long-term management effects**

The long-term management of FD requires a combination of lifestyle adjustments. In the integrated traditional Chinese and Western medicine model, herbal remedies can work synergistically with non-pharmacological approaches such as acupuncture and psychological interventions. For instance, in FD patients with comorbid anxiety and depression, combining “liver-soothing and depression-relieving herbs with psychological counseling” alongside acupuncture (targeting Neiguan, Zusanli, and Taichong acupoints) can improve both mood and gastrointestinal function through the dual pathways of “herbal regulation of the central nervous system and acupuncture stimulation of acupoint signals” [11]. Additionally, for elderly FD patients, herbal remedies (such as spleen-strengthening and stomach-nourishing formulas) combined with dietary guidance (e.g., eating smaller, more frequent meals and avoiding cold, raw, and greasy foods) can enhance gastrointestinal digestive function and reduce medication dependence.

## **3. Evidence-based medicine support for herbal remedies in integrated traditional Chinese and Western medicine treatment of FD**

### **3.1. Evidence grading and core conclusions**

According to the internationally recognized GRADE evidence grading system, the current evidence-based support

for herbal remedies in integrated traditional Chinese and Western medicine treatment of FD can be classified into high, moderate, and low levels, with significant differences in evidence strength across different syndrome types and application models.

### **3.1.1. High-level evidence**

High-level evidence primarily focuses on the synergistic use of herbal remedies for liver-stomach disharmony syndrome and spleen-stomach deficiency-cold syndrome with PPIs or prokinetic drugs. Based on the results of multiple systematic reviews and meta-analyses, such combined treatment regimens significantly outperform monotherapy with Western medicine in terms of symptom relief rate, duration of therapeutic effect, and safety<sup>[12,13]</sup>.

The characteristics of this level of evidence include adequate sample sizes, well-designed studies (mostly multicenter, randomized controlled trials), consistent results, and low risk of bias, providing reliable evidence support for clinical application.

### **3.1.2. Moderate-level evidence**

Moderate-level evidence primarily pertains to the synergistic use of herbal remedies in conjunction with *Helicobacter pylori* eradication therapy, as well as the combined application of herbal remedies for spleen-stomach damp-heat syndrome and food stagnation syndrome with Western medications. The core conclusion drawn from such evidence is that herbal remedies can significantly reduce the persistence rate of FD symptoms following *Helicobacter pylori* eradication while enhancing the tolerability of eradication therapy<sup>[14]</sup>.

However, due to relatively small sample sizes in some studies and geographical limitations (mostly single-region studies), the strength of this evidence is slightly lower than that of high-level evidence. For spleen-stomach damp-heat syndrome and food stagnation syndrome, owing to their relatively low clinical incidence, there are fewer relevant studies. Although existing research indicates that combined treatment approaches outperform Western medicine alone, more large-sample studies are needed to verify the stability and reliability of these results.

### **3.1.3. Low-level evidence**

Low-level evidence primarily involves the synergistic use of herbal remedies with non-pharmacological interventions, as well as research on the mechanisms of action of herbal remedies. The limitations of such evidence are mainly reflected in the fact that most studies are single-center and small-sample designs, lacking placebo control or blinding, resulting in a high risk of bias. Mechanism studies are mostly *in vitro* or animal experiments, lacking human clinical trial data, making it difficult to directly translate into clinical recommendations<sup>[15]</sup>. Although existing evidence suggests that herbal remedies can enhance the effects of non-pharmacological interventions, the reliability and repeatability of these conclusions still require further validation.

### **3.1.4. Factors influencing the quality of evidence-based evidence**

Currently, the evidence-based evidence for the use of herbal remedies in integrated traditional Chinese and Western medicine treatment of FD exhibits “uneven overall quality”, primarily influenced by three factors: Firstly, there is a lack of uniformity in syndrome differentiation criteria and efficacy evaluation systems. Different studies have varying diagnostic criteria for FD syndromes in traditional Chinese medicine, symptom scoring thresholds, and lack standardized efficacy evaluation indicators, making it difficult to conduct cross-sectional comparisons and meta-analyses of research results. Secondly, there are flaws in research design. Some randomized controlled

trials (RCTs) do not employ strict random sequence generation or allocation concealment methods, lack placebo controls, and generally have short follow-up periods, making it difficult to comprehensively evaluate long-term efficacy and safety. Thirdly, there is a lack of quality control for herbal medicines. Variations in the origin, processing methods, dosage, and extraction techniques of the same herb across different studies lead to unstable content of active ingredients in herbal medicines, affecting the reproducibility and reliability of their therapeutic effects.

## 4. Conclusion and prospect

This review systematically reviews the current application status and evidence-based evidence of herbal medicines in the integrated traditional Chinese and Western medicine treatment of FD. The results indicate that classical formulas corresponding to liver-stomach disharmony syndrome and spleen-stomach deficiency-cold syndrome demonstrate advantages in “enhancing efficacy, reducing adverse reactions, and lowering recurrence rates” when combined with Western symptomatic medications or *Helicobacter pylori* eradication therapy, supported by high-level evidence-based evidence. However, current applications and research still face issues such as inconsistent syndrome differentiation criteria, flaws in research design, lack of quality control for herbal medicines, and lagging mechanism research. In the future, the development direction of herbal medicines in the integrated treatment of FD with traditional Chinese and Western medicine should focus on three aspects: First, clinical standardization, achieving “precise syndrome differentiation and standardized medication” through unified syndrome differentiation criteria and physician training; second, high-quality research, conducting multi-center large-sample RCTs and long-term safety studies to enhance international recognition of evidence; and third, in-depth mechanism exploration, utilizing multi-omics technologies to analyze the synergistic mechanisms of herbal medicines, promoting the transition from “empirical medicine” to “evidence-based medicine + precision medicine”. With the resolution of these issues, herbal medicines will play a greater role in the integrated treatment of FD with traditional Chinese and Western medicine, providing safer and more effective treatment options for patients while advancing the discipline of integrated traditional Chinese and Western medicine gastroenterology.

## Disclosure statement

The author declares no conflict of interest.

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