

# ***Ganwei Baihe Decoction: A Therapeutic Strategy for Peptic Ulcer with Liver Stomach Disharmony Syndrome***

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**Abstract:** Liver stomach disharmony syndrome is a common syndrome type of peptic ulcer. The liver stomach disharmony syndrome in peptic ulcer belongs to the category of gastric pain in traditional Chinese medicine, and the main pathogenesis is considered the invasion of liver qi into the stomach and the obstruction of pain. Professor Xia Duheng takes regulating qi and relieving stomach pain as the treatment principle and uses Ganwei Baihe decoction to treat the liver stomach disharmony syndrome of peptic ulcer. Ganwei Baihe decoction has the effects of soothing the liver, regulating qi, and relieving stomach pain, and has achieved considerable effects in the treatment of peptic ulcers in clinical practice. This article reviews the current status of Ganwei Baihe decoction in the treatment of peptic ulcer with liver stomach disharmony syndrome, based on the theory of prescription, experimental research, and clinical research.

## **1. Introduction**

Ganwei Baihe decoction is a formula used by Professor Xia Duheng, a renowned Chinese medicine professor, to treat spleen and stomach diseases that belong to the liver stomach disharmony syndrome. This prescription is composed of drugs such as Chaihu, Yujin, Baihe, Wuyao, Chuanlianzi, Danshen, Huangqin, Gancao. It has the main effects of soothing the liver and stomach, regulating qi, and relieving pain. It also has the functions of resolving blood stasis and unblocking collaterals, clearing and purging the liver and stomach, nourishing yin and stomach. While treating liver stomach disharmony syndrome, it also prevents variables such as prolonged illness entering the collaterals, stagnation of heat, and heat damaging yin. It has achieved good effects in the treatment of peptic ulcer with liver stomach disharmony syndrome. This article reviews the application of Ganwei Baihe decoction in the study of peptic ulcer with liver stomach disharmony syndrome.

## 2. Chinese Medicine Pathogenesis of Liver Stomach Disharmony Syndrome

In clinical practice, upper abdominal pain is the main symptom of peptic ulcer, which is often classified as *Weiwantong* in traditional Chinese medicine. Professor Xia Duheng believes that emotion and diet are the key causes of epigastric pain. Therefore, if emotions are not smooth, the liver may lose its ability to relieve stress, the stomach may be affected by adverse reactions, and stomach qi may be blocked. If there is obstruction, pain will occur. Dietary stagnation can damage the spleen and stomach, causing stomach qi stagnation. If not, it can cause pain. It can also affect the circulation of liver qi, leading to stagnation of liver qi and the invasion of the stomach. This can worsen stomach pain. It refers to the close relationship between liver qi, laxity, and spleen and stomach. The liver governs laxity, regulates qi flow, and coordinates the rise and fall of the spleen and stomach. Therefore, if the liver loses laxity, it can easily affect the function of the spleen and stomach. As Zhu Danxi once said, "various diseases of the human body are often caused by depression; the spleen and stomach are the hub for the rise and fall of the whole body's qi, and the prolonged illness of the spleen and stomach can also affect emotions. As Wang Kentang once said, "No matter what organ is stagnant, it is all related to the middle earth. Therefore, both emotional and dietary disorders may cause disharmony between the liver and stomach. The treatment should be based on soothing the liver and stomach, regulating qi to relieve pain, and adding or subtracting *Ganwei Baihe* decoction.

## 3. The Formula and Mechanism of Ganwei Baihe decoction

The liver stomach disharmony syndrome of peptic ulcer is widespread in clinical practice, often caused by liver qi invading the stomach and pain due to obstruction. Therefore, after the treatment of liver qi and stomach qi regulating and pain relieving is given, and the liver stomach *Baihe* decoction is modified. The entire formula is composed of *Chaihu* and *Yujin*, which soothe the liver and relieve depression, *Baihe* for nourishing yin and stomach, *Wuyao* and *Chuanzhizi* for promoting qi and relieving pain, *Danshen* for clearing collaterals and resolving blood stasis, *Huangqin* for clearing stomach heat, and *Gancao* for harmonizing various herbs. The combination of various drugs has the effect of soothing the liver and stomach, regulating qi, and relieving pain. If there is also acid reflux, *Wuzeigu* and *Walengzi* can be added; if the pain is severe, *Yanhusuo* can be added; if accompanied by abdominal distension, it can be added with *Muxiang* and *Sharen*; if the patient is also constipated, they can add *Yuliren* and *Huomaren*; If combined with qi deficiency and weakness, *Dangshen* and *Baizhu* can be added; If combined with liver and stomach stagnation, *Pugongying* can be added.

## 4. Experimental Study on Ganwei Baihe decoction

Existing experimental studies suggest that the main mechanism of *Ganwei Baihe* decoction in treating peptic ulcers is to reduce the inflammatory response and reduce damage to the gastrointestinal mucosa; enhance immunity and promote the repair of gastrointestinal mucosa.

Firstly, alleviate inflammatory reactions and reduce mucosal damage. Yu Bin et al. [1-2] showed that *Ganwei Baihe* decoction can downregulate IL-1 and TNF- $\alpha$  Levels, upregulate IL-10 levels, exert anti-inflammatory effects, and reduce inflammatory damage. Mao Yizhi, Xu Yin et al. [3-4] point out that *Ganwei Baihe* decoction may inhibit IFN by- $\gamma$  synthesis and secretion of IL-2, promote the secretion of IL-10 and IL-4, achieve the regulation of Th1/Th2 balance, reduce the secretion of ACTH, CRH, and GC, play a role in regulating the HPA axis, and reduce damage to the gastric mucosa by intervening in the neuroendocrine network. Du Shan et al. [5] believe that *Ganwei Baihe* decoction upregulates the expression of GR protein in the hippocampus, and

downregulates the expression of MR protein by acting on the HPA axis, improves the imbalance of MR/GR, reduces the mucosal inflammatory response, and promotes mucosal repair. Zeng Menghui et al. [6] found that Ganwei Baihe decoction can reduce the activity of NF- $\kappa$ B, alleviate inflammation, and achieve the goal of reducing mucosal damage.

Secondly, it enhances immunity and promotes mucosal repair. Qin Huatuo et al. [7] showed that Ganwei Baihe decoction has the effect of increasing plasma NO and ET levels, increasing mucosal blood flow, protecting mucosal integrity, and promoting ulcer healing. Zou Yuming et al. [8] pointed out that Ganwei Baihe decoction can also increase Smad4 and TGF level-  $\beta$  1 level, achieving the effect of promoting wound repair.

## 5. Clinical Study on Ganwei Baihe decoction

Firstly, the comparison between Ganwei Baihe decoction and traditional Chinese medicine. A total of 1 study [9] meets the requirements. The 4-week efficacy comparison between Ganwei Baihe decoction and Weisu Granules shows that the total effective rate of Ganwei Baihe decoction is 90.00%, which is significantly higher than that of Weisu Granules at 76.67%, and the Hp eradication rate is 86.67%, which is higher than that of Weisu Granules at 73.33%. However, safety comparisons and analysis have not yet been conducted.

Secondly, the comparison between Ganwei Baihe decoction and conventional Western medicine. A total of 10 studies met the requirements, among which 4 studies [10-13] showed that the total effective rate of traditional Chinese medicine syndrome, gastroscopy, and Hp eradication rate of Ganwei Baihe decoction were higher than those of the stomach triple therapy in treating peptic ulcers; The research by Yu Bin, Sun Yiqing, and Chen Jiating consistently shows that the adverse reaction rate of the liver stomach Baihe soup group is lower than that of the stomach triple group, and the safety is higher. One study [14] showed that the total effective rate of Ganwei Baihe decoction in the treatment of refractory peptic ulcers was as high as 88.3%, which is higher than 46.7% of gastric quadruple therapy, but the safety has not been compared and analyzed. Three studies [15-17] have shown that compared with lansoprazole combined with sucralfate in the treatment of peptic ulcers, liver stomach disharmony syndrome, Ganwei Baihe decoction can significantly shorten the time for symptoms such as abdominal pain, acid reflux, and bleeding to disappear, and improve the overall effective rate; And three studies unanimously believe that the adverse reaction rate of the Ganwei Baihe decoction group is mild, significantly lower than the control group, and has higher safety. A study on the treatment of duodenal ulcers [18] showed that the total effective rate of the 4-week course of Ganwei Baihe decoction was 96.67%, higher than 90.00% in the omeprazole group. There were no significant adverse reactions in both groups in the experiment. A comparative study of famotidine [19] showed that the total effective rate of Ganwei Baihe decoction in treating peptic ulcers compared to famotidine was 92%, much higher than 76% of famotidine, but no comparison has been made on adverse reactions.

Thirdly, the comparison between Ganwei Baihe decoction combined with conventional Western medicine and conventional Western medicine. There are two studies [20-21] that meet the requirements, both of which are a comparison between the combination of Ganwei Baihe decoction and gastric triple therapy and the simple gastric triple therapy. Zhao Zhenya's results showed that the cure rate of the observation group was 81.3%, higher than the control group's 62.5%; the research results of Zhang Hesheng show that the total effective rate of liver stomach Baihe combination is 100%, higher than 93.6% in the stomach triple group. Both studies unanimously believe that the combination group of Ganwei Baihe decoction has higher efficacy, but the safety has not yet been evaluated.

## 6. Conclusion

Ganwei Baihe decoction is a new breakthrough in the treatment of peptic ulcers and is of great significance for developing a more executable, safe, and effective peptic ulcers treatment plan.

## Funding

If any, it should be placed before the reference section without numbering.

## Data Availability

The datasets used during the current study are available from the corresponding author on reasonable request.

## Conflict of Interest

The author states that this article has no conflict of interest.

## References

- [1] Yu Bin, Feng Guimei, Liu Lingyu, et al. Effect of Ultramicro Liver Stomach Lily Decoction on TNF in Patients with Gastric Ulcer-  $\alpha$  And the impact of IL-1. *Hunan Journal of Traditional Chinese Medicine*, 2012,28 (5): 1-4.
- [2] Yu Bin, Feng Guimei, Liu Lingyu, et al. The effect of ultrafine liver stomach lily decoction on epidermal growth factor and interleukin-10 in gastric ulcer patients. *Journal of Hunan University of Traditional Chinese Medicine*, 2012,32 (9): 53-56.
- [3] Mao Yizhi The effect of Ganwei Baihe Tang on the JAK/STAT pathway mediated Th1/Th2 cell balance in chronic stress gastric ulcer model mice. *Hunan University of Traditional Chinese Medicine*, 2017.
- [4] Xu Yin, Yu Bin. Effect of Ganwei Baihe Tang on Th1/Th2 cell balance and HPA axis in chronic stress gastric ulcer model mice. *Journal of Traditional Chinese Medicine*, 2019,47 (4): 32-36.
- [5] Du Shan The effect of Ganwei Baihe Tang on the HPA axis MR/GR balance in mice with chronic stress induced gastric ulcer model. *Hunan University of Traditional Chinese Medicine*, 2017.
- [6] Zeng Menghui Mechanism study on the repair effect of Ganwei Baihe Tang on gastric mucosal damage caused by chronic stress and *Helicobacter pylori* in model mice. *Hunan University of Traditional Chinese Medicine*, 2017.
- [7] Qin Huatuo Observation on the Effect of Ganwei Baihe Tang on NO and ET in Patients with DU Liver Stomach Stagnation Heat Syndrome. *Hunan University of Traditional Chinese Medicine*, 2010.
- [8] Zou Yuming, Wang Dou, Zhao Aiguang, et al. Clinical efficacy of Ganwei Baihe decoction in the auxiliary treatment of high altitude peptic ulcer and its effect on serum NO and TGF in patients-  $\beta$  1. The impact of Smad4 levels. *Progress in Modern Biomedical Sciences*, 2017,17 (28): 5493-5496+5470.
- [9] Li Qinghu, Zhang Hongqin, Wang Yipei. Clinical observation on the combination of Ganwei Baihe Tang and Western medicine in the treatment of *Helicobacter pylori* positive peptic ulcer with liver stagnation and qi stagnation syndrome. *Chinese Journal of Integrated Traditional and Western Medicine Digestion*, 2019,27 (2): 147-149.

- [10] Sun Yiqing *Clinical Study on the Treatment of Gastric Ulcer (Active Stage) with Liver Stomach Disharmony Syndrome with Ultramicro Liver Stomach Lily Decoction*. Hunan University of Traditional Chinese Medicine, 2009.
- [11] Lu Yanyan. *Clinical observation on the treatment of peptic ulcer at high altitude in Qinghai with Ganwei Baihe Tang*. *Sichuan Traditional Chinese Medicine*, 2012,30 (1): 80-81.
- [12] Yu Bin, Feng Guimei, Liu Lingyu, et al. *Clinical Observation on the Treatment of Gastric Ulcer Patients with Different Formulations of Ganwei Baihe Tang*. *Clinical Research of Traditional Chinese Medicine*, 2012,4 (15): 7-9.
- [13] Chen Jiating. *Clinical Observation on the Treatment of Gastric Ulcer with Liver Stomach Disharmony Syndrome with Ultramicro Liver Stomach Lily Decoction*. *Asia Pacific Traditional Medicine*, 2015,11 (15): 126-127.
- [14] Liu Jincheng. *Clinical analysis of Ganwei Baihe decoction in the treatment of refractory peptic ulcer*. *Smart Health*, 2017,3 (20): 103-104.
- [15] Chen Jianping. *Clinical study on the treatment of gastric ulcer with liver stomach disharmony syndrome with modified Ganwei Baihe Tang*. *Journal of Aerospace Medicine*, 2014,25 (11): 1583-1584.
- [16] Wang Ruiqin. *Clinical efficacy and safety of Ganwei Baihe decoction in the treatment of gastric ulcer with disharmony between the liver and stomach*. *World Latest Medical Information Digest*, 2017,17 (25): 1-2+4.
- [17] Yan Hong. *Analysis of the clinical efficacy and characteristics of Ganwei Baihe decoction in the treatment of gastric ulcer with disharmony between the liver and stomach*. *Smart Health*, 2018,4 (4): 1.
- [18] Qin Huatuo. *Treatment of 30 Cases of Duodenal Ulcer with Ganwei Baihe Tang*. *Chinese Medical Innovation*, 2010,7 (21): 39.
- [19] Chen Lihua, Lin Wanjuan, Chen Wei, et al. *Observation on the therapeutic effect of Ganwei Baihe Tang on peptic ulcer*. *Chinese Journal of Traditional Chinese Medicine Emergencies*, 2006 (6): 602-603.
- [20] Zhao Zhenya. *Clinical efficacy observation of integrated traditional Chinese and Western medicine in the treatment of peptic ulcers*. *Journal of Hebei Union University (Medical Edition)*, 2012,14 (3): 362-363.
- [21] Zhang Hesheng. *Observation on the therapeutic effect of integrated traditional Chinese and Western medicine on peptic ulcer*. *Asia Pacific Traditional Medicine*, 2013,9 (1): 100-101.