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Review Article

**TRADITIONAL HERBAL DRUGS USED IN THE TREATMENT
OF PEPTIC ULCER****Sejal R. Sahu^{1*}, Vivek D. Rathod², Dhiraj A. Thaddani¹, Aniket P. Sawsakade¹,
Dipti Damodar¹, Pallavi Atalkar¹.**¹Student, Vidyabharti College of Pharmacy, Amravati²Assistant Professor, Vidyabharti College of Pharmacy, Amravati.**Abstract:**

Gastric ulcer is common disorder of digestive system. Current therapeutic regimens largely rely on Western medicine. However, numerous studies have demonstrated that herbal medicines can effectively treat gastric ulcer in humans and various animal models via divergent mechanisms. This review updates the efficacy and safety of herbal medicines in treating gastric ulcer, and the mechanisms of their action in humans and animal models. Studies have demonstrated that the efficacy of herbal medicines is comparable or superior to that of drugs such as omeprazole or cimetidine in humans and animal models, and herbal medicines display fewer adverse effects. The mechanisms by which herbal medicines benefit gastric ulcer include stimulation of mucous cell proliferation, anti-oxidation, and inhibition of gastric acid secretion and H(+)/K(+)-ATPase activity.¹ Most common sign of peptic ulcer disease (PUD) is a break in the GI tract's inner lining brought on by either pepsin or gastric acid release. It penetrates the stomach epithelium's muscularis propria layer. Usually, it affects the proximal duodenum and stomach.² Patients with gastric disorders typically experience epigastric discomfort within 15 to 30 minutes after eating, whereas duodenal ulcer patients typically experience pain 2 to 3 hours later.² Past decade has obviously witnessed a tremendous surge in acceptance and public interest in natural therapies both in developing and developed countries, with these herbal remedies being available not only in drug stores, but now also in food stores and supermarkets. It is estimated that up to four billion people (representing 80% of the world's population) living in the developing world rely on herbal medicinal products as a primary source of healthcare and traditional medical practice which involves the use of herbs is viewed as an integral part of the culture in those communities.³

Keywords: Peptic ulcer, H.pylori bacteria, NSAIDs, Traditional herbs, Endoscopy, Gastric cancer.

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INTRODUCTION:

The word 'peptic' derives from the Greek term "peptikos", meaning related to digestion and an ulcer is a crater like lesion in a membrane. ⁴An "ulcer" is an open sore. The word "peptic" means that the cause of the problem is due to acid.⁵

The two most common types of peptic ulcer are called "gastric ulcers" and "duodenal ulcers".

1] Gastric ulcer: Open develop on the inside lining of the stomach .

2] Duodenal ulcer: Open sores that develop on inside lining of the upper portion of the small intestine.⁶

History:

For over a century, peptic ulcers were thought to result from stomach acid's impact on the gastric lining. However, Barry Marshall and Robin Warren's 20th-century discovery of *H. pylori* as the true culprit earned them Nobel Prize.^{7,8}

Early speculation on peptic ulcers:

Before the discovery of *Helicobacter pylori* in 1982, peptic ulcers were often attributed to lifestyle choices. Clinicians believed factors like a spicy diet and difficulty managing emotional stress led to overproduction of gastric acid, resulting in ulcer formation. Treatment back then included adopting a bland diet, bed rest and medications to block acid production. However despite symptoms relief, the ulcers had a high recurrence rate, It was not until the identification of *H. pylori* and its link to ulcers that a new understanding emerged, reshaping approaches to diagnosis and treatment.⁹

Discovery of helicobacter pylori:

The road to the discovery of the *Helicobacter pylori* bacteria as the infectious agent in gastritis and peptic ulcers was a long one. In the late 19th century, the Polish clinical researcher Professor W. Jaworski and the Italian medical researcher Giulio Bizzozero both observed spiral-shape micro-organisms in the gastric mucosa of humans and dogs, respectively. However, these observances were thought to be attributed to post-mortem contamination of the tissue samples. It was the belief at the time that microorganisms could not survive the extremely acidic environment in the stomach of a living human or another mammal. In 1982, two physicians from Perth, Australia, Dr. Robin Warren, and Dr. Barry Marshall, again observed bacteria associated with ulcerated and inflamed regions of the human gut and began investigating its role in disease. These scientists isolated the bacteria from stomach biopsies and named the organism *Helicobacter pylori*.

After a long trial and error period, Warren and Marshall figured out how to grow *H. pylori* in culture, which occurred by chance after inadvertently leaving the culture to grow over a long Easter holiday. *H. pylori* is slow-growing as compared with other bacteria and requires additional days of growing time. Using themselves as test subjects, Marshall and another volunteer ingested a culture of *H. pylori* and soon developed gastritis, thus definitively establishing a link between the infectious agent and disease. Warren and Marshall published their work in 1982 and were awarded the Nobel Prize in Medicine in 2005 for their outstanding contributions to the field. ⁹

Causes of peptic ulcer :

The most common cause of peptic ulcer is *H. pylori* ,NSAIDs.

1] *H. pylori*, a bacteria causing ulcers, affects specific individuals, though many naturally carry it without developing ulcers. It is transmitted through food and drink, *h. pylori* produces urease to reduce stomach acidity, residing in stomach and duodenal lining mucus.¹⁰

2]NSAIDs, like ibuprofen and aspirin, prescribed for pain and inflammation, contribute to peptic ulcer development.¹¹

Other causes:

The following are other possible reasons of peptic ulcers:

- Genetics
- smoking
- alcohol intake
- corticosteroid use ,etc^{10,11}

Sign and symptoms:

It include Fullness in the abdomen , Nausea and vomiting, Hematemesis Epigastric abdominal pain, Bleating.¹¹

• Diagnosis:

It includes various tests such as

I. Laboratory tests for *H. pylori*.

H. pylori testing Every patient suffering from peptic ulcers needs to have a *H pylori* infection tested. The rapid urease test, histopathology, and culture are endoscopic or invasive methods for detecting *H pylori*. Fast urease tests are regarded as the preferred endoscopic diagnostic procedure. Urease testing is used to determine whether stomach mucosal biopsy specimens contain *H pylori*. By looking for *H pylori* antigens in stools, fecal antigen testing can determine whether an individual has an active

H pylori infection. Compared to urea breath tests, this test is less expensive and offers greater accuracy than antibody testing.¹²

II. Endoscopy:

A minimally invasive procedure called endoscopy can be used to diagnose stomach ulcers. You have a long, thin tube inserted down your throat and into your stomach that has a camera on the end. If necessary, endoscopy can also be used for treatment. Using an endoscopy, physicians can view the ulcer and treat it if it is bleeding.¹³

- **Complications:**

If Peptic Ulcer Disease (PUD) is not identified and treated in a timely manner, it can result in severe consequences. The following issues with PUD can arise:

- **Upper gastrointestinal bleeding:** A common complication that affects 15–20% of patients is bleeding. About 40–60% of cases of acute upper gastrointestinal bleeding are caused by PUD.^{14,17}
- **Gastric outlet obstruction:** Another complication associated with PUD is gastric outlet obstruction (GOO), which can manifest as early satiety, bloating, weight loss, indigestion, nausea, and vomiting.^{14,15}
- **Perforation:** The second most frequent complication of PUD is perforation, which affects 2–10% of peptic ulcers. It can cause abrupt, intense abdominal pain that is accompanied by hemodynamic instability or shock.^{15,16,18,19}
- **Penetration:** One uncommon consequence of peptic ulcer disease is penetration into the liver, which can result in odd consequences like abscess formation or upper gastrointestinal bleeding. It is unknown how frequently this complication occurs in patients with peptic ulcers.^{15,16}
- **Gastric cancer:** Helicobacter pylori is the main bacteria responsible for gastric ulcers. There is a connection between H pylori infection and carcinoma, or cancer. intestinal cancer.^{14,15}
- **Intestinal blockages:** It occurs when food can't move from your stomach into your small intestine. This happens when ulcers cause strictures (narrowing of the intestinal passage).^{15,16}

- **Herbal drugs used in the treatment of peptic ulcer:**

1. BEETROOT

"Beetroot" is the common name for Beta vulgaris (Chenopodiaceae).²⁰

Originally from the seacoasts of the Mediterranean, sugar beet is now widely grown in both Europe and America. For the purpose of producing flesh roots and leaves, it is also grown in gardens throughout much of

India. Red and white are the two varieties. One of the active principles in this plant's chemical composition is "betin".²¹

- **Method of use:**

As in Ayurveda. All types of ulcers and running sores respond well to a root decoction made with a small amount of vinegar added.²⁰

2. PAPAYA

The common name for Carica papaya (Caricaceae) is "papaya." Locals refer to it as "papali-pazham." It is a plant that grows throughout the world's tropical and many subtropical regions. This plant contains the following chemicals: antheraxanthin, carposide, carpaine, pectin, chymopapain, and papain.^{20,21,22,23}

- **Method of use**

Folk Medicine. Most of it is found in traditional tropical medicines. While unripe fruit can be cooked and consumed for indolent ulcers, ripe fruit is edible^{24,25}. While ripe fruits are typically consumed raw, devoid of seeds and skin, unripe fruit can be cooked and added to salads, jellies, and stews. There is evidence that eating the plant's unripe fruit has antiulcer properties.^{20,21,25}

3. CHINESE HIBISCUS:

Hibiscus rosa sinensis is known as Chinese hibiscus. The Malvaceae plant Hibiscus rosa sinensis is widely referred to as the "changing rose." Locally, it's referred to as "chembaruthi." It is a native of China and is widely grown throughout India as an ornamental plant. This plant contains flavonoids, anthocyanins, quercetin, cyanidin, kaempferol, and hydrocitric acid as chemical components.^{26,27,28}

- **Method of use :**

Folk Medicine. In Kanyakumari district, Tamil Nadu, India, the kani tribes have historically used the root of H. rosa sinensis to treat ulcers. In Current Research. At dosages of 250 and 500 mg/kg, the alcohol and aqueous extracts of H. rosa sinensis roots demonstrated notable antiulcer activity in rats with pylorus ligation. Thus, the sufficient potential of these extracts as an antiulcerogenic agent has been demonstrated by science.^{26,27,28}

Active Constituents. Flavonoids and quercetin are considered.

4. Coconut:

Coconut is very good for people, suffering from stomach ulcer because of its anti-bacterial qualities. It kills the bacteria that cause ulcer.

More ever, coconut milk and coconut water have anti ulcer properties.²⁹

- **Method of use:**

Drink few cups of coconut fresh milk tender coconut water daily. Also eat the Kernel of the tender coconut follow this treatment for at least one week to get +ve result. Alternatively take one table spoon of coconut oil in the morning and another at night for one week. As coconut oil is mainly composed of medium chain fatty acid, it can be easily digested.²⁶

5. Honey:

The medicinal importance of honey has been known since ancient times and its antimicrobial property as well as wound-healing activities

was well-known long ago.²⁹ A number of studies suggest that honey may have antimicrobial effects against *H. pylori*, suggesting it could be useful for treating stomach ulcers. Raw honey has potent healing properties that help a lot in the treatment of stomach ulcer. An enzyme called Glucose oxidase in honey produces hydrogen peroxide, which in turn kills harmful bacteria that cause ulcer. Plus it soothes and reduces the inflammation of stomach lining.^{29,31,32}

- **Method of use:**

Take two table spoons of raw honey daily early in the morning on an empty stomach. It will help clean the bowl strengthen the stomach lining and also treat the stomach ulcer.³²

- **Some more traditional herbal drugs in peptic ulcer:**

Herbs Name	Synonyms	Botanical Name	Chemical constituent responsible for Antiulcer property	Uses
Turmeric ³³	Haldi, curcuma, Kurkum, Huang Jiang, harihadra ³⁴	<i>Curcuma longa</i> Family: Zngiberaceae ³⁴	Curamin, Curaminoids ³⁵	1) Epigastric pain 2) Dyspepsia 3) Anti ulcer 4) Prostate cancer 5) Cardioprotective 6) Arthritis 7) Anti coagulant 8) Anti diabetic 9) Anti fungal 10) Hypotensive 11) Oral cancer 12) prostate cancer 13) Atherosclerosis 14) Wound healing property ³⁸
Moringa	Moringa, oleifera, subhanjana, saguna, sainjna suragavo, murinna, sigru sainjna, soanjna ³⁹	<i>Moringa oleifera</i> Family: Moringaceae ³⁹	Flavanoids And phenolic compounds ^{39,40}	1. Anti ulcer 2. Anti-inflammatory 3. Anti-cancerous 4. Hepatoprotective 5. Antiasthmatics 6. Cardiovascular 7. Antiepileptic 8. Anthelmintic 9. Antioxidant ⁴⁰
Cistus laurifolius	Karahan, laden ⁴¹	<i>Cistus laurifolius</i> L. Family: Cistaceae ⁴¹	Flavonoids ⁴¹	1. Anti ulcer. 2. gastric ailments stomachache 3. Common cold in turkish traditional medicine ⁴¹

Licorice	Mulethi Mulathi Liquorice Yashtimadhu And sweet wood ⁴²	<i>Glycyrrhiza glabra</i> Linn Family: Leguminosae ⁴²	Glycyrrhizin, carbenoxolone ⁴²	1. Anti ulcer 2. Anti oxidant 3. Anti diabetic 4. Anticarcinogenic 5. Anti coagulant and Memory enhancing activity ⁴²
Aloevera	Gwarpatha Ghrit Kumari Koarphada Kathalai ⁴³	<i>Aloe barbadensis</i> Family: Asphodelaceae ⁴⁴	Glucamannans, aminoacids, babalin, isobarbalin	1. Anti ulcer 2. Seborrheic Dermatitis 3. Psoriasis vulgaris 4. Skin burns 5. HIV infection 6. Cancer prevention ⁴⁴
Ginger	Sringavera, Sunthi Saunth, adrak ⁴⁵	<i>Zingiber officinale</i> Family: Zingiberaceae ⁴⁶	Zingerone ⁴⁷	To treat 1) Gastric ulceration 2) Arthritis 3) Rheumatism 4) Muscular aches 5) Asthma 6) Sasthma 7) diabetes 8) sore throats 9) gingivitis 10) bloating 11) belching ⁴⁸
Fenugreek	Methi, Hulba Uluva, Shoot, Dari ⁴⁹	<i>Trigonilla foenumgraecum</i> Family: Fabaceae	phytic acid, saponins ⁵⁰	1]gastric ulcer 2] in treatment of diabetes 3] hypercholesterolemia 4] in industry for the synthesis of steroidal hormone ⁵¹
Lemon Balm	Malabar, coch ingras	<i>Mellisa officinalis</i> Family: lamiaceae	Flavonoids with caffeic acid, a- tocopherol, naringin, rosmarinic acid ⁵³	1]anti ulcer 2] anti-oxidant 3]insomnia 4]antispasmodic activity 5]antiparasitic. 6] antibacterial ⁵³

Ayurvedic description of ulcer:

In ayurveda, Peptic ulcers can be correlated to Parinaam Shula and Anna-drava Shula. Parnama shula closely resembles with duodenal ulcers while Annadrava Shula closely resembles gastric ulcers.⁵⁵ It is a disease of tridosh but aggravation of vata and pitta specially noted in all cases. Vata type ulcers occurs secondary to dryness of the mucous membranes of the stomach and small intestine. Ayurveda describes this as vata entering the rasa dhatu of the annavaha srota. A dry membrane is unable to protect the underlying tissue from the normal or even low levels of acid present in the digestive system. The result is that the acids burn the tissue resulting first in hyperacidity and later in ulceration. Pitta type ulcers result from excess acid secretions. These secretions overwhelm the protective mucous secretions of the intestinal lining.

The result begins or hyperacidity and later results in ulceration.^{56,57}

• Ayurvedic herbal formulation:

• **Triphala:** Tripala, a blend of Haritiki, Amalaki, and Bibhitak, relieves hyperacidity, pain, and aids wound healing, offering effective results for peptic ulcers.⁵⁸

• **Laghu Suta Shekhar Rasa,** a blend of pure swaran gairik and shunthi, serves as an antacid, anti burning, anti-emetic and haemostatic agent yielding positive outcomes in peptic ulcers.⁵⁸

• **Pittantak churna:** It is a blend of gairik and amritardha, cools pitta, excelling in hyperacidity. With its cooling and anti-vomiting properties, it effectively treats peptic ulcers.⁵⁹

CONCLUSION AND DISCUSSION:

This study suggests that exploring plant-based remedies can yield effective treatments. Traditional medicine gains traction due to modern medicine's limitations in treating various illnesses. Traditional practices have successfully addressed gastrointestinal disorders, providing compelling evidence for the efficacy of remedies, whether from conventional or scientific sources, in treating ulcers. Contrary to the outdated theory exclusively attributing ulcers to acid secretion, current approaches focus on reducing acid production and enhancing the immune system. Throughout the history of medicine, plant-derived chemicals have been integral in treating human ailments, with half of recent chemical discoveries originating from natural sources. Recent technological advances reignites interest in drug discovery from natural products. Better medications with fewer adverse effects for the treatment of peptic ulcers can be created by combining traditional and modern knowledge. Although the experimental evaluation of herbal medications for the treatment of gastric ulcers is clearly quite impressive, relatively few of these medications have advanced to clinical trials and are still not widely available. Pharmacologists must therefore become more involved in the assessment of herbal medications for possible antiulcer activity and the standardization of these medications for them to be clinically successful and competitive in the global market.⁶³

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