



# MEDICINAL PLANTS IN THE MANAGEMENT OF PEPTIC ULCER DISEASE: TRADITIONAL WISDOM MEETS MODERN SCIENCE

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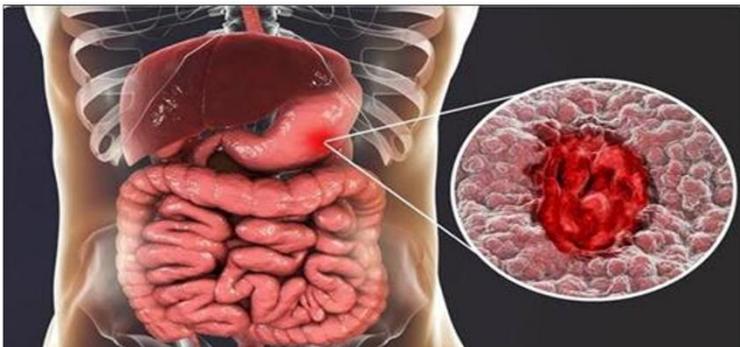
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**Abstract:** Peptic ulcer disease (PUD) is the most common disorder of the stomach and duodenum associated with *Helicobacter pylori* infection. UGD occurs due to an imbalance between offensive and defensive factors, and proton pump inhibitors (PPIs), nonsteroidal anti-inflammatory drugs (NSAIDs), and antibiotics are often used for treatment. Recently, herbal medicines have emerged as effective, safe, and widely available alternative therapies for UGD. The aim of this review was to study medicinal plants and phytochemicals that have been used for the treatment of UGD to evaluate the potential role of natural compounds for the development of herbal medicines for UGD. Finally, 279 plants from 89 families were identified, and information on plant families, plant parts used, chemical constituents, extracts, ulcer models used, and dosages were extracted. The results showed that most of the anti-PUD plants belonged to the Asteraceae (7.1%) and Fabaceae (6.8%) families, while flavonoids (49%), tannins (13%), saponins (10%), and alkaloids (9%) were the most common natural compounds in plants with anti-PUD activity. Peptic ulcer disease, also known as peptic ulcer disease, is an ulcer (defined as an erosion of the mucosa equal to or greater than 0.5 cm) of an area of the gastrointestinal tract that is normally acidic and therefore extremely painful. Symptoms include abdominal pain, the severity of which is related to the meal, about 3 hours after eating; bloating and a feeling of abdominal fullness; frequent nausea and vomiting; loss of appetite and weight loss, etc. There are many herbs, nutrients, and herbal products that play a role in the protection or healing of stomach and peptic ulcers. Little human evidence is available, but many have shown good potential in animal or in vitro studies. And the present study aims to collect information about the different herbs used in the treatment of peptic ulcer disease in different parts of the world, based on the data provided by several researchers.

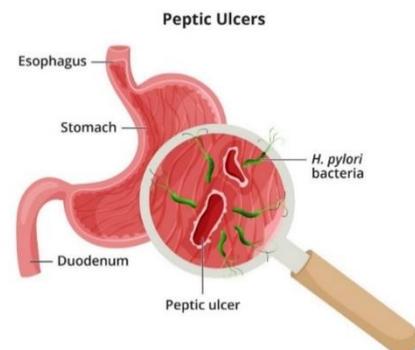
**Keywords:** Peptic Ulcer, *Helicobacter Pylori*, Gastrin, Plant Antioxidant, Medicinal Plants. Natural Products.

## 1. INTRODUCTION

A skin or mucosal ulcer is an open wound characterized by scaling of dead inflammatory tissue [1]. Ulcers are lesions of the skin or mucosa characterized by the loss of superficial tissue. Ulcers come in many forms, including vaginal, esophageal, peptic, and oral ulcers. Many people suffer from peptic ulcers due to these ulcers [2]. Gastric ulcers and duodenal ulcers are the two most common types of peptic ulcers. The term refers to the location of the ulceration. Duodenal and gastric ulcers can occur at the same time in the same person. Gastric ulcers, which are common in older people and cause pain, are called gastric ulcers. Instead of reducing the discomfort, eating may make it worse. Weight loss, nausea, and vomiting are additional possible symptoms [3]. Bloody stools, severe cramps, and vomiting of blood are all signs of peptic ulcer disease. Acid, pepsin, and *Helicobacter pylori* are examples of offensive and protective elements that are unevenly distributed in peptic ulcer disease (mucin, prostaglandins, bicarbonate, nitric oxide, and growth factors). [6]



**Fig 1:** peptic Ulcer



**Fig 2:** Peptic Ulcer in Stomach

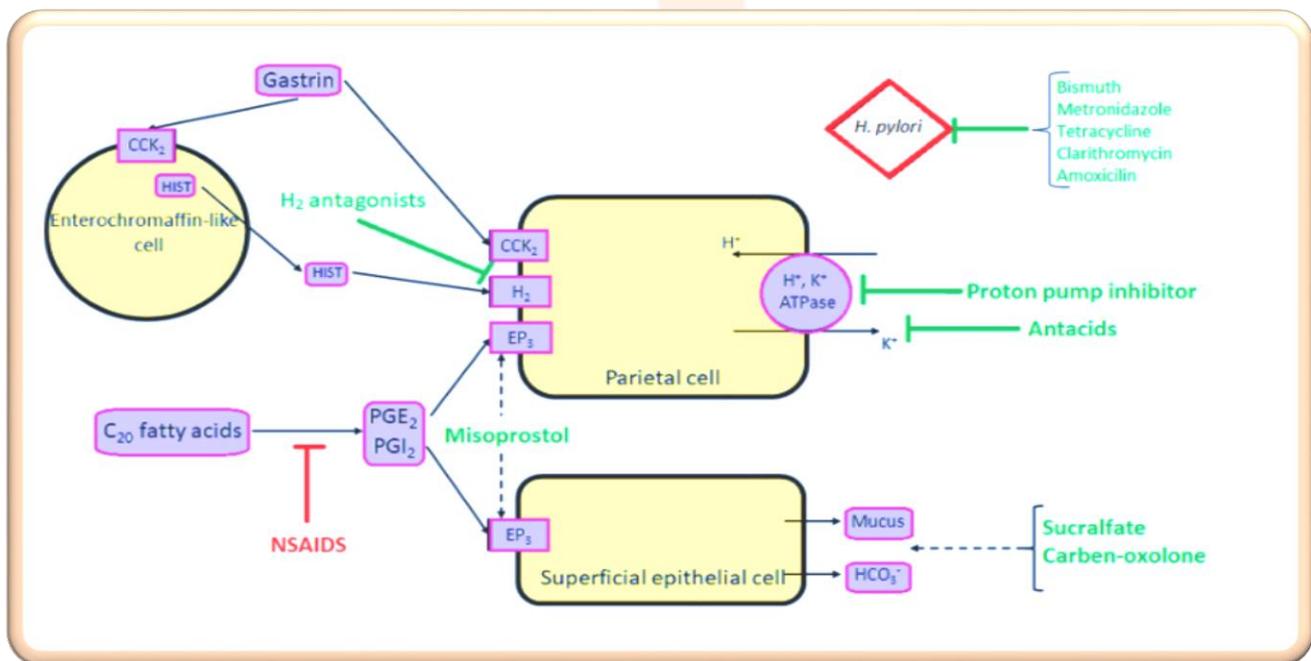
To survive in the hostile environment of the stomach, the gram-negative bacteria *Helicobacter pylori* persist between the mucosal layer and the gastric epithelium. Initially found in the antrum, *Helicobacter pylori* gradually move to the more proximal parts of the stomach [9]. One of

the most common gastrointestinal diseases in the world, peptic ulcer disease affects 10% of the world's population<sup>[10]</sup>. Duodenal ulcers account for 19 out of 20 peptic ulcers. The annual death toll from peptic ulcer disease is estimated at 15,000<sup>[11]</sup>. Antacids and antiulcer drugs in the Indian pharmaceutical market constitute 6.2 billion rupees and 4.3% of the market in the modern era, 75–80% of the world's population still uses herbal medicines, especially in developing countries, for primary health care, due to better cultural acceptability, better compatibility with the human body, and fewer side effects.<sup>[12]</sup> The term peptic ulcer refers to an acid-induced gastroduodenal injury of the digestive tract, resulting in a breakdown of the mucosa reaching the submucosa. Peptic ulcers are usually located in the stomach or proximal duodenum, but they can also be found in the oesophagus or Meckel's diverticulum. In this article, the term peptic ulcer disease refers to a peptic ulcer located in the stomach or duodenum. The widespread use of nonsteroidal anti-inflammatory drugs (NSAIDs) in the second half of the 20th century has changed this perception. The estimated prevalence of peptic ulcer disease in the general population is 5–10%, but recent epidemiological studies have shown a decrease in the incidence of hospitalizations and mortality from peptic ulcer disease. This is likely due to the introduction of new therapies and improved hygiene, which have led to a decrease in *Helicobacter pylori* (*H. pylori*) infections. All patients with *H. pylori* ulcers should receive eradication therapy. For many decades, the surgical management of peptic ulcer disease (PUD) has been one of the cornerstones of gastrointestinal surgery. In 1977, antisecretory therapy with H<sub>2</sub> receptor blockers was introduced and quickly accepted as the primary treatment for gastric and duodenal ulcers. Within 5 years, more than 1.5 billion Cimetidine tablets were purchased each year in the United States. The Indian Ayurveda book *Materia Medica* and electronic databases including Science Direct, PubMed, Scopus, and Google Scholar were searched for each of the medicinal plants for peptic ulcer, and all articles retrieved were evaluated for in vitro evidence, in vivo or clinical evidence studies of its effectiveness, and possible mechanisms. The studies obtained clearly show the effectiveness of these herbs or indirectly show their effectiveness in the mechanisms involved in the treatment of peptic ulcer.

### 1. PATHOGENESIS OF PEPTIC ULCER: -

Almost half of the world's population is colonized by *H. pylori*, which remains one of the most common causes of peptic ulcer disease.<sup>[13]</sup> The prevalence of *H. pylori* is highest in developing countries, particularly in Africa, Central America, Central Asia, and Eastern Europe.<sup>[14]</sup> The infection is usually acquired during childhood in an environment with unsanitary conditions and overcrowding, especially in countries with low socioeconomic status. *H. pylori* cause degeneration and damage of epithelial cells, generally more severe in the antrum, by the inflammatory response of neutrophils, lymphocytes, plasma cells and macrophages.

The mechanism by which *H. pylori* promote the development of different types of lesions in the gastroduodenal mucosa is not fully understood. *H. pylori* infection can lead to hypochlorhydria or hyperchlorhydria, thus determining the type of peptic ulcer. The main mediators of *H. pylori* infection are cytokines that inhibit parietal cell secretion, but *H. pylori* can directly affect the  $\alpha$  subunit of the H<sup>+</sup>/K<sup>+</sup> ATPase, activate somatostatin-associated calcitonin gene-related peptide (CGRP)-expressing sensory neurons, or inhibit gastrin production.<sup>[15]</sup> Although gastric ulcer formation is associated with hyposecretion, 10 to 15% of patients with *H. pylori* increases gastric secretion caused by hypergastrinemia and reduced antral somatostatin.<sup>[16]</sup> This leads to an increase in histamine secretion, and subsequently to an increase in acid or pepsin secretion from parietal and gastric cells. Furthermore, eradication of *H. pylori* results in decreased gastrin mRNA expression and increased somatostatin mRNA expression.<sup>[17]</sup> In most patients, gastric ulcers are associated with hypochlorhydria and mucosal atrophy. The primary mechanism of NSAID-related gastroduodenal mucosal injury is systemic inhibition of constitutively expressed Cyclooxygenase-1(COX-1), which is responsible for prostaglandin synthesis and is associated with decreased mucosal blood flow, mucus and bicarbonate secretion, and inhibition of cell proliferation. NSAIDs inhibit the enzyme in a reversibly, concentration dependent manner. Simultaneous administration of exogenous prostaglandins and cyclooxygenase-2(COX-2) selective NSAIDs reduces mucosal damage and ulcer risk.<sup>[18]</sup> However, the different



**Fig 3:** Figure 1. Schematic presentation of main pathophysiological mechanisms involved in the development of peptic ulcer disease, and the sites of action of the most commonly used pharmacological options in the treatment of peptic ulcer disease. CCK2 = Cholecystokinin Receptor; PGE<sub>2</sub> = Prostaglandin E<sub>2</sub>; PGI<sub>2</sub> = Prostaglandin I<sub>2</sub>; EP<sub>3</sub> = Prostaglandin E receptor 3; HIST = Histamine.

physicochemical properties of NSAIDs lead to differences in their toxicity.<sup>[19]</sup> NSAIDs disrupt mucus phospholipids and lead to their dissociation Mitochondrial oxidative phosphorylation, thereby initiating mucosal damage. When exposed to acidic gastric juice (pH 2), NSAIDs are protonated and cross lipid membranes in epithelial cells (pH 7.4), were ionizes and releases H<sup>+</sup> In this form, NSAIDs cannot cross

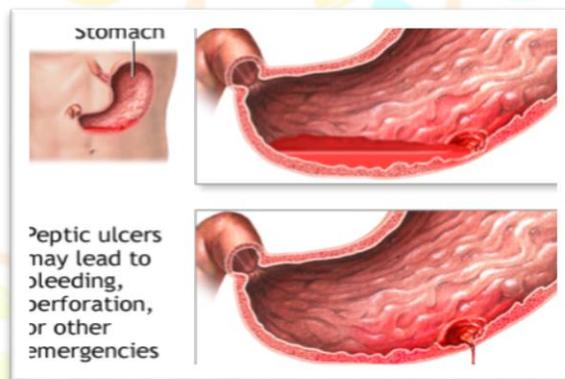
the lipid membrane and are trapped in epithelial cells, leading to uncoupling of oxidative phosphorylation, decreased mitochondrial energy production, increased cell permeability and reduced cell integrity. Patients who have a history of peptic ulcer or bleeding, who are over 65 years old, who also use steroids or anticoagulants, and those taking high doses or combinations of NSAIDs are at the highest risk of developing it [20] Ulcers caused by NSAIDs. The main pathophysiological mechanisms and sites of action of antiulcer treatment are presented in and taking high doses or combinations of NSAIDs have the highest risk of developing NSAID-induced ulcers. [21] The main pathophysiological mechanisms and sites of action of antiulcer drugs.

## 2. CAUSES: -

Normally, the lining of the stomach and small intestines can protect itself against strong stomach acids. But if the lining breaks down, the result may be: -

- Swollen and inflamed tissue (gastritis)
- An ulcer

**2.1 Stomach ulcer:** -The stomach is the organ of the digestive system in which food travels from the oesophagus and is further broken down before its nutrients are absorbed in the small intestine. It produces acid and various enzymes that break down food into simple substances. The inside wall of the stomach is protected from the acid and enzymes by a mucous lining. Ulcers are caused when there is an imbalance between the digestive juices produced by the stomach and the various factors that protect the lining of the stomach. Symptoms of ulcers may include bleeding. On rare occasions, an ulcer may completely erode the stomach wall. A major cause of stomach ulcers is the bacteria called *Helicobacter pylori*. Treatment regimens for ulcers caused this bacterium usually include medications to suppress the stomach acid as well as antibiotics to eradicate the infection. Most ulcers occur in the first, inner surface, layer of the inner lining. A hole in the stomach or duodenum is called a perforation.



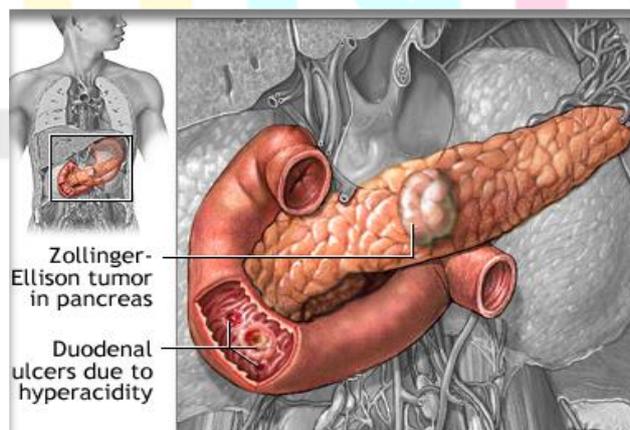
The most common cause of ulcers is infection of the stomach by bacteria called *Helicobacter pylori* (*H pylori*). Most people with peptic ulcers have these bacteria living in their digestive tract. Yet, many people who have these bacteria in their stomach do not develop an ulcer.

The following factors raise your risk for peptic ulcers: -

- Drinking too much alcohol
- Regular use of aspirin, ibuprofen, naproxen, or other nonsteroidal anti-inflammatory drugs (NSAIDs)
- Smoking cigarettes or chewing tobacco
- Being very ill, such as being on a breathing machine
- Radiation treatments
- Stress

A rare condition, called Zollinger-Ellison syndrome, causes the stomach to produce too much acid, leading to stomach and duodenal ulcers

## 3. SYMPTOMS: -



Small ulcers may not cause any symptoms and may heal without treatment. Some ulcers can cause serious bleeding. Abdominal pain (often in the upper midabdominal) is a common symptom. The pain can differ from person to person. Some people have no pain

### 3.1 Pain occurs: -

- In the upper abdomen
- At night and wakes you up

- When you feel an empty stomach, often 1 to 3 hours after a meal
- Other symptoms include.
- Feeling of fullness and problems drinking as much fluid as usual
- Nausea, Vomiting, possibly bloody
- Bloody or dark, tarry stools
- Chest pain, Weight loss
- Fatigue
- Ongoing heartburn

#### 4. PATHOPHYSIOLOGY: -

The peptic ulcer disease (PUD) mechanism results from an imbalance between gastric mucosal protective and destructive factors. Risk factors predisposing to the development of PUD.

- *H. pylori* infection
- NSAID use
- First-degree relative with PUD
- Emigrant from a developed nation
- African American/Hispanic ethnicity

With peptic ulcers, there is usually a defect in the mucosa that extends to the muscularis mucosa. Once the protective superficial mucosal layer is damaged, the inner layers are susceptible to acidity. Further, the ability of the mucosal cells to secrete bicarbonate is compromised.

*H. pylori* is known to colonize the gastric mucosa and causes inflammation. The *H. pylori* also impair the secretion of bicarbonate, promoting the development of acidity and gastric metaplasia.

#### 5. PLANT USED IN TREATING PEPTIC ULCER.<sup>[22]</sup>

Herbs used to treat peptic ulcers There are many herbs, nutrients, and plant products that play a role in the protection or healing of gastric and peptic ulcers. Few human trials are available, but many have shown good potential results in animal or in vitro studies.

Several botanicals have been reported to have antiulcer activity, but the documented literature has focused primarily on pharmacological action in laboratory animals. With the exception of a few phytochemical compounds (e.g., aloe, liquorice, and chili), clinical data are available to support the use of herbs as gastroprotective agents and, therefore, data on efficacy and safety are limited. Despite this, there are some botanicals with potential therapeutic applications due to their high efficacy and low toxicity. Finally, it should be noted that substances such as flavonoids, aesc in, aloe gel and many others, which possess anti-ulcer activity, have a particular therapeutic importance, since most of the anti-inflammatory drugs used in modern medicine are ulcerogenic. The active principles of anti-ulcer activity are flavonoids, terpenoids and tannins.

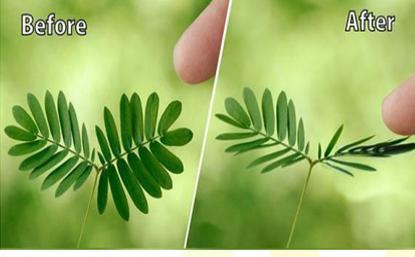
##### 5.1 Some medicinal plants used in the treatment of ulcer:

|                    |                         |                     |                    |                           |
|--------------------|-------------------------|---------------------|--------------------|---------------------------|
| Ficus Arnottian    | Gymnosporia Motana      | Alstonia Scholari   | Azadirachta Indica | Asparagus Racemosus       |
| Berberis Asiatica  | Bauhinia Variegata      | Aloe Vera           | Butea Frondose     | Hibiscus Sinensis<br>Rosa |
| Carica Papaya      | Astragalus Membranaceus | Annona Squamoza     | Rheum Emodi        | Benincasa Hispida         |
| Curcuma Longa      | Eruca Sativa            | Uncaria Tomentosa   | Ulmus Rubra        | Althaea Officinalis       |
| Angelica Sinensis  | Emblica Officinalis     | Althaea Officinalis | Brassica Oleracea  | Tinospora Cordifolia      |
| Withania Somnifera | Centella Asiatica       | Glycyrrhiza Glabra  | Crataeva Nurvala   | Musa Paradisca            |
| Panax Ginseng      | Moringa Oleifera        | Musa Paradisca      | Garcinia Cambogia  | Pogostemon Cablin         |

##### 5.2 PLANT USED IN PEPTIC ULCER

| SR. NO. | NAME OF DRUG  | BIOLOGICAL SOURCE/<br>FAMILY/ CHEMICAL<br>CONSTITUENTS   | USES  |
|---------|---|--|---|
| 01      |  <p style="text-align: center;"><b>Papaya</b> <sup>[23]</sup></p>      | <p><b>B.S:</b> It is a ripe fruit of <i>Carica</i></p> <p><b>Synonyms:</b> <i>Papali-pazham</i></p> <p><b>family:</b> <i>Caricaceae</i></p> <p><b>Chemical constituents:</b></p> <ul style="list-style-type: none"> <li>▪ Pectin</li> <li>▪ Carposide</li> <li>▪ Carpaine</li> <li>▪ Carotenoids</li> </ul>        | <ul style="list-style-type: none"> <li>○ The extract protects the gastric mucosa from the effects of ethanol.</li> <li>○ Its extract is used to reduce the amount of gastric juice and gastric acidity.</li> <li>○ Papaya is used to prevent and treat gastrointestinal disorders and as a sedative and diuretic.</li> <li>○ Unripe fruits can be used in salads, jellies, and stews.</li> <li>○ The leaves are used to make medicine.</li> </ul> |
| 02      |  <p style="text-align: center;"><b>Ginger</b> <sup>[24]</sup></p>      | <p><b>B.S:</b> Ginger consists of the dried rhizomes of the <i>Zingiber officinale</i> Roscoe.</p> <p><b>Synonyms:</b> <i>Bister, Brick</i></p> <p><b>Family:</b> <i>Zingiberaceae</i></p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>▪ Carbohydrates</li> <li>▪ Lipids</li> </ul> | <ul style="list-style-type: none"> <li>○ Some active ingredients of ginger are used to treat peptic ulcer disease.</li> <li>○ Ginger has been used as an analgesic. Such as: - chest pain, abdominal pain.</li> <li>○ Ginger is used as an anti-inflammatory agent, anticancer agent.</li> <li>○ Ginger is also used as a flavouring in foods and as a fragrance in soaps and cosmetics.</li> </ul>   |
| 03      |  <p style="text-align: center;"><b>Banana</b> <sup>[25]</sup></p>    | <p><b>B.S:</b> It is a ripe fruit of <i>Musa Paradisiaca</i>.</p> <p><b>Synonyms:</b> <i>Apple of paradise</i></p> <p><b>Family:</b> <i>Musaceae</i></p> <p><b>Chemical constituents:</b></p> <ul style="list-style-type: none"> <li>▪ Phenolics</li> <li>▪ Carotenoids</li> </ul>                                 | <ul style="list-style-type: none"> <li>○ Bananas contain several antibacterial compounds that inhibit the growth of <i>H. pylori</i>, a bacteria responsible for ulcers.</li> <li>○ Eat three bananas a day to relieve an ulcer.</li> <li>○ Used to improve blood sugar and improve insulin sensitivity when unripe.</li> <li>○ You can also buy green banana powder; mix</li> </ul>  |
| 04      |  <p style="text-align: center;"><b>Neem</b> <sup>[26]</sup></p>      | <p><b>B.S:</b> It is a leaf of <i>Azadirachta indica</i></p> <p><b>Synonyms:</b> <i>Vembu</i></p> <p><b>Family:</b> <i>Meliaceae</i></p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Flavonoids</li> <li>• Volatile fatty acids</li> <li>• Stearic acid</li> </ul>                | <ul style="list-style-type: none"> <li>○ In Ayurveda, it is used to treat infected ulcers, which respond well to a poultice made from sesame leaves and seeds</li> <li>○ In present studies on rats, <i>Azadirachta indica</i> leaf extract prevented gastric ulcers induced by pyloric ligation and cold stress.</li> </ul>  |
| 0.5     |  <p style="text-align: center;"><b>Aloe vera</b> <sup>[27]</sup></p> | <p><b>B.S:</b> Aloe vera is the dried juice extracted from the leaves of <i>Aloe Barbidensis</i>.</p> <p><b>Synonyms:</b> <i>Aloe gel, Kattalai</i></p> <p><b>Family:</b> <i>Liliaceae</i></p> <p><b>Chemical constituents</b></p>   | <ul style="list-style-type: none"> <li>○ The extract showed significant antiulcer activity</li> <li>○ comparable to the control.</li> <li>○ In America, the leaves are used successfully to treat chronic localized ulcers.</li> <li>○ Significant antiulcer activity has been observed in the extract.</li> <li>○ It is used as an antioxidant to treat digestive problems and improve the appearance of the skin</li> </ul>                     |

|            |  |   |   |
|------------|--|---|---|
| <p>0.6</p> |  <p><b>Indian berry</b> <sup>[28]</sup></p> | <p><b>B.S:</b> It is a dried/ripe fruit (berry) of <i>Berberis aristata</i>.</p> <p><b>Synonyms:</b> Indian or Nepal barberry <i>Kasturi manjal</i></p> <p><b>Family:</b> <i>Berberidaceae</i></p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>▪ Flavonoids</li> <li>▪ Alkaloid</li> </ul> | <ul style="list-style-type: none"> <li>○ In Ayurveda it is used the root is used to make crude</li> <li>○ extracts known as rasaut (in Hindi), and the bark can be applied to skin Ulcerations when combined with honey.</li> <li>○ Best use of this herb is in eye related disorders.</li> <li>○ It is used to treat diarrhea, manage diabetes, and also give</li> <li>○ a anticancer effects</li> <li>○</li> </ul>  |
| <p>0.7</p> |  <p><b>Drum-stick</b> <sup>[29]</sup></p>   | <p><b>B.S.:</b> It is a vegetable of <i>Moringa oleifera</i>.</p> <p><b>Synonyms:</b> <i>Murungai</i></p> <p><b>Family:</b> <i>Moringaceae</i></p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Alkaloids</li> <li>• Flavonoids</li> <li>• Tannins</li> </ul>                             | <ul style="list-style-type: none"> <li>○ The leaf tea treats Gastric Ulcers.</li> <li>○ The extract showed decreases in ulcer and acid pepsin secretion.</li> <li>○ It is help to decreasing the blood pressure and blood purification.</li> <li>○ Drumsticks improve bone density and improve immunity</li> </ul>  |
| <p>0.8</p> |  <p><b>Mango</b> <sup>[30]</sup></p>       | <p><b>B.S:</b> It is an edible fruit of <i>Mangifera indica</i>.</p> <p><b>Synonyms:</b> <i>Mangaai</i>.</p> <p><b>Family:</b> <i>Anacardiaceae</i></p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Alkaloids</li> <li>• Tannins</li> <li>• Flavonoids</li> </ul>                        | <ul style="list-style-type: none"> <li>○ Leaf extracts were dissolved in rice bran oil and given orally for ulcer.</li> <li>○ Traditionally the plant is reported to have antiulcer activity.</li> <li>○ The extract significantly reduced the gastric juice volume and gastric acidity.</li> <li>○ They help treat or prevent diseases, improve intestinal flora</li> </ul>  |
| <p>0.9</p> |  <p><b>Tulsi</b> <sup>[31]</sup></p>      | <p><b>B.S:</b> It is a fresh leaf and stem of <i>Ocimum Sanctum</i>.</p> <p><b>Synonyms:</b> <i>Holy basil</i></p> <p><b>Family:</b> <i>Lamiaceae</i></p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Alkaloids</li> <li>• Tannins</li> <li>• Flavonoids</li> </ul>                      | <ul style="list-style-type: none"> <li>○ Extract of Tulsi leaves is used in ulcer.</li> <li>○ A tea prepared with the leaves of Tulsi.</li> <li>○ Tulsi is commonly used for intestinal disorders</li> </ul>  |
| <p>10</p>  |  <p><b>Garlic</b> <sup>[32]</sup></p>     | <p><b>B.S:</b> Garlic consists of the fresh compound bulb of <i>Allium sativum</i> Linn.</p> <p><b>Synonyms:</b> <i>Vellapundu</i></p> <p><b>Family:</b> <i>Liliaceae</i></p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Volatile oil</li> <li>• Alliin</li> <li>• Allicin</li> </ul>   | <ul style="list-style-type: none"> <li>○ Garlic juice mixed with 3 to 4 parts of pure distilled water was used as a lotion to wash fetid wounds and ulcers.</li> <li>○ A lotion made from garlic juice and three to four parts of pure or distilled water was used to remove ulcers and unpleasant sores.</li> <li>○ The extract significantly accelerates the healing of gastric ulcers and protects rats from experimentally produced gastric and duodenal ulcers.</li> </ul> |

|           |  |  |  |
|-----------|--|--|--|
| <p>11</p> |  <p><b>Guggul</b> <sup>[33]</sup></p>             | <p><b>B.S.:</b> It is an exudate obtained from the plant <i>Commiphora mukul</i>.</p> <p><b>Synonyms:</b> Gukkulu</p> <p><b>Family:</b> Burseraceae</p> <p><b>Chemical constituents:</b></p> <ul style="list-style-type: none"> <li>• Volatile oil</li> <li>• Gum-resin</li> </ul>                         | <ul style="list-style-type: none"> <li>○ In Ayurveda it is used to treat Indolent Ulcers, guggul gum is combined with coconut oil or lime juice and administered as a lotion or a plaster.</li> <li>○ Is used as ointment in bad ulcers such as combined with Sulphur, catechu, and borax.</li> <li>○ It is used in constipation, gout, geriatric disorder, diseases of skin.</li> </ul>   |
| <p>12</p> |  <p><b>Tamarind Tree</b> <sup>[34]</sup></p>      | <p><b>B.S:</b> The Acetic dried, ripe fruits of the <i>Tamarindus indica</i> Linn.</p> <p><b>Synonyms:</b> Puli, Puliya-m-pazham</p> <p><b>Family:</b> Caesalpiniaceae</p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Tartaric acid</li> <li>• Citric acid</li> </ul>    | <ul style="list-style-type: none"> <li>○ It is a used as a anticancer, antioxidants, and antimicrobial.</li> <li>○ Decoction of the leaves is used as a wash for Indolent Ulcers and promotes healthy action.</li> <li>○ It is a used as a anticancer, antioxidants, and antimicrobial.</li> <li>○ It is a used to improves digestion, manage diabetes, and helps in weight loss.</li> </ul>   |
| <p>13</p> |  <p><b>Changing Rose</b> <sup>[35]</sup></p>     | <p><b>B.S:</b> It is a consist flower of <i>Hibiscus rosa sinensis</i>.</p> <p><b>Synonyms:</b> Chembaruthi</p> <p><b>Family:</b> Malvaceae</p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Flavonoids</li> <li>• Quercetin</li> <li>• Hydrocitric acid</li> </ul>        | <ul style="list-style-type: none"> <li>○ Ulcers have historically been treated with the root of <i>H. rosa sinensis</i>.</li> <li>○ It is a used as a antioxidant, inflammation.</li> <li>○ It is help reduce high blood pressure in humans and maintain cholesterol level.</li> </ul>   |
| <p>14</p> |  <p><b>Thottal Sinungee</b> <sup>[36]</sup></p> | <p><b>B.S:</b> It is a plant of <i>Mimosa pudica</i>.</p> <p><b>Synonyms:</b> Touch me not</p> <p><b>Family:</b> Fabaceae</p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Flavonoids</li> <li>• Tannins</li> <li>• Gums</li> </ul>  | <ul style="list-style-type: none"> <li>○ Decoction of the fresh leaves and seeds are consumed for Intestinal Ulcer.</li> <li>○ These leaf extracts may be useful as a natural antioxidant in treatment of ulcer.</li> <li>○ It helps in the treatment of many disorders like piles, dysentery, sinus, insomnia, diarrhea, alopecia and is also applied to cure wounds since ages.</li> <li>○ Touch-me-not plant helps as it has antibacterial, antivenom, antidepressant, anticonvulsant, anti-fertility and anti-asthmatic properties.</li> </ul> |
| <p>15</p> |  <p><b>Bitter Gourd</b> <sup>[37]</sup></p>     | <p><b>B.S:</b> It consists of fresh green vegetables of the plant <i>Momordica charantia</i>.</p> <p><b>Synonyms:</b> Pvakka-ched</p> <p><b>Family:-</b> Cucurbitaceae</p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Bitter glucoside</li> <li>• Yellow acid</li> </ul> | <ul style="list-style-type: none"> <li>○ For dusting over leprous and other intractable sores and in the healing of wounds, whole plant powder is utilized.</li> <li>○ An effective treatment for Malignant Ulcers can be made ointment by combining rice, cinnamon, and long pepper.</li> <li>○ It is help to reduce blood sugar and reduce cholesterol levels.</li> </ul> <p>Weight loss.</p>  |

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| <p>16</p> |  <p><b>Custard Apple</b> <sup>[38]</sup></p>             | <p><b>B.S:</b> It is a ripe fruit <i>Annona squamosa</i>.</p> <p><b>Synonyms:</b> Sitapalam</p> <p><b>Family:</b> Annonaceae</p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Alkaloids</li> <li>• Flavonoids</li> <li>• Tannins</li> </ul>                                       | <p>○ In Ayurveda it is used unhealthy ulcers are treated by applying a paste produced from leaves without any water.</p> <p>○ In current studies rats exposed to pylorus ligation and ethanol-induced Stomach Ulcers were prevented by the aqueous leaf extract.</p> <p>○ Prevent high blood pressure and promote good digestion.</p> <p>○ It is a used as a antioxidant, anticancer and antiinflammation</p> |
| <p>17</p> |  <p><b>Stonebreaker</b> <sup>[39]</sup></p>              | <p><b>B.S:</b> It is a plant of <i>Phyllanthus niruri</i>.</p> <p><b>Synonyms:</b> Kizhkay nelli</p> <p><b>Family:</b> Euphorbiaceae</p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Alkaloids</li> <li>• Tannins</li> <li>• flavonoids</li> </ul>                               | <p>○ In Ayurveda it is used to treat ulcers, the entire plant is mashed with the root and mixed with rice water.</p> <p>○ It is help to treat kidney stones.</p> <p>○ It is used high blood sugar and high blood presser.</p>   |
| <p>18</p> |  <p><b>Black nightshade berries</b> <sup>[40]</sup></p> | <p><b>B.S.:</b> It consists of dried berries of <i>Solanum nigrum</i>.</p> <p><b>Synonyms:</b> Manathakkali Keerai</p> <p><b>Family:</b> - Solanaceae</p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Alkaloids</li> <li>• Flavonoids</li> </ul>                                 | <p>○ To treat Intestinal Ulcers, the fresh leaves are eaten.</p> <p>○ Aqueous leaf extract of <i>Solanum nigrum</i> protected against pylorus ligation induced Gastric Ulcers in rats.</p> <p>○ It is help to treating asthma and many skin diseases.</p> <p>○ It is used in stomach irritation, cramps, spasms, pain, and nervousness.</p>   |
| <p>19</p> |  <p><b>Guava</b> <sup>[41]</sup></p>                   | <p><b>B.S:</b> It is an edible fruit of <i>Psidium guyava</i>.</p> <p><b>Synonyms:</b> Koyya</p> <p><b>Family:</b> Myrtaceae</p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Tannin</li> <li>• Resin</li> <li>• Volatile</li> </ul>  | <p>○ Decoction of the leaves is employed in unhealthy ulcers and is an efficacious gargle for swollen gums and Ulceration of the mouth.</p> <p>○ It is used to treatment for digestive disorders.</p> <p>○ It is Help Lower Blood Sugar Levels.</p> <p>○ It is boosting your immunity and boost heart health.</p>   |
| <p>20</p> |  <p><b>Akathi</b> <sup>[42]</sup></p>                  | <p><b>B.S:</b> It is the fruit of <i>Phyllanthus emblica</i>, also called <i>Emblica officinalis</i>.</p> <p><b>Synonyms:</b> Basna</p> <p><b>Family:</b> Fabaceae</p> <p><b>Chemical constituents</b></p> <ul style="list-style-type: none"> <li>• Saponins</li> <li>• Tannins</li> <li>• Triterpenes</li> </ul> | <p>○ Leaves are boiled in cow milk taken for treatment of Peptic Ulcers.</p> <p>○ The boiled leaves are taken orally for ulcer.</p> <p>○ <i>Sesbania grandiflora</i> leaves prepared in the form of soup and taken orally used as against Peptic Ulcer.</p> <p>○ It is help to prevents cancer and regulates diabetes.</p> <p>○ It is help to improve the immunity and improve the strength of bones.</p>     |

3.

II.

**CONCLUSION:**

From this study, we can conclude that research involving plant sources can lead to the development of unique and effective treatment regimens. In this regard, conventional medicine has developed effective procedures for the treatment of a number of digestive diseases. The old theory stated that acid secretion was the only factor contributing to the development of ulcers and that reducing acid production was the only therapeutic strategy. However, this idea has changed in light of current research. Today, reducing acid secretion and strengthening the immune system are the main goals of ulcer treatment. Since the beginning of medicine, plant chemicals have been used to treat human diseases. Many medicinal plants and their extracts, which contain chemically active compounds including tannins and flavonoids, have shown strong antiulcer activity in *in vivo* tests in animal models. The world's oldest medical system, Ayurveda, provides avenues for the discovery of plant chemicals with therapeutic potential. Therefore, to extract, define, and standardize active ingredients from plant sources for antiulcer activity, Ayurvedic knowledge supported by modern science is required. The best medication for peptic ulcer with fewer side effects can be created by combining traditional and modern expertise.

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