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A review on herbal plants used in peptic ulcer

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Abstract
Up to 10% of people worldwide are affected by the chronic condition known as Peptic Ulcer. Peptic Ulcer development is influenced by the pH of gastric juice and a decline in mucosal defences. The main factors affecting the mucosal resistance to damage are *Helicobacter pylori (H. pylori)* infection and non-steroidal anti-inflammatory medicines (NSAIDs). Treatment for Peptic Ulcers is today a challenging task for every patient. A Peptic Ulcer is a digestive disorder that affects the GI tract and results from a disruption of the normal equilibrium brought on by either increased aggression or decreased mucosal resistance. It creates an inflammatory rupture in the epidermis or the mucous membrane lining of the alimentary tract. Today, there are various synthetic medications available to treat ulcers. However, these medications are more expensive than herbal remedies and are likely to have greater adverse effects. The purpose of this overview to discuss about certain medicinal plants that may be utilized in both Ayurvedic and western medicine for the treatment or prevention of Peptic Ulcers.

Keywords: Peptic ulcer, herbal plant, pharmacological activity, medicinal use

1. Introduction
A skin or mucus membrane ulcer is an open sore that is identified by the shedding of inflammatory dead tissue [1]. Ulcers are skin lesions or mucous membrane lesions that are characterized by a superficial loss of tissue. Ulcers come in a variety of forms, including Vaginal, Esophageal, Peptic, and Mouth Ulcers. Many people have Peptic Ulcers as a result of them [2].

Gastric Ulcer and Duodenal Ulcer are the two most typical Peptic Ulcer kinds. The term alludes to the location of the Ulceration. Duodenal and Stomach Ulcers can both occur at the same time in one person. Stomach Ulcers, which are present in older age groups and cause pain, are called Gastric Ulcer. Instead of decreasing discomfort, eating might make it worse. weight loss, nausea, and vomiting are possible additional symptoms [3]. Bloody stools, excruciating cramps, and vomiting blood are all signs of Peptic Ulcers [4-5]. Acid, pepsin, and *Helicobacter pylori* are examples of offensive and defensive elements that are inequitably distributed in Peptic Ulcer disease (mucin, prostaglandin, bicarbonate, nitric oxide, and growth factors) [6].

Fig 1: Peptic Ulcer

The main etiological causes of Peptic Ulcers are *Helicobacter pylori*, NSAIDS, mental stress, alcoholism, and smoking [7-8].

In order to survive in the hostile environment of the stomach, the Gram-negative bacterium *Helicobacter pylori* persists between the mucous layer and the gastric epithelium. Initially found in the antrum, *Helicobacter pylori* gradually moves toward the stomach's more proximal parts [9]. One of the most common gastrointestinal diseases in the world, Peptic Ulcer disease affects 10% of the global population [10]. Duodenal Ulcers make up for 19 out of 20 Peptic Ulcers. The estimated annual death toll from
Peptic Ulcers is 15,000 [11]. Antacids and antiulcer medications in the Indian pharmaceutical market account for 6.2 billion rupees and 4.3% of the market [6]. In this modern era also 75–80% of the world populations still use herbal medicine mainly in developing countries, for primary health care because of better cultural acceptability, better compatibility with the human body, and lesser side effects [12].

2. Plants Used in Pepetic Ulcer

2.1 Papaya [13, 14, 15].

B.S: It is a ripe fruit of *Carica Papaya.*

Family: Caricaceae

Synonyms: Papali-pazham

Chemical constituents
- Pectin
- Carposide
- Carpaine
- Carotenoids

Fig 2: Papaya

Used
- The extract defended the stomach mucosa from the effects of ethanol.
- It's extract are used decreased the amount of gastric juice and stomach acidity.
- Papaya is used for preventing and treating gastrointestinal tract disorders and as a sedative and diuretic.
- Unripe fruit can be used in salads, jellies, and stews.
- The leaves are used to make medicine.

2.2 Ginger [16, 17].

B.S: Ginger consists of the dried rhizomes of the Zingiber officinale Roscoe.

Family: Zingiberacae

Synonyms: Bister, Brick

Chemical constituents
- Carbohydrates
- Lipids

Fig 3: Ginger

Used
- It's extract significantly reduced the ulcer.
- Some active components of ginger are used to treat the Peptic Ulcer.
- Ginger has been used as a pain relief. Like :- chest pain, stomach pain.
- Ginger is used as an anti-inflammatory agent, anti-cancer agent.
- Ginger is also used as a flavoring agent in foods and as a fragrance in soaps and cosmetics.

2.3 Banana [18, 19].

B.S: It is a ripe fruit of *Musa Paradisiaca.*

Family: Musaceae

Synonyms: Apple of paradice

Chemical constituents
- Phenolics
- Carotenoids
- Phytosterols

Fig 4: Banana

Used
- There are certain anti-bacterial compound in bananas that inhibit the growth of ulcer-causing *H.paylori.*
- Eat three bananas in a day get relief from an ulcer.
- It's used improve blood sugar levels, improve insulin sensitivity when unripe.
- You can also buy green banana powder, blend 2 tbsp of banana powder and 1 tbsp of honey. Have this mixture 3 times in a day for a week.
- Some countries, bananas used for cooking may be called "plantains", distinguishing them from dessert bananas.

2.4 Garilc [20, 21, 22,].

B.S: Garlic consists of the fresh compound bulb of *Allium*

sativum Linn.

Family: Liliaceae

Synonyms: Vellapundu

Chemical constituents
- Volatile oil
- Alliin
- Allicin

Fig 5: Garlic

Used
- Garlic juice mixed with 3 or 4 parts of ordinary or distilled water has been used as a lotion for washing Wounds and Foul Ulcers.
- A lotion made of garlic juice and three to four parts plain or distilled water has been used to wash away nasty ulcers and lesions.
- The extract dramatically speeds up Gastric Ulcer healing and shields rats from getting experimentally produced gastric and Duodenal Ulcers.
- Garlic helps boost your body's immune system, reduce high blood pressure and reduce cholesterol levels.

2.5 Guggul [23, 24, 25].
B.S.: It is an exudate obtained from the plant *Commiphora mukul.*

Family: Burseraceae

Synonyms: Gukkulu

Chemical constituents
- Volatile oil
- Gum-resin

Fig 6: Guggul

Used
- 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.
- Is used as ointment in bad ulcers such as combined with sulphur, catechu, and borax.
- It is used in constipation, gout, geriatric disorder, diseases of skin.

2.6 Neem [26, 27, 28].
B.S: It is a leaves of *Azadirachta indica.*

Family: Meliaceae
Synonyms: Vembu

Chemical constituents
- Flavonoids
- Volatile fatty acids
- Stearic acid

Fig 7: Neem

Used
- In Ayurveda it is used infected Ulcerations respond well to a poultice made of leaves and sesame seeds.
- In current studies in rats, *Azadirachta indica* leaf extract prevented pylorus ligation- and cold-stress-induced Stomach Ulcers.
- It is a used to reduce blood sugar levels, kill bacteria and prevent pregnancy.

2.7 Indian berry [29, 30, 31].
B.S: It is a dried/ripe fruit (berry) of *Berberis aristata.*

Family: Berberidaceae

Synonyms: Indian or Nepal barberry Kasturi manjal

Chemical constituents
- Flavonoids
- Alkaloid

Fig 8: Indian berry

Used
- In Ayurveda it is used the root is used to make crude extracts known as rasaut (in Hindi), and the bark can be

applied to skin Ulcerations when combined with honey.
- Best use of this herb is in eye related disorders.
- It is used to treat diarrhea, manage diabetes, and also give a anticancer effects.

2.8 Aloe vera [32, 33, 34].
B.S: Aloe vera is the dried juice extracted from the leaves of *Aloe Barbidensis.*

Family: Liliaceae

Synonyms: Aloe gel, Kattalai
Chemical constituents
- Aloin
- Isobarbaloin
- Emodin

Fig 9: Aloe vera

Used
- The extract showed significant antiulcer activity comparable to control.
- In America, leaves are successfully utilised to treat localised chronic ulcers.
- Significant antiulcer activity was seen in the extract.
- It is a used to antioxidants digestive issues treat skin conditions and improve skin appearance.

2.9 Tamarind Tree [35, 36, 37].
B.S: The dried, ripe fruits of the *Tamarindus indica* Linn.

Family: Caesalpiniaceae

Synonyms: Puli, Puliyam-pazham

Chemical constituents
- Tartaric acid
- Citric acid
- Acetic acids

Fig 10: Tamarind Tree

Used
- It is a used as a anticancer, antioxidants, and antimicrobial.
- Decoction of the leaves is used as a wash for Indolent Ulcers and promotes healthy action.
- It is a used as a anticancer, antioxidants, and antimicrobial.
- It is a used to improves digestion, manage diabetes, and helps in weight loss.

2.10 Changing Rose [38, 39, 40].
B.S: It is a consist flower of *Hibiscus rosa sinensis.*

Family: Malvaceae

Synonyms: Chembaruthi

Chemical constituents
- Flavonoids
- Quercetin
- Hydrocitric acid

Fig 11: Changing Rose

Used
- Ulcers have historically been treated with the root of *H. rosa sinensis.*
- It is a used as a antioxidants, inflammation.
- It is help reduce high blood pressure in humans and maintain cholesterol level.

2.11 Mango [41, 42, 43].
B.S: It is a edible fruit of *Mangifera indica*.

Family: Anacardiaceae

Synonyms: Mangaai.

Chemical constituents
- Alkaloids
- Tannins
- Flavonoids

Fig 12: Mango Tree

Used
- Leaf extracts were dissolved in rice bran oil and given orally for ulcer.
- Traditionally the plant is reported to have antiulcer

activity.
- The extract significantly reduced the gastric juice volume and gastric acidity.
- They help treat or prevent diseases, improve intestinal flora.

2.12 Thottal Sinungee [44, 45, 46].
B.S: It is a plant of *Mimosa pudica*.

Family: Fabaceae

Synonyms: Touch me not

Chemical constituents
- Flavonoids
- Tannins
- Gums

Fig 13: Thottal Sinungee

Used
- Decoction of the fresh leaves and seeds are consumed for Intestinal Ulcer.
- These leaf extracts may be useful as a natural antioxidant in treatment of ulcer.
- It helps in the treatment of many disorders like piles, dysentery, sinus, insomnia, diarrhea, alopecia and is also applied to cure wounds since ages.
- Touch-me-not plant helps as it has antibacterial, antivenom, antidepressant, anticonvulsant, anti-fertility and anti-asthmatic properties.

2.13 Bitter Gourd [47,48,49]
B.S: It consists of fresh green vegetables of the plant *Momordica charantia.*

Family:- Cucurbitaceae

Synonyms: Pvakka-ched

Chemical constituents
- Bitter glucoside
- Yellow acid
- Resin

Fig 14: Bitter Gourd

Used
- For dusting over leprous and other intractable sores and in the healing of wounds, whole plant powder is utilised.
- An effective treatment for Malignant Ulcers can be made ointment by combining rice, cinnamon, and long pepper.
- It is help to reduce blood sugar and reduce cholesterol levels.
- Weight loss.

2.14 Drum-stick [50, 51, 52].
B.S.: It is a vegetable of *Moringa oleifera.*

Family: Moringaceae

Synonyms: Murungai

Chemical constituents
- Alkaloids
- Flavonoids
- Tannins

Fig 15: Drum-stick

Used
- The leaf tea treats Gastric Ulcers.
- The extract showed decreases in ulcer and acid pepsin secretion.
- It is help to decreasing the blood pressure and blood purification.
- Drumsticks improve bone density and improve immunity.

2.15 Tulsi [53, 54].
B.S: It is a fresh leaf and stem of *Ocimum Sanctum.*

Family: Lamiaceae

Synonyms: Holy basil

Chemical constituents
- Alkaloids
- Tannins
- Flavonoids

Fig 16: Tulsi

Used
- Extrct of tulsi leaves is used in ulcer.
- A tea prepared with the leaves of tulsi.
- Tulsi is commonly used for intestinal disorders.

2.16 Custard Apple [55, 56, 57].
B.S: It is a ripe fruit *Annona squamosa*.

Family: Annonaceae

Synonyms: Sitapalam

Chemical constituents
- Alkaloids
- Flavonoids
- Tannins

Fig 17: Custard Apple

Used
- In Ayurveda it is used unhealthy ulcers are treated by applying a paste produced from leaves without any water.
- In current studies rats exposed to pylorus ligation and ethanol-induced Stomach Ulcers were prevented by the aqueous leaf extract.
- Prevent high blood pressure and promote good digestion.
- It is a used as a antioxidant, anticancer and anti-inflammation.

2.17 Stonebreaker [58, 59, 60].
S: It is a plant of *Phyllanthus niruri.*

Family: Euphorbiaceae

Synonyms: Kizhkay nelli

Chemical constituents
- Alkaloids
- Tannins
- Flavonoids

Fig 18: Stonebreaker

Used
- In Ayurveda it is used to treat ulcers, the entire plant is mashed with the root and mixed with rice water.
- It is help to treat kidney stones.
- It is used high blood sugar and high blood pressur.

2.18 Black nightshade berries [61, 62, 63].
B.S.: It consist of dried berries of *Solanum nigrum*.

Family:- Solanaceae

Synonyms: Manathakkali Keerai

Chemical constituents
- Alkaloids
- Flavonoids

Fig 19: Black nightshade berries

Used
- To treat Intestinal Ulcers, the fresh leaves are eaten.
- Aqueous leaf extract of *Solanum nigrum* protected against pylorus ligation induced Gastric Ulcers in rats.
- It is help to treating asthma and many skin diseases.
- It is used in stomach irritation, cramps, spasms, pain, and nervousness.

2.19 Guava [64, 65, 66].
B.S: It is an edible fruit of *Psidium guyava.*

Family: Myrtaceae

Synonyms: Koyya

Chemical constituents
- Tannin
- Resin
- Volatile oil

Fig 20: Guava

Used
- Decoction of the leaves is employed in unhealthy ulcers and is an efficacious gargle for swollen gums and Ulceration of the mouth.
- It is used to treatment for digestive disorders.
- It is Help Lower Blood Sugar Levels.
- It is boost your immunity and boost heart health.

2.20 Akathi [67, 68, 69].

B.S: It is the fruit of *Phyllanthus emblica*, also called *Emblica officinalis*.

Family: Fabaceae

Synonyms: Basna

Chemical constituents
- Saponins
- Tannins
- Triterpenes

Fig 21: Akathi

Used
- Leaves are boiled in cow milk taken for treatment of Peptic Ulcers.
- The boiled leaves are taken orally for ulcer.
- *Sesbania grandiflora* leaves prepared in the form of soup and taken orally used as against Peptic Ulcer.
- It is help to prevents cancer and regulates diabetes.
- It is help to improve the immunity and improve the strength of bones.

3. Conclusion

We can infer from this study that research involving plant sources can lead to the development of unique and efficient treatment regimens. In this regard, conventional medicine has developed effective procedures for treating a variety of digestive diseases. The old theory held that acid secretion was the only factor contributing to Ulcer development, and that reducing acid production was the only therapeutic strategy. But this idea has modified in light of current research. Today, reducing acid secretion and strengthening the defence system are the main goals of Ulcer treatment. Since the beginning of medicine, chemicals originating from plants have been employed to cure human illnesses. Numerous medicinal plants and their extracts, which contain chemically active components including tannins and flavonoids, have been shown to have strong antiulcer action in in-vivo tests on animal models. The world's oldest medical system, Ayurveda, offers clues for discovering plant chemicals with therapeutic potential. Therefore, to extract, define, and standardise the active ingredients from herbal sources for antiulcer action, ayurveda knowledge backed by modern science is required. Better Peptic Ulcer medications with fewer side effects may be created by combining traditional and modern expertise.

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