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Herbs used as anti-ulcer: A review

Shefali joshi[1]*, Mansi Chaudhary[2], Divyakant Patel[3]
[1] Assistant Professor, Department of Pharmacognosy, Sharda School of Pharmacy, Pethapur, Gandhinagar, Gujarat, India
[2] Researcher, Department of Pharmacy Sharda School, Pethapur, Gandhinagar, Gujarat, India
[3] Principal, Department of Pharmacognosy Sharda School of Pharmacy, Pethapur, Gandhinagar, Gujarat, India

Abstract
One of the most prevalent gastrointestinal (GI) issues of our time, gastric ulcers (GUs) are open sores that form on the inside of the stomach's mucosal lining and affect about 10% of the global population. Due to the breakdown of the equilibrium between the gastric mucosa's natural defence mechanism, aggressive factors (such as the secretion of gastric acid and pepsin, oxidants, free radicals, leukotrienes, and endothelin), and exogenous factors (such as *Helicobacter pylori* infection, alcohol use, and non-steroidal anti-inflammatory drugs), the disorder is multifactorial and complex. Nowadays, H2 antihistamines, proto-pump inhibitors, ulcer protectants, and antiulcer medications are used to treat and prevent GUs. Extended usage of these chemicals is frequently linked to problems such as diarrhoea, anaemia, and enterochromaffin-like (ECL) cell hyperplasia. Herbal remedies have been used since ancient times to treat a variety of disorders like gastro-protective and anti-ulcer activities. So, for the treatment of anti-ulcer activity various herbs are used for treatment like Triphala powder (Amla, Harde, Baheda), Fennel fruit, Black catechu, Ficus plant :(Banyan tree plant) all having the gastro-intestinal protective action and also soothes the mucosal lining of the stomach.

Keywords: Gastric ulcers, herbal remedies, gastro-intestinal protection, mucosal lining

Introduction

India is facing an era of faster lifestyle and unhealthy diet. In this current scenario Gastric ulcer stands out as a detrimental problem in the society. Point prevalence of gastric ulcer in India is 4.72% and lifetime prevalence is 11.22%. Western studies reveal that 5-10% of adult populations are more prone for gastric ulcer [1]. The prevalence of gastric ulcer is more discernible in regions where there is increased consumption of sloppy food like cooked rice, Tapioca, and buttermilk. These foods can be easily gobbled down without getting chewed, thus mixing of saliva is reduced. The other factors for high gastric ulcer rate in India are chewing betal- nut, tobacco, smoking and faster competing lifestyle. Gastric ulcer generally presents with abdominal discomfort, loss of appetite, hematemesis, nausea, vomiting and dark coloured stool. Peptic ulcer is more common among middle age and older adults. The most common cause of stomach ulcer is a bacterium called *Helicobacter pylori*. Similarly, ulcer may cause by over use of pain killers, such as aspirin and non-steroidal anti-inflammatory such as ibuprofen, naproxen etc [2]. A peptic ulcer is essentially is a wound that affects the mucous membrane of the digestive tract. Different names are given to ulcers depending on where they are located (gastric ulcers are located in the lining of the stomach; duodenal ulcers are located in the duodenal).

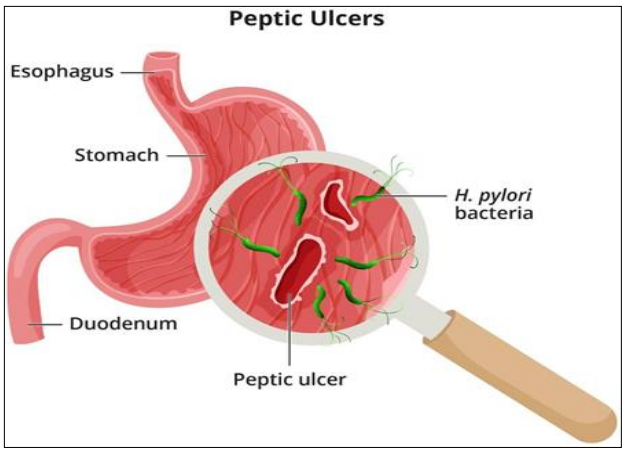

Fig H: pylori bacteria in stomach

Many times, in clinical practice we see a lack of digestive enzymes to be the root cause of the ulcer a lack of enzymes can create an imbalanced environment leading to a growth of *H. pylori* which can infect the mucous membrane. The patho-physiology of peptic ulcer disease involves an inbalance between offensive (acid, pepsin, Helicobacter pylori) and defensive factors (mucin, prostaglandin), bicarbonate, nitric oxide and growth factors. Peptic ulcers are once believed to be caused by spicy food and stress; these have been found merely to be aggravating factors and the real cause have been found by research to include bacterial infection (*H. pylori*) [10]. The gram-negative

bacterium *H. pylori* remains present between the gastric epithelium and mucous layer and is strategically designed to live within the aggressive environment of the stomach. Initially, *H. pylori* reside in the antrum but over time migrate towards the more proximal segments of the stomach. Peptic ulcer is one of the world's major gastrointestinal disorders and affecting 10% 0f the world population. About 19 out of 20 peptic ulcers are duodenal [13]. In this modern area also 75-80% of the world population still used herbal medicine mainly in developing countries, for primary health care because of better compatibility with the human body, and lesser side effects [3].

Hers Used in Anti-Ulcer

1. Fennel fruit
2. Triphala powder
3. Black catechu
4. Ficus plant :(Banyan tree plant)

Fennel

Foeniculum Vulgare is a perennial, aromatic plant which belongs to Apiaceae (Umbelliferae) family.

It has many subspecies and varieties. two sub-species of fennel, which have wide range of medicinal use. *F. vulgare* subsp. vulgare var. Dulce is called sweet fennel, while *F. vulgare mill*. Subsp. vulgare var. vulgare is bitter fennel which have wide range of medicinal use [19, 21].

Biological source: obtained from the dried fruits of *Foeniculum vulgare Miller*
Family: Apiaceae

Synonyms: Anethum foeniculum L, Foeniculum capillaceum Gilib, F. officinale Allioni

Common Name: - Fennel, Sweet fennel, Florence fennel the plant is known by various names in different language as under
India: Fennel, Sweet fennel
Hindi: Sounf
Manipuri: Hop
Tamil: Sompu
Malayalam: Preumjirakam
Telungu: Peddajilakarra
Kannada: Doddasompu
Bengali: Mauri

Fig: Fennel fruit

Fennel is utilized in all of its components, notably the seeds, roots, leaves, and fruit, 6.3% of fennel seed is water, 9.5% is protein, 10% is fat, 13.4% is mineral, 18.5% is fiber, and 42.3% is carbohydrates. Its leaves include calcium, potassium, iron, phosphorus, thiamine, riboflavin, niacin, and vitamin C, among other vitamins and minerals. Fruits contain between 10 and 12% oil, which is kept in the cotyledons of seeds. The fennel fruit oil contains 6% petrocylic acid, 22% oleic acid, 14% linoleic acid, and 4% palmitic acid. The fruit's essence content ranges from 4 to 6%. The essence of fennel is what gives it its fragrant quality. The essential oil of fennel contains more than 30 different types of terpene chemicals; the most significant of them are 50 to 80% trans-anethole and 5% limonene. Additionally, this plant includes phenolic substances: tannin, coumarin, hydroxycinnamic acids, flavonoids, and phenolic acids [4].

Chemical constituents: Fennel (Foeniculum vulgare) contains 1–3% of a volatile oil composed of approximately 50–60% anethole and 20% de-fenchone [5].

Other compounds present in fennel include: 2-pentanone, Benzaldehyde-4-methoxy, d-α pinene, d-α, phellandrene, Dipentene, Methyl chavicol, Feniculum, Anisaldehyde, Anisic acid

Fennel also contains some major phenolic chemicals, including: Rutin, Chlorogenic acid, Eriocitrin, Miquelianin, 1,3-o-dicaffeoylquinic acid, 1,5-o-dicaffeoylquinic acid, 4-, caffeoylquinic acid, 1,4-o-dicaffeoylquinic acid, 3-o-caffeoylquinic acid, Rosmarinic acid.

Uses: anti-bacterial activity, anti-fungal activity, anti-oxidant, anti-inflammatory, anti-anxiety, gastro protective activity: Regulation of intestinal muscle movement, treatment of gastrointestinal spasm and chronic colitis, protective effect on gastric ulcer, reduce the mucosal lining of the stomach, estrogenic activity, cardiovascular and lipid activity, anti-diabetic, anti-cancer, hepato-protective, memory protective [6].

Triphala Powder

a. Amla

Biological source: ***Emblica officinalis***

Chemical constituents: Astragalin-flavanol, gallic acid-benzenoid, emblicol, phyllembic acid, emblicanin-B, embicanin, ellagic acid-canmarin, pedunculagin, punigluconin-tanin, terchebin, trigalloylglucose, corilagin, vitamin 'C', protein, carbohydrates, linoleic acid, and 2 major alkaloids (phyllantidine andphyllantine) [7].

Uses: Astringent, antioxidant, antidiarrhoeal, antacid, diarrhoea, dyspepsia, cough, indigestion, constipation, piles, jaundice, anaemia, weight loss and cardiac problems. It is beneficial for urinary infection, ulcers, stomach and intestinal inflammation [8, 9].

Fig: Triphala

b. Baheda

Biological source: ***Terminalia bellerica***

Chemical constituents: Gallic acid, ellagic acid, 3, 4, 5-trihydroxybenzoic acid; ethyl gallate, Betasitoserol, Major tannins composed of chebulin, chebulinic acid, chebulagic acid, 1,3,6-Trigalloylglucose and 1,2,3,4, 6-pentagalloylglucose, corilagin, terchebin, glucogallin, palmitic acid, stearic acid, oleic acid, linoleic acid, arachidic acid, behenic acid [9].

Uses: Analgesic, antiallergenic, antibronchitic, antipyretic, anti-spasmodic, digestive aid, astringent, anaemia, asthma, bronchitis, tonic, laxative, leprosy, leucoderma, eye disorders, dyspepsia, diarrhoea, dysentery, intestine inflammation, liver diseases and germicidal, and agent, cough and tuberculosis [10].

c. Harde

Biological source: ***Terminalia chebula***

Chemical constituents: Gallic acid, ellagic acid, 1,6-di-O-galloyl-β-Dglucose, 3,4,6-tri-O-galloyl-β-d-glucose, 1,2,3,4,6-penta-o-galloyl-β-D-glucose, β-Sitosterol, bellericanin, nicalagin, casuarinin, corilagin, terchebin, terchebulin, tannic acid, nonchebulinic acid, corilagin, chebulanin, chebulin, chebulagic, chebulinic acid, anthraquinone glycoside, arjungenin, chebupentol, daucosterol, phyllemblin, punicalagin, quercetin, termilignan, thaninilignan, flavannolignan behenic acid [9, 10].

Uses: Astringents, antitussive, antispasmodic, antiseptic, laxative, digestive, diuretic, chronic diarrhoea, dysentery, allergies, asthma, anaemia, carminative, eye disorders, diabetes, chronic and recurrent fever, hypertension, homeostatic, laxative, stomachic tonic. Increases appetite, digestive aid, liver stimulant, stomachic, gastrointestinal prokinetic agent, renal calculi, skin and dental disorders and cardiotonic activities [11].

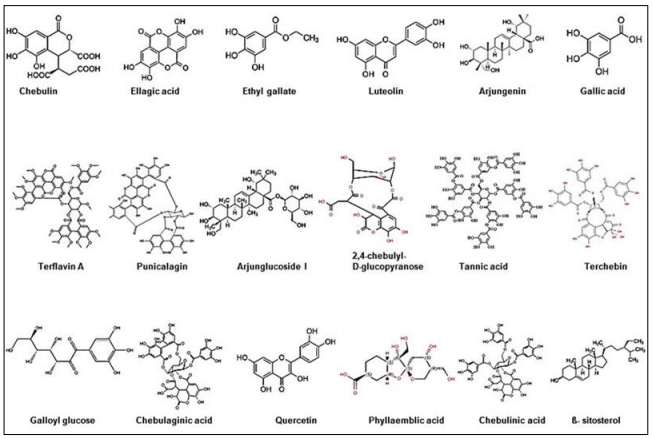

Fig: chemical constituents of triphala

Black Catechu

Synonym: Cutch, black catechu, kattha.

Biological sources: black catechu is the dried aqueous extract prepared from the heartwood of acacia catechu willdenow belonging to family leguminosae.

Chemical Constituents: Cutch or black catechu resembles pale catechu or gambier in its composition. It contains about 2–12% of catechin and about 25 to 33% of phlobatannin catechutannic acid. The principle fraction of cutch has been identified as a mixture of catechin isomers which includes (-) epicatechin, acatechin, DL-acacatechin, L- acacatechin and D-isoacacatechin. It also contains 20–30% gummy matter, catechin red, quercetin and querecitin. It yields 2–3% of ash. Acacia species revealed that the genus acacia be a rich source of flavonoids and tannins [12].

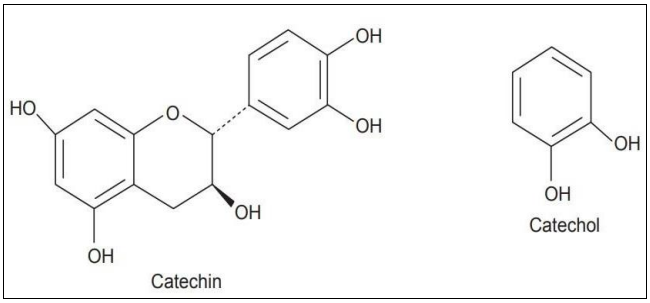

Fig: Black Catechu

Uses

Cutch is used in medicine as astringent. It cures troubles of mouth, diseases of the throat and diarrhoea. It also increases appetite. In India and eastern countries, it is used in betel leaves for chewing. In dyeing industries, cutch I used for dyeing fabrics brown or black.

Catech having broad activities including antioxidant, antipyretic, antileprosy, antidiarrheal, antimicrobial, antibacterial, antifertility, anticancer, immunomodulatory, chronic renal failure, hepatoprotective, hypotensive, hypoglycemic & wound healing. Antiulcerogenic activity [12].

Catechin has high content of antioxidants and a high antioxidant and antiinflammatory potential. These are used to treat many inflammatory conditions like boils, ulcer, skin lesions, pharyngitis, leucorrhea, erysipelas, spongy gums, diarrhea and hypertrophy of gums [13, 14, 15, 16].

Aqueous extract of areca catechu showed potential antiulcerogenic effect compared to Ranitidine, which is the standard gastric anti-secretory drug [17].

Ficus Plant (Banyan Tree)

Synonym banyan: banyan fig and Indian banyan,

Biological bsource: *Ficus benghalensis* L. Banyan (or 'banyan') is a kind of fig. It usually starts life by growing on another plant as an epiphyte. Its seeds germinate in the cracks and crevices on a host tree, or on other structures like buildings and bridges

Chemical constituent: The aerial root contains Phytosterolin. Leaves contain Triterpin, Friedelin and Beta sitostero. The bark of the tree contains a glucoside, Bengalinoside and flavonoid glycosides, Leucocyanidin and Leucopelargonidin.

Regarding phytochemistry, leucoanthocyanindin derivatives and triterpenes were reported from the stem bark and triterpene derivatives and phenolic compounds including flavonoids were reported from the leaves [18].

Use: Banyan tree parts such as fruits, leaves, roots, and barks may be used as herbal medicine. These parts may show positive effects on the brain and liver. These parts may also show immunomodulating properties. They may be helpful in many diseases as well, like diabetes and inflammation.

Both in *vitro* and in *vivo* pharmacological activity evaluations have been carried out for its antidiabetic, anti-inflammatory, wound healing, and other activities [18].

Administration of Ficus bengalensis extract resulted in a significant reduction in ulcer index [19, 20].

Fig: Ficus Plant

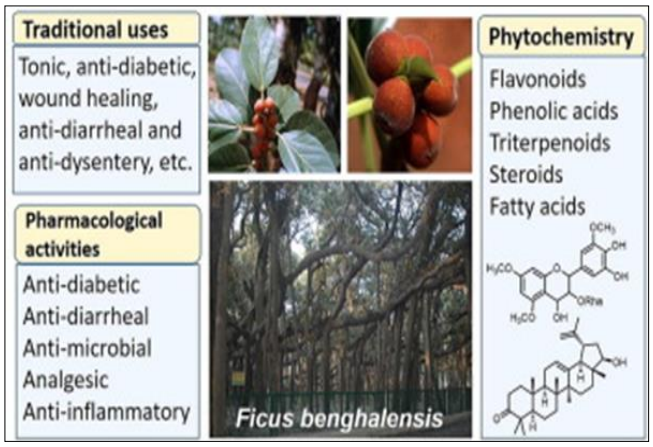

Fig: Uses of Ficus Plant

References

1. Gupta M, Kapoor B, Gupta R, Singh N. Plants phytochemicals for treatment of peptic ulcer an overview. South African Journal of Botany,2021:138:105–114.
2. Srinivas RL, Lakshmi SM, Shama SN, Reddy GK, Prasanna KR. Medicinal plants as anti-ulcer agents. Journal of Pharmacognosy Phytochemistry,2013:2(4):91–7.
3. Ranjan KN, Shreechandan P, Priyadarshini P, Sampad SS, Herbal drugs in treatment of peptic ulcer. J Bio Innov,2017:6(3):499–508.
4. Noreen S, Tufail T, Badar Ul, Ain H, Awuchi CG, Pharmacological, nutraceutical, functional therapeutic properties of Foeniculum vulgare. International Journal of Food Properties,2023:26(1):915–27.
5. Kooti W, Moradi M, Ali-Akbari S, Sharafi-Ahvazi N, Asadi-Samani M, Ashtary-Larky D. *et al* Therapeutic pharmacological potential of Foeniculum vulgare Mill a review. Journal of HerbMed Pharmacology,2015:4(1):1–9.
6. Tanveer M, Shehzad A, Butt MS, Shahid M. Pharmacodynamics of Foeniculum vulgare against ulcer, inflammation, hepatotoxicity nephrotoxicity. Journal of Animal Plant Sciences Pakistan,2021:31(3):841–53.
7. Maheshwari RK, Rajnee K. Ingenious triphala A curative preparation for health care. Asian J, Chem Pharm Res,2014:2:175–85.
8. Kulkarni AS, Jirole UD, Yadav AD, Mane AR, Sutar AM, Formulation, evaluation standardization of polyherbal churna as an antacid and laxative. Asian Journal of Chemical Laxative.
9. Parveen R, Shamsi TN, Singh G, Athar T, Fatima S. Phytochemical analysis in-vitro biochemical characterization of aqueous methanolic extract of Triphala, a conventional herbal remedy. Biotechnology Reports,2018:17:126–136.
10. Saurabh A, Mishra AS, Gupta SA, review on medicinal plant which may effective in the treatment of ulcer or which show anti ulcer activities. International Journal of Pharma Professional's Research,2021:12(1):1–10.
11. Bhatnagar S, Rani A, Kumari R. Therapeutic potential of Triphala against human diseases. Int. J. Pharm. Sci. Rev. Res,2015:31(2):5–13.
12. Jyoti Alambayan, Manisha Vats, Satish Sardana, Renu Sehrawat. Evaluation of antiulcer activity of roots of

Acacia catechu Willd. Mimosoideae. Journal of Pharmacognosy Phytochemistry,2015:3(5):79–84.
13. Khare B, Dubey N, Sharma A. Antiulcer activity of controlled release formulation containing aqueous extract of Acacia catechu Willd on rodent models. Int J Curr Pharm Res,2018:10(5):25–31.
14. Alam G, Singh MP, Singh A, Patel R. Investigation of anthelmintic, anti-inflammatory activity of leaves extract of Acacia catechu Willd. J Pharm Res,2012:5(5):2587–9.
15. Rashid M, Shamsi S, Zaman R, Ilahi A. Kath Acacia catechu an overarching envelops of traditional and modern update. Int J Curr Trends Pharm Res,2015:3(5):1007–12.
16. Alambayan J, Vats M, Sardana S, Sehrawat R. Evaluation of antiulcer activity of roots of Acacia catechu Willd. Mimosoideae. J Pharmacog Phytochem. 2015:3(5):79–84.
17. Reena RN, Anthikat A, Michael A. Anti-ulcerogenic effects of Areca catechu L. in Sprague Dawley rats. IJPSR 2011:2(1).
18. Rajan L, Saravanan Vivekanandarajah V, *et al*. *Ficus benghalensis* L. Moraceae A review on ethnomedicinal uses, phytochemistry pharmacological activities. Current Research in Biotechnology,2023:6:100134.
19. Mayank Kulshreshtha, *et al*. Anti-ulcerogenic potential of *Ficus benghalensis* leaf, biochemical parameter & histopathological study. Journal of Applied Pharmaceutical Science,2011:1(2):65–68.
20. Yadav S, Kulshreshtha M, Goswami M, Rao Ch V, Sharma V. Elucidation of analgesic and antipyretic activities of *Ficus benghalensis* leaves in rats. Journal of Applied Pharmaceutical Science,2011:1:38–41.