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FORMULATION, DEVELOPMENT, AND EVALUATION OF HERBAL ANTI-ULCER TONIC

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ABSTRACT

Peptic ulcer is the most common stomach disease and is often caused by a mismatch between defense and aggression in the stomach. Diseases occur frequently in industrialized, civilized and developing countries due to the pressures of life. Factors such as smoking, alcohol consumption, stress, use of non-steroidal anti-inflammatory drugs and poor nutrition can cause peptic ulcer disease. Symptoms of peptic ulcer are pain and abdominal pain. Duodenal ulcers have a pain-food relief pattern, and stomach ulcers have food pain. According to popular belief, ulcers are not caused by spicy foods, but are most often caused by infection or long-term medication use. Standard treatment is a combination of antibiotics and medications such as proton pump inhibitors. Data show that many synthetic drugs are used to treat peptic ulcers but may cause some side effects.

Ayurveda plants therefore stand out for their ethno, ethno botanical and ethno medical uses. Peptic ulcers occur due to the presence of acid in the juice, which causes damage to the mucosal barrier of the digestive tract. Two main factors can cause mucosal damage: Non-steroidal Anti-inflammatory drugs (NSAIDs), such as aspirin and Helicobacter pylori infection. Many natural products have been evaluated as treatments for a variety of conditions, including peptic ulcers. Extensive pharmacological studies have been conducted on the antiulcer activity of some compounds.

KEYWORDS: Antiulcer activity, peptic ulcer, medicinal plant, phytoconstituents, flavonoids, tannins.

1. INTRODUCTION

Today, 75-80% of the world's population still uses herbal medicine only in developing countries and is rarely used due to better culture and social relations of body sex Side effects. Histological studies have shown that this medicinal plant has no acute toxicity. Preliminary photochemical analysis of this medicinal plant has shown the presence of important metabolites such as flavonoids and tannins, which are active substances in disease prevention. Peptic ulcer disease (PUD), including stomach and duodenal ulcers, is the most common gastrointestinal problem and requires treatment strategies. The most common place for bacteria is the first few centimeters of the stomach and duodenum. Peptic ulcers, due to some drugs such as non-steroidal anti-inflammatory drugs (NSAIDS), stomach acid and pepsin, cause obstruction in the continuation of the stomach or duodenal mucosa and ultimately cause pain.[1-2]

Basically, the word “peptic” is derived from the Greek word “pepticos” meaning something related to digestion. Many reports show that older people are more susceptible to stomach infections. The risk of developing duodenal ulcer is higher in young people . The pathogenesis of peptic ulcer disease indicates a complex imbalance of gastric attack factors such as acid, pepsin secretion, Helicobacter pylori (H. pylori), bile salts, ethanol, some drugs such as non-steroidal anti-inflammatory drugs and plasma peroxidation of lipids. , Zollinger-Ellison syndrome and protective mucosal factors such as prostaglandins, nitric oxide, gastric mucus, cell regeneration, blood circulation, mucosal cell loss, glycoproteins, mucin secretion, hyperplasia of antioxidant enzymes such as catalase, superoxide dismutase and glutathione [3,4,5,6,7]

The pathophysiology of peptic ulcer disease is similar with the disagreement between critical problems and protective factors. Peptic ulcers were once thought to be caused by tasteless foods and stress. These conditions have been found to be improved by an infection (H. pylori) or resistance to various medications, especially nonsteroidal anti-inflammatory drugs (NSAIDS). Depression, alcohol and smoking are the main causes associated with peptic ulcer. It is suggested that the Gram-negative bacterium Helicobacter pylori remains between the mucosal layer and the gastric epithelium and lives in the stomach environment. Initially, H. pylori is found in the antrum, but over time it migrates to the proximal part of the stomach [8,9,10,11]

2. METHODOLOGY

- **Peptic ulcer are of two types:**

1. **Gastric ulcer:** when the ulcer occurs in stomach they are called gastric ulcer
2. **Duodenal ulcer:** when the ulcer occurs in the duodenum it is called as duodenal ulcer

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The duodenal ulcer is the commonest of peptic ulcer with the ratio of 4:1 in duodenum and stomach respectively. Peptic ulcer can lead to several complications such as obstruction, hemorrhage and perforation.

- **Signs and symptoms of peptic ulcer:**

Abdominal pain and nausea, bulking and abdominal pulpness, Water brash, vomit, Melena, Rarely acute peritonitis, Dark or black stools, Dry tongue, delicate or weak pulse, reduce of breath.

- **The potential medicinal plants used in ulcer:**

Although it is one of the famous plants used in the treatment of many diseases in Indian medicine, there is a lack of research on the pharmacological properties of some medicinal plants. We examined the antiulcer activity and toxicity of some medicinal plants. Our study shows that the studied medicinal plants can prevent diseases in mice at dosage. Histological studies have shown that this medicinal plant has no acute toxicity. Preliminary analysis of this medicinal plant detected the presence of important metabolites such as flavonoids and tannins [12,13]

- **Emergence of herbal drug to treat ulcer:-**

Different classes of synthetic drugs are used to treat peptic diseases, but most of them have serious side effects such as cardiac arrhythmias, gynecomastia, impotence, arthralgia, hyper gastrinemia and hematopoietic changes. One option these days is to study medicine from Ayurveda or traditional medicine. It has been shown that the use of herbal ingredients in the treatment of serious diseases is more effective and less toxic than existing drugs, while at the same time reducing their offensive properties and trying to prevent digestion. Sexual intercourse. In this season, most of the people in the world use herbal medicines in basic treatment, primarily in developing countries, due to their recognition, compliance and low side effects. Plants or medicines contained in plants are considered to have a good relationship with the human body, as they are part of the physiological functions of living things. This review highlights the properties of some medicinal plants with antiulcer activity.

Sr.no.	Name of plants	Phytoconstituents
1.	Bacopa moniera	Bascoside A
2.	Moringa oleifera	Beta setosterol, quercetin
3.	Aloevera	Barbaloin, saponins
4.	Ocimum sanctum	Fixed oil eugenol
5.	Allium sativum	Alliin, allicin
6.	Psidium guajava	Quercetin, flavonoids
7.	Annona squamosal	Tannic acid
8.	Sesbania grandiflora	Tannis, saponins
9.	Magnifera indica	Mangiferin
10.	Carica papaya	Chymopapain papain
11.	Mimosa pudica	Alkaloid mimosine
12.	Shorea robusta	Ursolic acid, amyrin
13.	Azadirachta indica	Nimbidin
14.	Terminalia chebula	Tannins, gallic acid
15.	Fiscus religiosa	Flavonoids-Naringenin
16.	Aegel marmelos	Luvangetin

➢ Mechanism based study of some herbal antiulcer drug :-

1. Bacopa Monniera:

Family: Scrophulariaceae

Synonyms: Indian Pennywort

Biological Source: Found in warm wetlands, and native to Australia and india

Uses: Ayurvedic medicine are memory improvement insomnia

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Fig no: 1 Bacopa Monniera

It is often as saraswati and belongs to the figwort family. It is effective in the treatment of various stomach ulcer diseases. The main ingredient used to treat the disease is bacoside A. It has anti-ulcer and ulcer healing activities. Several potential mechanisms for baccoside A have been proposed. The first treatment for the disease is anti-H. H. pylori was found to be active at a dose of 1000 mg/ml and prostaglandins (PGE and PGI2) were increased at a dose of 10 mg/ml. Other possible mechanisms are mucosal aggressive pepsin secretion and protective factors such as mucin secretion, mucosal cell shedding, cell proliferation and antioxidant activity in mice.[14,15,16]

2. Moringa oleifera

Family: Moringaceae

Synonyms: Horseradish tree

Biological source: Moringa oleferia is native to northwestern india and widely cultivated topical and subtropical areas

Uses: Oxidation and Toxicity

Fig no: 2 Moringa oleifera

Antimicrobial activity. Moringa's leaves, roots, bark and seeds contain antibacterial properties against bacteria and fungi. In vitro activity of the plant against bacteria, yeast, dermatophytes and helminths was found by disk diffusion method.

3. Aloevera

Family: Asphodelaceae

Synonyms: Aloe Indica Royle

Biological source: The biological source of aloe is dried latex of leaves.

Use: Aloe is topically orally.

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Fig no: 3 Aloevera

Mechanism. Therapeutic Properties: Glucomannan (a mannose-rich polysaccharide) and gibberellin (a growth hormone) interact with the growth receptors of fibroblasts, thereby promoting their activity and growth, enabling local and oral aloe vera to increase collagen synthesis**.**

4. Ocimum Sanctum

Family: Labiatae

Snynonyms: Ocimum tenuiflorum

Biological source: It is propagated by seeds

Used: Anticancer, Antidibetic

Fig no: 4 Ocimum Sanctum

Ocimum sanctum has also been shown to be anti-anxiety by normalizing blood sugar, blood pressure, and blood lipid levels, its positive effects on memory and cognitive functions, and to combat mental stress thanks to its anxiolytic and antidepressant properties. Tulsi's broad-spectrum antibacterial activity, including activity against a wide range of human and animal diseases, suggests its potential as a hand sanitizer, mouthwash, and water purifier, as well as feed for animals, wound healing, food, medicinal herbs, and a product for travelers health.

5. Allium Sativum

Family: Amaryllidaceae

Snynonyms: Allium Controversum

Biological source: Garlic is originally from Asia. But It is cultivated china, north Africa

Uses: Abdominal pain, low blood pressure

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Fig no: 5 Allium Sativum

The hypotensive mechanism of action of garlic extract is that garlic contains many active sulfur molecules, which have been shown to increase endothelial contraction and relaxation, thereby lowering blood pressure.

6. Psidium Guajava

Family: Myrtaceae

Synonyms: Guajava pyrifera

Biological Source: Guava is belived to have originated from an area extending from southern mexico into or through central America

Uses: Stomach Aches, and Indigestion

Fig no: 6 Psidium Guajava

Morphine-like antispasmodic effects (irreversible with naloxone; include inhibition of acetylcholine release) and effects on the transport of electrolytes (Na + and K +) and water have been reported as part of the anti-inflammatory properties of the leaf's guava polar potential. Subtract**.**

7. Carica Papaya

Family: Caricaceae

Synonyms: Carica bourgeaui solms

Biological Source: The papaya may represent the fusion of two or more species of carica native to mexico and central America

Uses: It is used in inflammation, diabetics

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Fig no: 7 carica Papaya

The methanolic extract of the plant showed gastroprotective and ulcer-healing effects in rats at doses of 125, 250 and 500 mg/kg. reduces stomach pain by inhibiting it by 56%, 76% and 82% respectively. The cytoprotective effects of papaya are responsible for its anti-inflammatory activity. Enzymes found in papaya P1G10 have anti-inflammatory properties.[17,18,19]

8. Fiscus Religiosa

Family: Moraceae

Synonyms: Bodhi tree

Biological source: Ficus religiosa is native to most of the indian subcontinent Bangladesh, Bhutan, Nepal.

Uses: Antiulcer, Antibacterial, Antidibetic

Fig no: 8 Fiscus Religiosa

It is commonly known as the "Bodhi Tree". It property of the mulberry family. Alcoholic extract of Buddha at doses of 250 mg\kg and 560 mg has been reported to be effective against pyloric ligation-induced ulcers, ethanol-induced ulcers, and aspirin-induced ulcers. . . Antibiotic resistance\kg Swiss albino mice. Root bark ethanolic extract has anti-inflammatory properties due to endogenous prostaglandins that stimulate mucus secretion.together ensure that these plants have the ability to protect against diseases.[20,21]

9.Mimosa Pudica

Family: Fabaceae

Synonyms: Shame plant and humble plant

Biological Source: Diffuse prick undershrub belonging to family Mimosaceae

Uses: The herb has been used traditionally for ages in the treatment of urogenital disorder, piles.

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Fig no: 9 Mimosa Pudica

Inducement of mimosa sensitiva causes K+ secretion from the cytosol the apoplast. 20 Mechanical stimulation causes a decrease in K+ ions in the extensor muscles. 8,21 Contraction of the extensor muscles and swelling of the flexor muscles cause the occipital colliculus to bend. 22 The degree of petiole curvature is related to actin tyrosine phosphorylation within the petiole. 11 Although the actin cytoskeleton, rather than microtubules, is involved in regulating movement, the breaking of actin filaments and microtubules occurs during bending.

10. Shorea Rubosta

Family: Dipterocarpaceae

Synonyms: Sal tree, shala

Biological Source: The plant belongs to the dipterocarpaceae botanical family

Uses: Manufacturing of papers, wood varnishes and lacquers, and paints.

Fig no: 10 Shorea Rubosta

In both the hot plate test and the tail kick method, shorewood resin extract significantly increased the mean reaction time over the entire study period ($P < 0.001$). Considering the need for new, safe and effective treatments and the side effects associated with currently used drugs, Wangshan resin represents an important and promising herbal medicine for the healing of pain for which there is no effective treatment, such as chronic pain. From this, we conclude that Robusta leaf resin extract has significant analgesic activity and wound healing potential. Debprasad et al also reported that Lagaonia exercise works by inhibiting TNF and INOS expression. Acetate-induced writhing and tail wagging tests were performed to determine activation.

➢ Some potential plant with antiulcer activity:

Botanical name and family	Common name	parts used	Active constituents	medicinal used
Aloe vera Fam: liliaceae	Gritkumari	Leaves	Barbaloin, saponins.	Laxative, ulcer
Capsium Fam: solanaceae	Chilli or Paprika	Fruit	Triterpenoids, saponins	Flatulent dyspepsia, Antiulcer
Basellla rubra Fam: Apocynaceae	Ceylon spinach, india spinach	Leaf	Saponin, protin	Antiulcer

Nigella sativa linn Fam:ranunuculaceae	Kalonji	Seed	Alkaloids nigellicin, tannin	Diuretic, hypoglycemic,antiulcer
Curcuma longa Fam: zingiberaceae	Haldi	Rhizome	Phenolic, tannins	Antiulcer, wound healings
Vetiveria ziziinoides Fam: graminae	Benachar	Root	Phenolic compound, flavonoids	Hyperdipsia, buerning, ulcer

3. CONCLUSION

The research of natural products is mainly driven by health knowledge, and its contribution to the use of new medicine is enormous by providing new drug models and methods of action. Folk medicine uses many medicinal plants to treat various diseases. Synthetic drugs used in its treatment have side effects, and some synthetic drugs have been shown to have harmful effects. In this case, the safe and balanced one, such as herbal medicine and synthetic medicine, is the obvious other. This article presents various botanical sources based on traditional knowledge and reports of different scientists. Additionally, only by understanding the mechanisms by which wounds form can we find new ways to treat diseases.

Peptic ulcer is a type of gastrointestinal disease caused by repeated and various complications. Moreover, the allopathic medicine used in its treatment can also be harmful and worsen people's health. For this reason, researchers have focused on medicinal plants with therapeutic effects. This plant contains alkaloids, tannins, flavonoids, phenols, saponins, etc. It is rich in many phytochemicals such as; Isolating and using these substances may provide health benefits. Therefore, medicinal plants that are both safe and cheap and have the ability to prevent diseases are discussed here.

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