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REVIEW ON ANTIULCER AGENTS FROM MEDICINAL PLANTS

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ABSTRACT

Peptic ulcer is a common gastrointestinal disorder which is seen among many people. It is basically an inflamed break in the skin or mucus membrane lining the alimentary tract. Ulceration occurs when there is disturbance of the normal equilibrium caused by either enhanced aggression or diminished mucosal resistance. It is due to regular usage of drug, irregular food habits, stress etc. Peptic ulcer is a broad term that includes ulcers of the digestive tract in the stomach or the duodenum. Formation of peptic ulcer depends on the presence of acid and peptic activity in the gastric juice and breakdown in mucosal defenses. There are number of synthetic drugs are available but that produce side effect and are expensive also as compared to herbal medicines. The literature revealed that many medicinal plants and polyherbal formulations are used for treatment of ulcer by various Ayurvedic doctors and traditional medicinal practitioners. The ideal aims of treatment of peptic ulcer disease are to relive pain, heal the ulcer, and delay ulcer recurrence. In this review attempts have been made to know about some medicinal plants which may be used in Ayurvedic as well as modern science for the treatment or prevention of peptic ulcer.

KEYWORDS: Peptic ulcer, Herbal drugs.

INTRODUCTION

Peptic Ulcer is a Gastrointestinal disorder due to an imbalance between the aggressive factors like acid, pepsin, Helicobacter pylori and defensive factors like bicarbonate secretion, prostaglandins, gastric mucus, innate resistance of mucosal cell factors.[1] Peptic ulcer disease increases gastric acid production. Until the late 1970s Peptic ulcer In United States were

treated with antacids and anticholinergic and surgery was frequently necessary for the treatment of ulcer disease. Peptic ulcer is once believed to be caused by spicy food, emotional stress and smoking are the principle etiological factors associated with peptic ulcer.[2] An ulcer is basically an inflamed break in the skin and the mucus membrane lining the alimentary tract. Today, there are two main techniques for treating peptic ulcer. The first is the reducing the production of gastric acid and the second is re-enforcing gastric mucosal protection.[3] The gastric mucosa is continuously exposed to various injurious agents such as acid, bile acid, pepsin, food ingredients bacterial products and drugs. These agents have been played role in the pathogenesis of Gastric ulcer, including enhanced pepsin and gastric acid secretion, cell proliferation growth, inhibition of prostaglandins synthesis and diminished gastric blood flow and gastric motility.[4]

In Ayurveda, Peptic ulcer mostly refers to Amlapitta or Parinamasula. According to Ayurveda, Amlapitta is a disease of gastrointestinal tract, especially of the stomach. It has not been described as an independent disease in major Ayurvedic texts, but has been mentioned in short in Kashyapa Samhita. Amlapitta literally means pitta leading to sour taste.[5] Effective therapies for peptic ulcer use alternatives that control acidic hyper secretion and its direct effect on the gastric mucosa. The two main classes of drug used to treat acid related disorder include proton pump inhibitors (PPI) that inhibits the hydrogen pump in the partial cell directly, independently of any membrane receptor stimulation and Histamine type 2 receptor Antagonists (H2RAs), which block the histamine receptor on parietal cells therapy reducing hydrogen ion release. PPI is among the most prescribed drugs in the world; however, it may be lead to the development of parietal cell hyperplasia of the gastric glands. Long term use of H2RAs is associated with development of undesirable effect such as Gynecomastia and galatorrhea as well as alteration of the bacterial flora of the gastrointestinal tract.[6]

Most patients with peptic ulcer suffers with abdominal discomfort, pain or nausea, with epigastric pain being the most common peptic ulcer symptoms (Gastric and duodenal ulcer) these characteristics by the burning sensation occurring after meals. Usually duodenal ulcer pain can be relived with food or antacids, while gastric ulcer pain is often aggravated by meals. Duodenal ulcer is associated with nightly pain occurring in about 50 to 80% of the sufferers as opposed to about 30 to 40% in gastric ulcer patients. Other possible manifestation of the disease includes dyspepsia such as belching bloating, distention, intolerance to fatty

foods, weight loss or poor appetite, heartburn, chest pain or discomfort, hematemesis and even anemia. Patient may often be asymptomatic with only 20 to 25% of them having suggestive symptoms of peptic ulceration, found to have peptic ulcer after investigation.[7]

Various synthetic drugs like Proton pump inhibitors, H2 receptor, cytoprotectants, demulcent, anti-cholinergic, antacids and prostaglandins analogues are used to treat peptic ulcer, but these drugs produce several side effects. So, Herbal medicines are considered as better alternatives for the treatment of peptic ulcer. Due to occurrence of many side effects by use of synthetic drugs for many diseases, medicinal plants are considered as the main source of new drug as they have less or no side effects. As herbal medicines are considered as the safe for the treatment of ulcers with lesser adverse effect, economical, effective, relatively less toxic, extensive research is carried out in search for potent Antiulcer agents of plant origin.[8]

SOME MEDICINAL PLANTS WITH ANTIULCER ACTIVITY

1] Mango (*Magnifera Indica*)

Fig-1: Magnifera Indica.

Mangoes (*Magnifera Indica*) belongs to genus Magnifera which consists of about 30 species of tropical fruiting trees in the flowering plant family Anacardiaceous. Mango possesses antidiabetic, antioxidants, antiviral, anti-inflammatory properties. Various effects like antibacterial, antifungal, anthelmintic, anticancer, anti-HIV, antibone resorption, antispasmodic, antipyretic, antidiarrheal, immunomodulation, antimicrobial, hepatoprotective, gastro protective.[9] Chemical constituents in this plant are alkaloids, sterols, saponins, tannins and flavonoids.[10]

Gastroprotective effects of M. Indica: Different extracts of Magnifera Indica are used as Gastroprotective agents. Decoction prepared from M. Indica flowers can significantly increase gastroprotective properties in an experimental rat model by reducing gastric juice

volume and acidity. Decoction prepared from leaves of M. Indica reduce gastric lesions induced by HCL, ethanol and Non-Steroidal Anti-inflammatory drugs in experimental rat models.[11]

2] Henna (*Lowsonica Alba*)

Fig-2: Lowsonica Alba.

Lowsonica Alba (Lythraceae) is commonly known as "Heena". Locally called "Maruthoni".[10] Chemical constituents of leaf are lawsone (0.5-1.0%), 5-10% of gallic acid, white resin, sugar, tannin and xanthones.[12]

In Ayurveda, an ointment prepared from the leaves is used to cure wounds and ulcers.[10]

3] Hibiscus *(Hibiscus Rosa Sinensis)*

Fig-3: Hibiscus Rosa Sinensis.

Hibiscus Rosa Sinensis (Malvaceae) is commonly known as changing rose. It is locally called "Chembaruthi" Chemical constituents in this plant are flavonoids, anthocyanins, quercitine, cynidine, kaempferol and hydrolytic acid.[10] The alcoholic extracts of H. Rosa Sinensis roots had noteworthy antiulcer action in pylorus ligated rats at the portion of 250 mg/kg. This extract has enough potential as an antiulcer genic property.[13]

4] Papaya (Carica *Papaya)*

Fig-4: Carica Papaya.

Carica Papaya Linn is commonly known as Papaya. It belongs to family Caricaceae and well known for various medicinal properties. The fruit possess antiulcer activity. The fruits had shown hepatoprotective activity and also used for pediatric burns. The seeds are reported to exert antimicrobial, anthelmintic, ant amoebic properties.[8] Papaya is a strong digestive enzyme and useful in serious digestive disorders such as bloating and chronic indigestion.[14] Two important compound of Papaya are papain and chymopapain, which are widely being useful for digestive disorders and disturbance of Gastrointestinal tract.[3]

From the study it has been found that the hydroalcoholic extracts of Carica Papaya 250 mg/kg showed decrease number of erosions in mucus but still there is inflammable with areas of hemorrhage. Further, there was a decrease extent of gastric mucosal rupture whereas 500 mg/kg effectively decrease the epithelial cell loss, gastric lesions and hemorrhage.[15]

5] Aloevera

Fig-5: Aloevera.

Aloe is the dried juice of the leaves of Aloe barbadencis Miller, known as Curaccan aloes.[12] Chemical constituents of Aloevera such as amino acids, anthraquinones, enzymes, hormones,

lignin, minerals, salicylic acid, saponins, sterols, sugars, vitamins. The whole plant of Aloevera is useful for medicinal purpose.[16]

The study confirmed that gastroprotective potential of aloe vera (50, 100, 150 mg/kg) leaf gel extracts against pylorus ligation, indomethacin and stress induced ulcerative damage in rats. Result showed the significant reduction in ulcer scores, gastric secretion, free acidity, total acid outputs and ulcerative index along with significant increase in mucus production which confirm the antiulcer activity of aloe vera gel extracts due to its anti-inflammatory, mucus stimulatory and antioxidant potential.[17]

6] Neem (*Azadirecta Indica*)

Fig-6: Azadirecta Indica.

Azadirecta Indica commonly known as "Neem" belonging to family Meliaceae and has been extensively used in India as an Ayurvedic medicine for treatment of various disease, such as leprosy, intestinal helminthiasis and respiratory disorders in children.

Antiulcer and cytoprotective of potential of Azadirecta Indica (Neem) stem bark extract was evaluated in albino rats. Azadirecta Indica significantly inhibited gastric ulceration induced by indomethacin. This action was accompanied by a dose dependent decrease in total gastric acidity. It was proposed that Azadirecta Indica probably act via histamine H2 receptor.[18]

It acts mainly by inhibiting acid secretion and blocking oxidative damage of the gastric mucosa. Inhibition of acid secretion was confirmed by inhibition of H+ K+ ATPase activity. While blockage of oxidative damage of gastric mucosa was evident from blocking a lipid peroxidation and scavenging of endogenous hydroxyl radical (OH).[19]

7] Trifala (*Terminalia Chebula*)

Fig-7: Terminalia Chebula.

Terminalia Chebula belongs to family Combretaceae. It commonly known as trifala is considered as king of medicines because of traditional value.[20] Traditionally, it has been used for treating constipation, diarrhoea, ulcers, gastroenteritis, paracites, skin disease, leprosy, rheumatism, arthritis, gout, neuropathy, paralysis, memory loss, epilepsy, depression etc.[15]

Methanolic extracts of Terminalia Chebula was administered in the dose of 250 and 500 mg/kg orally. Gastric lession was induced by pylorus ligation induced ulcer and ethanol induced gastric ulcer. Omeprazole was taken as reference drug. The extracts showed significant reduction in gastric volume, free acidity and ulcer index as compared to control.[21]

8] Turmeric

Fig-8: Turmeric.

Curcumin, a yellow pigment obtained from rhizomes of Curcuma longa Linn, belonging to family Zingiberaceae is a major component of turmeric and is commonly used as a spice and food coloring agent.[22] Constituents of curcuma longa gives protective effects on the

gastrointestinal tracts. The salt of curcumin, sodium curcuminate, was found to inhibit intestinal spasm and p-tolymethyl carbinol, a component of turmeric was capable of increasing gastrin, secretin, bicarbonate and pancreatic enzyme secretion. Curcumin have found to have antiulcer activity during the acute chronic phase of gastric ulcer comparable to omeprazole and promotes gastric ulcer prevention or healing by induction of angiogenesis in granular tissue of ulcer.[23]

CONCLUSION

Peptic ulcer is a disease of gastrointestinal tract mainly affect inner walls of stomach. Peptic ulcer is caused by spicy food, emotional stress, smoking which causes increased gastric secretion and disturbs acid base balance, pepsin level etc. It also causes due to Helicobacter pylori infection with symptoms like abdominal discomfort, abdominal pain, nausea, etc.

Mainly proton pump inhibitor and Histamine type 2 receptor antagonist are used to treat peptic ulcer, but various drug shows several side effects hence as an effective alternative herbal drug are used.

In this article we have studied the literature on medicinal plants having antiulcer activities such as Magnifera Indica, Low Sonica Alba, Hibiscus Rasa Sinensis, Carica Papaya, Aloevera, Azadirecta Indica, Terminalia Chebula, and Turmeric these are popular herbal medicines used all over world for treatment of ulcer.

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