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REVIEW ON ANTIULCER AGENTS FROM MEDICINAL PLANTS

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ABSTRACT

A peptic ulcer is erosion in a segment of the gastro intestinal mucosa. It may typically in the stomach (gastric ulcer) or first few centimeters of duodenum (duodenal ulcer) that penetrates through the muscular is mucosae. Contrary to popular belief, ulcer is not only caused by spicy food but also most commonly due to an infection of Helicobacter Pylori and long term use of medications. Standard treatment is a combination of drugs including antibiotics and a proton pump inhibitors. Floating matrix tablets of Lansoprazole were developed to prolong gastric residence time, leading to sustained action of the drug. Tablets were prepared by wet granulation technique, using hydroxypropylmethyl cellulose as a polymer in two different grades, HPMC K4M and HPMC K15M. Tablets were evaluated for their physical characteristics, viz., hardness, thickness, friability**,** mass variation, drug content and

KEYWORDS: Peptic ulcer herbal drug.

INTRODUCTION

In recent years, oral dosage forms for gastric retention have drawn more and more attention for their theoretical advantage in permitting control over the time and site of drug release. This is particularly valuable for drugs that exhibit an absorption window in the upper part of the small intestine and dissolve better in the acidic environment of the stomach1 Oral delivery of drugs is, by far, the most preferable route of drug delivery due to the ease of administration, patient compliance, and flexibility in formulation. A controlled drug delivery system with prolonged residence time in the stomach is of particular interest for drugs that are locally active in the stomach, using current release technology, oral delivery for 24 h is

possible for many drugs; however, the substance must be well absorbed throughout the whole gastrointestinal tract. A significant obstacle may arise if there is a narrow window for drug absorption in the gastrointestinal tract (GIT), The real issue in the development of oral controlled release dosage forms is not just to prolong the delivery of the drugs for more than 12 h, but to prolong the presence of the dosage forms in the stomach or somewhere in the upper intestine until all of the drug is released over the desired period of time2.

The principle of buoyant preparation offers a residence time for the dosage form and sustained drug release. The various buoyant preparations include micro-balloons, Peptic ulcer is a gastro intestinal 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 the mucosal cell factors.[1] Normally peptic ulcer develops when aggressive factors overcome the defensive factors.[2] Peptic ulcer can be categorized on the basis of location and on the severity of disease. Basically, word "peptic" is derived from Greek term "peptikos" whose meaning is related to digestion. Various reports indicates that old age group patients are more prone to gastric ulcer. Younger individuals have higher risk of duodenal ulcers. A number of drugs including proton pump inhibitors and H2 receptor antagonists are available for the treatment of peptic ulcer, but clinical evaluation of these drugs has shown incidence of relapses, side effects, and drug interactions. But therapeutic uses of plant are safe, economical & effective as their ease of availability.[3] Different plants are rich source of medicines. Currently, increasing health concern urged the researchers to revitalize the natural products and to alleviate the diseases without harming the body. This study has presented the review of commonly used anti-ulcer plants which are used for the treatment or prevention of peptic ulcers. Plants such as Ocimum sanctum L., Morus alba L., Musa acuminata, Mangifera indica L., Zingiber officinalis Roscoe.

Medicinal plant use of Anti ulcer drug

1) Ocimum sanctum Linn

Synonym:- ocimum tenuiflorum

Biological source:-it is the commonly known as Quinin

Fig. ocimum sanctum linn.

Ocimum sanctum belong to family Lamiaceae are very important for their therapeutic potential. Ocimum sanctum has two varieties i.e. black (Krishna Tulsi) and green (Rama Tulsi), their chemical constituents are similar.[4] Ocimum sanctum is widely distributed covering the entire Indian sub continent. Tulsi is an important symbol of the Hindu religious tradition. Different parts of plant are used in Ayurveda and Siddha Systems of Medicine for prevention and cure of many illnesses. Tulsi is a popular home remedy for many ailments such as wound, bronchitis, liver diseases, catarrhal fever, otalgia, lumbago, hiccough, ophthalmia, gastric disorders, genitourinary disorders, skin diseases, various forms of poisoning and psychosomatic stress disorders.[5,6] It has also aromatic, stomachic, carminative, demulcent, diaphoretic, diuretic, expectorant, alexiteric, vermifuge and febrifuge properties.[7]

Anti-ulcer activity: The fixed oil significantly possessed antiulcer activity due to its lipoxygenase inhibitory, histamine antagonistic and antisecretory effects.[8] Reported pharmacological activities of the plant are anti-bacterial, anti inflammatory, antihypertensive cardioprotective, central nervous system depressant, anti oxidant, chemopreventive, immunomodulatory, analgesic, antipyretic, antifertility, anti-arthritic, anti-stress, anti-cataract, anticoagulant, hepatoprotective, radioprotective.[9]

2) Morus alba Linn

Biological source :-morus Alba and man food source silkworm

Family:-moraceae

Fig:-morus Alba linn.

Morus alba Linn. is commonly known as White mulberry and belongs to the family .White mulberry is cultivated throughout the world, wherever silkworms are raised. The leaves of white mulberry are the main food source for the silkworms. The plant is known by various names in different languages as: Sanskrit: Tutam; Hindi: Tut; English: Mullberry; Malayalam: Malbari; Tamil: Musukette. This widely grown plant has been in use by tribals of this country for ailments such as asthma, cough, bronchitis, edema, insomnia, wound healing, diabetes, influenza, eye infections and nosebleeds.[10] Traditionally, the mulberry fruit has been used as a medicinal agent to nourish the blood, benefit the kidneys and treat weakness, fatigue, anemia and premature graying of hair. It is also used to treat urinary incontinence, tinnitus, dizziness and constipation in the elderly patient.[11] It also reported reduction of blood glucose levels by regeneration of β cells.[12]

Anti-ulcer activity

The plant leaf extracts reported antiulcer activity in experimentallyinduced gastric ulcers in rats.[13] The white mulberry has a long history of medicinal use in Chinese medicine; Almost all the parts of the plant are used as Medicine.[14] The mulberry leaves are richest source of phytochemicals, which are beneficial for the health and can be used as vegetable. The leaves of mulberry contains higher amount of quercetin which is responsible for reduction of oxidation process in vivo and in vitro.

3) Musa acuminata

Fig:-musa acuminta.

Biological source:-colla is a wild species of banana best know being origin Musa acuminata is a plant that belongs to the family Liliaceae with lilies and orchids. Musa acuminata is one of two species (along with M. balbisiana) that are wild progenitors of the complex hybrids that make up modern bananas and plantain. Important ingredients in banana fruit: fructose and glucose, potassium (350 mg), carotene provitamin A), vitamins B-complex, pectin, malic acid. Banana is rich in potassium, a key mineral that helps normalize blood pressure, heart function, work cells, nerves and muscles. Many previous studies have shown that a diet rich in potassium, magnesium and dietary fiber reduces the risk of heart attack. In one of the studies showed that a mixture of banana and milk significantly reduces gastric acid secretion. It is also used in curing of intestinal lesions in colitis, inflammation, pains and snakebite[15] as well exhibited antiulcerogenic[16], hypoglycemic[17], hypolipidemic activities.[18]

Anti-ulcer activity

Ripe bananas contain compounds that act in two ways: by activating the epithelial cells lining the stomach to produce a thick protective layer of mucus, which is stomach acid barrier and eliminate the bacteria from the stomach (especially Helicobacter pylori) for which it is known to cause ulcer. Plant parts like peels, stalks, fruits, roots and leaves of banana plants have been consumed orally or tropically for the medication of diarrhea and dysentery. However,

the antiulcerative activity in banana is due to the presence of natural flavonoids and this activity may vary in different varieties of banana due to the different levels of these natural active components.[19,20]

4) Turmeric

Fig-4 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.

5) Neem (Azadirecta Indica)

Fig-5 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 byindomethacin. 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 hydroxylradical(OH).

6) Zingiber officinalis Roscoe

Fig:- Zingiber officinalis Roscoe.

Zingiberr officinalis Roscoe is commonly known as Ginger which is consumed as a flavoring agent, spice belongs to the family Zingiberaceae. Reported pharmacological activities of the plant are antioxidant, anti migraine, antiemetic, anti inflammatory, antimicrobial, anti thrombotic, anti analgesic, anti proliferative, anti osteoarthritic, hepato protective.[23] Powdered rhizome of ginger root has been used as a traditional remedy for gastrointestinal

complaints including in treating peptic ulceration despite the fact that ginger promotes gastric secretions.[24]

Anti-ulcer activity

Several anti-ulcer compounds have been isolated from ginger, including 6-gingesulphonic acid[25], 6- shogaol and ar-curcumene.[26] Most notable is 6- gingesulphonic acid, which showed weaker pungency and more potent anti-ulcer activity than 6- gingerol and 6-shogaol.[27-29] The antiulcer activity of ginger may also be due to the potent thromboxane synthetase inhibition.[30] High doses of ginger probably act as a gastric irritant.

7) Mangifera indica Linn

Fig 7. Mangifera indica Linn.

Mangifera indica L. is commonly known as Mango. It belongs to the family Anacardiaceae. Various parts of plant are used as a dentrifrice, antiseptic, astringent, diaphoretic, stomachic, vermifuge, tonic, laxative and diuretic and to treat diarrhea, dysentery, anaemia, asthma, bronchitis, cough, hypertension, insomnia, rheumatism, toothache, leucorrhoea, haemorrhage and piles. All parts are used to treat abscesses, broken horn, rabid dog or jackal bite, tumour, snakebite, stings, datura poisoning, heat stroke, miscarriage, anthrax, blisters, wounds in the mouth, tympanitis, colic, diarrhea, glossitis, indigestion, bacillosis, bloody dysentery, liver disorders, excessive urination, tetanus and asthma.

CONCLUSION

Phytogenic agents have traditionally been used by herbalists and indigenous healers for the prevention and treatment of peptic ulcer. This report reviews the anti-acid/anti-peptic, gastroprotective and/or anti-ulcer properties of the most commonly employed herbal medicines and their identified active constituents. Botanical compounds This article reviews drugs derived from plants which are used for the treatment of peptic ulcer and it is evident that plant extracts have significant antiulcer activity in animal models.

The present study was carried out with the aim to develop the floating drug delivery with controlled release of lansoprazole using HPMC K4M and HPMCK15M polymers as the carriers. The preliminary evaluation results of the floating tablets were found satisfactory.

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