

Herbal Plants - A Boon for Ulcer Disease

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ABSTRACT

The Indian traditional systems of medicine composed of herbal plant treatment and it provide a great relevance to the health care of the people. Undoubtly, the use of herbal plants for the various diseases is safer than the synthetic formulation. Many researches support that majority of world population are still relying on herbal plant formulation. Numerous herbal products have been evaluated as therapeutics for the treatment of a variety of diseases, including stomach ulcer. Ulcer is a term that includes ulcers of digestive tract in the stomach, but when ulcers affects digestive stomach as well the duodenum they called as peptic ulcer. Increasing acid and pepsin in gastric juice and destruction of mucosal defences indicates the presence of ulcers. Majorly two factors that can disrupt the mucosal resistance to injury: the over use of non-steroidal anti-inflammatory drugs (NSAIDs) example, aspirin and other is helicobacter pylori infection. In this review, we shall address some literature on different medicinal plants with antiulcer activity. This article reviews the antiulcer properties of the most commonly employed herbal medicines and their identified active constituents.

Keywords: Herbal Plant, Synthetic Formulation, Stomach ulcer, Peptic Ulcer, NSAIDs.

INTRODUCTION

Plants have long since been deemed a valuable source of natural products for maintaining human health. It is known that some plants are rich in secondary metabolites such as tannins, alkaloids, flavonoids, phenols, steroids, and volatile oils which are responsible for therapeutic activities. Also the use of different plant parts, mostly their decoctions, infusions, oral administration and others have been used as popular medicine for various diseases. The knowledge of medicinal plants and their roles in the treatment of diseases is as old as man. They constitute a predominant mode of managing health problems in developing countries and mostly among the rural populace. It is strongly believe that Herbal medicine is generally more effective and having fewer side effects compared to synthetic medicines. In today's scenario and also from past, researcher uses plants and herbal constituents to treat various kind of human as well as animal diseases and they reported many plants with valuable medicinal activities. Likely, several natural drugs have been reported to possess anti-ulcerogenic activity by virtue of their on

mucosal defensive factors. Although a number of antiulcer drugs such as H₂ receptor antagonists, proton pump inhibitors and cytoprotectants are available for ulceration all these drugs have side effects and limitations. Herbal medicine deals with plants and plant extracts in treating diseases. These medicines are considered safer because of the natural ingredients with no side effects. The treatment of peptic ulcers with plant products used in folk medicine and the protection of induced gastric ulcer in laboratory animals using medicinal plants were reported. Generally plant flavonoids have been found to be effective against ulcer in experimental animals and exhibit several biological effects.

Peptic ulcer disease (PUD) is a group of disorders as well as conglomerate of heterogeneous disorders characterized by the ulcers. It is a deep mucosal lesion penetrating through entire thickness of the gastrointestinal tract (g.i.t) mucosa and muscularis mucosa.

Peptic ulcers causes due to exposure of stomach and duodenum to acid and pepsin in sufficient concentration and duration. There are the different type ulcers most common are peptic ulcer. Peptic ulcer embraces both

gastric and duodenal ulcers. Basically, word "peptic" is derived from Greek term "peptikos" whose meaning is related to digestion.

Peptic ulcers can affect people of any age, including children, but they are rare among teenagers and even more uncommon in children. However the condition is most common in people who are 60 years of age, or over. Both sexes are equally affected by peptic ulcers.

Peptic ulcer disease represents a serious medical problem and has been a major threat to the world's population over the past two centuries, with a high morbidity and substantial mortality. An estimated 15,000 deaths occurs each year consequence of PUD. In India, PUD is common and the Indian Pharmaceutical industry, antacids and antiulcer drugs share 6.2 billion rupees and occupy 4.3% of the market share. Approximately 500,000 new cases are reported each year. According to the WHO data published in April 2011, PUD deaths in India have reached 1.2% of total deaths. It is hard to accurately estimate exactly how common peptic ulcers are because in many people they do not cause any symptoms. However, a Swedish study that tested 1,000 adults at random found that four percent of them had a peptic ulcer. A study concluded in the United States about four million people have active peptic ulcers and about 350,000 new cases are diagnosed each year. In the diagnosis four times as many duodenal ulcers are diagnosed as gastric ulcers and approximately 3000 deaths per year in the United States are due to duodenal ulcer and 3000 to gastric ulcer.

The most commonly prescribed ulcer drugs are cimetidine (Tagamet) and ranitidine (Zantac). These may be appropriate for an acute ulcer, but they are not suitable for long-term use. They work by suppressing gastric acid secretion. By suppressing stomach acid, these drugs also impair calcium absorption—calcium carbonate, the most common form of calcium in food, requires an acid gastric medium for bioavailability. Acid-suppressing drugs may also inhibit absorption of iron, magnesium, and vitamin B-12. Most promising drug therapy for prevention and treatment of peptic ulcer. Proton pump inhibitors, histamine receptor antagonists, drugs affecting the mucosal barrier and prostaglandin analogues (primarily misoprostol). However, the clinical evaluation of these drugs showed development of tolerance and incidence of relapses and side effects that make their efficacy arguable. The goals of the treating peptic ulcer disease are to relieve pain, heal and prevent ulcer recurrence. There is no cost

effective treatment that meets all these goals. Hence these negative effects are the rationale for the development of new antiulcer drugs and the search for novel molecules in natural products. In spite of being various investigations showed that these investigated medicinal plants could prevent ulcer in rats in a dose-dependent manner. Histological studies revealed that these medicinal plants did not show any acute toxicity. So that these herbal sources are the major thrust area of the present day research, for a better and safer approach for the management of peptic ulcer.

Herbal Prospective

Herbs have been used for centuries by people around the world. They may be the oldest "evidence-based medicine." Herbal remedies have been recorded to cure all kinds of diseases for billions of people as a critical therapeutic method in many cultures. These cultures include Native American, European, Egyptian, Hebrew, Indian, and Chinese.

Herbal remedies work on the basic principle that the body tends to heal itself if given the right support. It does not interfere with the body's natural healing process. Herbs are a gentle way to promote that healing, show minimum side effect and consider to be safe. In recent years, the growth in popularity of herbal medicines has been simply phenomenal. Every day, more and more people are opting for herbal remedies instead of using traditional medical treatment.

Herbal medicine is still the mainstay of about 75 - 80% of the world population, mainly in the developing countries. This is primarily because of the general belief that herbal drugs are without any side effects besides being cheap and locally available. According to the World Health Organization (WHO), the use of herbal remedies throughout the world exceeds that of the conventional drugs by two to three times. This is largely because they feel it is a natural way to get better and more importantly, Nature is a better healer.

In comparison to herbal drugs most synthetic drugs that have pure ingredients, such as small molecules or just a single protein, one herb has complex ingredients. Those different ingredients in one herb may balance each other, buffer each other, and act synergistically to make the systemic effect more powerful. In some herbal practices, such as in Chinese herbal medicine, several herbs are usually used together in a formula to treat one illness. Such combination of herbs takes advantage of the interactions among different ingredients from multiple herbs for more balanced, less toxic, and more powerful effects. The

complicated ingredients in herbal recipes are closer to nature and usually can be absorbed and processed better by the complicated human body.

Following are some important points which should make the herbal drugs better in comparison to the synthetic drugs

1. Herbal combinations do not cause any type of addictive or habit forming supplements, but in spite of that herbal drugs have powerful nutritional agents that assist the body naturally.
2. Lower risk of unwanted reaction (side effect) — generally it believes that herbal medicines are well tolerated by the patient, shows reduced side effect than pharmaceutical drugs and may be safer to use over time.
3. Herbal drugs are much effective in chronic conditions as compare to synthetic drugs because they have fewer side effects. Such treatments include dietary changes like adding simple herbs, eliminating vegetables from the nightshade family and reducing white sugar consumption.
4. Lower cost - Another advantage to herbal medicine is cost. Herbs tend to be inexpensive compared to drugs. or cost is much less than synthetic drugs.
5. Widespread Availability: One of the important benefits of herbal medicines are their prevalent availability without a prescription. You can grow some simple herbs, such as peppermint and chamomile, at home.

Reported antiulcer activity of herbal plants

S.no	Plant name	Family	Responsible Chemical Constituent	Animal Model	Mechanism of action
1.	<i>Solanum nigrum</i> Linn.	Solanaceae	Tannins, Alkaloids, Anthocyanins	Cold restraint, Pylorus Ligation, Indomethacin induced, Ethanol induced gastric ulcer model.	Antisecretory activity and potent antioxidant effect.
2.	<i>Drimys angustifolia</i> Miers.	Winteraceae	Xanthones, Saponins, Tannins, Triterpenoids, and Flavonoids	piroxican-induced gastric lesions, Ethanol/HCl 0.3 M-induced lesions.	Regulation of blood flow, maintenance of vascular and muscle tone, control of platelet aggregation and modulation of mastocyte activity.
3.	<i>Maytenus ilicifolia</i>	Celastraceae	Flavonoids, Quercetin and Catechins	Ethanol induced gastric lesion, Pylorus ligation	Inhibition of H ⁺ , K ⁺ -ATPase and histaminergic pathway of the gastric acid secretory mechanism.
4.	<i>Cordia verbenacea</i> DC.	Boraginaceae	Xanthones, Saponins, Triterpenoids and Flavonoids	Piroxican-induced gastric lesions, Ethanol/HCl 0.3 M-induced lesions	Through scavenging properties on oxygen radicals by inhibition of nitric oxide synthase activity
5.	<i>E. agallocha</i> L.	Euphorbiaceae	Oxygenated, Dipterpenoids Excolabdonea, Excolabdoneb and Excolabdone C	NSAID induced ulcer rat	Decrease the acidity and increase the mucosal defense in the gastric areas
6.	<i>Ficus religiosa</i>	Moraceae	Tannins, Saponins, Flavonoids, Steroids and Terpenoids	Pylorus ligation, Indomethacin induced model, Cold restrained stress	Antisecretory activity
7.	<i>Abutilon indicum</i>	Fabaceae	Flavonoids (Quercetin), Alkaloids and Tannins	Pylorus ligation induced ulcer model and Ethanol inducer ulcer model	Antisecretory action, stimulate mucus, bicarbonate and the prostaglandin secretion

8.	<i>Mimosa pudica</i>		Flavonoids	Pylorus ligation, Alcohol and Aspirin induced ulcer	Antisecretory action, antioxidant, cytoprotective
9.	<i>Lafoensia pacari</i>	Lythraceae	Egallic Acid, Saponins, Triterpenes and Tannins	Indomethacin-induced gastric ulcer, Cold restraint-stress induced gastric ulcer, pylorus-ligation, Ethanol-induced gastric ulcer	Increased mucus and bicarbonate secretion and inhibition of acid secretion.
10.	<i>Moringa oleifera</i> Lam.	Moringaceae	Zeatin, Quercetin and Kaempferol	Pylorus ligation, Cold restraint, stress, Aspirin induce gastric ulcer	Antioxidant activity,
11.	<i>Carica papaya</i> Linn	Caricaceae	Papain, Chymopapain, Alkaloids, Flavonoids and Benzylisothiocyanate And Phenolic	Ethanol-induced gastric ulcer	By inducing th the secretion of mucus and HCO ₃ , Antioxidant activity
12.	<i>Achyranthes aspera</i> Linn	Amaranthaceae	Oleanolicacid, Quercetin, Ecdysterol, Flavonoids and Triterpenoids	Pylorus ligation	Cytoprotective action
13.	<i>Aegle marmelos</i> , Linn.),	Rutaceae	Quercetin and Flavonoids	Indomethacin induce ulcer, Stress induced ulcer and Pylorus ligation	Antagonising particular receptors and Cytoprotective
14.	<i>Pisonia Aculeate</i>	Nyctaginaceae	Flavonoids, Terpenoids, Saponins, Tannins and Alkaloids	Pylorus ligation	Antisecretory activity
15.	<i>Murraya Koenigii</i>	Rataceae	Alkaloids, Volatile Oil, Gycosoline, Xanthoxine and Sesquiterpione	NSAIDs induce ulcer, Pyloric ligation induced ulcer	Antisecretory and Cytoprotective effect
16.	<i>Citrullus colocynthis</i> (L.)	Cucurbitaceae	Flavonoids, Saponins, Glycosides, Carbohydrates and Phenols.	Pylorus ligation induced gastric ulceration	Stimulate mucus, bicarbonate and the prostaglandin secretion and counteract with the deteriorating effects of reactive oxidants in gastrointestinal lumen
17.	<i>Wrightia tinctoria</i> (Roxb)	Apocynaceae)	Alkaloids, Terpenes, Wrightial, Tryptanthrin, Indole and Flavonoids	Aspirin plus Pylorus Ligation – induced Gastric ulcer Model	Antisecretory activity
18.	<i>Calotropis gigantea</i>	Asclepiadaceae	Glycosides, Calotropin, Uscharin, Calotoxin and Resin-Mudarine	Pylorus ligation and Ethanol induced ulcer model	Antisecretory, enhancement of the mucosal barrier through the increase production of prostaglandin
19.	<i>Acacia catechu</i>	Mimosaceae	Tannins, Catichin and Flavonoids Etc	Pylorus ligation induced ulcer model	Antisecretory Activity
20.	<i>Shorea tumbergaia</i>	Dipterocarpaceae	Sterols And Triterpenoids In Chloroform Extract and Tannins and Phenols	Pylorus ligation induced ulcer model	Antisecretory Activity

CONCLUSION

A synthetic as well as herbal drug possesses different integrity in the pharmaceutical market. The selection and rejection of the both option depends upon some obvious reasons like, forthcoming side effects due to long term treatment with synthetic drugs, but herbal or plant products always proved for its safety and efficacy. Herbal therapy provides rational means for the treatment of the many internal

diseases and the plant products are harmless or have least side effects than synthetic drugs. But we never annoyed the existence of the both drug products due to their numerous applications in the field of medicine. In the present scenario many researcher and manufacturer shows interest in isolation, separation and characterization of the actively plants metabolites because herbal formulations have reached widespread

acceptability as therapeutic agents in India and abroad. The various approaches have also been established for the treatment peptic ulcer by using chemical agents (like synthetic treatment) but are not strictly advisable due to their unwanted effects. The herbal products are continuously growing recognition as a safe remedy for the treatment of various disorders including peptic ulcer. From this study, it is clear that the medicinal plants play a vital role against on various diseases. Various herbal plants and plants extracts have significant antiulcer activity in animal models. It has mucoprotective activity and gastric anti-secretory when compared with that of reference herbal drugs. Our review results show that above-mentioned medicinal plants could prevent ulcer with the principle on dose-dependent. The results of this study indicate that extracts of leaves and plants extracts of some medicinal plant have good potentials for use in peptic ulcer disease.

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