

Review on Gastroprotective Effect of Herbal Medicines

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Abstract

Herbal medicines are very important to cure the various ailments of human. Demands of the herbal medicines are increasing in both developed and under developed countries due to growing recognition of natural plants being lesser of side effect, easily available in surrounding place with low cost. Despite extensive research, the etiology of peptic ulcer disease remains unclear. Given the multiple processes that control acid and pepsin secretion and defense and repair of the gastroduodenal mucosa, it is likely that the cause of ulceration differs between individuals. Acid and pepsin appear to be necessary but not sufficient ingredients in the ulcerative process.. NSAIDs cause a significant number of gastric and duodenal ulcers; this is probably due to inhibition of prostaglandin production with loss of its protective effects. In the absence of NSAIDs and gastrinoma, it appears that most gastric ulcers and all duodenal ulcers occur in the setting of H. pylori infection. Gastric ulcer often occurs with decreased acid-peptic activity, suggesting that mucosal defensive impairments are more important. The combination of inflammation, protective deficiencies, and moderate amounts of acid and pepsin may be enough to induce ulceration. Many questions remain in understanding the pathophysiology of peptic ulcer disease. The physiology and pathophysiology of mucosal regeneration and the mechanisms by which H. pylori and inflammation disrupt normal gastroduodenal function will be fruitful areas of future investigation. In this review attempts have been made to know the antiulcer drug of natural origin with their suggested medicinal part.

Key Words: Peptic ulcer , H.pylori , Herbal Medicines ,NSAID's

Introduction

Ulcers are an open sore of the skin or mucus membrane characterized by sloughing of inflamed dead tissue [1]. Ulcers are lesions on the surface of the skin or a mucous membrane characterized by a superficial loss of tissue. Ulcers are most common on the skin of the lower extremities and in the gastrointestinal tract, although they may be encountered at almost any site. There are many types of ulcer such as mouth ulcer, esophagus ulcer, peptic ulcer, and genital ulcer .Of these peptic ulcer is seen among many people. The peptic ulcers are erosion of lining of stomach or the duodenum [2]. The two most

common types of peptic ulcer are called “gastric ulcer” and “duodenal ulcer.” The name refers to the site of ulceration. A person may have both gastric and duodenal ulcers at the same time. Gastric ulcers are located in the stomach, characterized by pain; ulcers are common in older age group. Eating may increase pain rather than relieve pain. Other symptoms may include nausea, vomiting, and weight loss. Although patients with gastric ulcers have normal or diminished acid production, yet ulcers may occur even in complete absence of acid [3]. Duodenal ulcers are found at the beginning of small

intestine and are characterized by severe pain with burning sensation in upper abdomen that awakens patients from sleep. In view of the progress of western medicine not only new synthetic drugs but also herbal drugs have to fulfill the international requirements on quality, safety and efficacy. Herbal drugs have the advantage of being available for patients in the geographical area of the special traditional medicine. The development procedure of herbal drugs for world-wide use has to be different from that of synthetic drugs [4].

The pathophysiology of peptic ulcer disease involves an imbalance between offensive (acid, pepsin, and *Helicobacter pylori*) and defensive factors (mucin, prostaglandin, bicarbonate,

nitric oxide, and growth factors) [5]. 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 causes have been found by research to include bacterial infection (*Helicobacter pylori*) or reaction to various medications, particularly NSAIDs (nonsteroidal anti-inflammatory drugs) [6]. *Helicobacter pylori*, NSAIDs drugs, emotional stress, alcohol abuse, and smoking are the principal etiological factors associated with peptic ulcer [7].

Peptic ulcer is one of the world's major gastrointestinal disorders and affecting 10% of the world population [8]. About 19 out of 20 peptic ulcers are duodenal. An estimated 15000 deaths occur each year as a consequence of peptic ulcer. Annual incidence estimates of peptic ulcer hemorrhage and perforation were 19.4–57 and 3.8–14 per 100,000 individuals, respectively. The average 7-day recurrence of hemorrhage was 13.9% and the average long-term recurrence of perforation was 12.2% [9]. In the Indian pharmaceutical industry, antacids and antiulcer drugs share 6.2 billion rupees and occupy 4.3% of the market share [10]. In this modern era also 75–80% of the world populations still use herbal medicine mainly in developing countries, for primary health care

because of better cultural acceptability, better compatibility with the human body, and lesser side effects [11]. Histological studies revealed that these medicinal plants did not show any acute toxicity. Preliminary photochemical screening of this medicinal plant identified the presence of important secondary metabolites like flavonoids and tannins which are the active principles of antiulcer activity [12].

Present study was conducted to review medicinal plants considered as gastroprotective and healing agents on ulcers in ayurvedic resources and beside that to gather evidence for their effectiveness and biological mechanisms in modern investigation. In order to achieve this aim, Indian ayurvedic book *Materia Medica* and electronic databases including science direct, pubmed, scopus, and google scholar were explored for each of the medicinal plants for peptic ulcers and all retrieved articles were evaluated to achieve any in vitro, in vivo, or clinical evidence for their efficacy and possible mechanisms. The retrieved studies either demonstrate obviously effectiveness of these herbs or indirectly their efficacy on the involved

mechanisms in the treatment of peptic ulcers. *Materia Medica* provides lots of information about ethno medicinal herbs, which are valuable as antiulcer agents and their use experimentally was evaluated and proved by many researchers for its antiulcer activity. Following compiled data suggested that medicinal plant those are evidently reported for its antiulcer activity.

2.0 Findings and Discussion:

Herbal Medicines with Antiulcer Properties:

Acacia arabica. *Acacia arabica* (family Mimosaceae), is common all over India in dry and sandy localities. It is commonly known as “babul tree” and locally called as “karuvelam.”

2.0.1. Antiulcer Activity

As gargle it is useful as wash in haemorrhagic ulcer and wounds. Bruised tender leaves formed

into apoultice and applied to ulcers act as stimulant and astringent [13].

2.1 Adansonia digitata. *Adansonia digitata* belonging to the family Malvaceae is commonly known as “boabab or monkey-bread tree of Africa.” It is locally known as “papurapuli.”

2.1.1. Antiulcer Activity

Fresh juice of the leaves mixed with powdered ginger together with the expressed juice of the fresh root of *Salvadora indica* is applied with considerable benefit to indolent syphilitic ulcer. Leaves are used as fomentations and poultices for irritable inflammatory ulcers [14].

2.3. Allium sativum. *Allium sativum* belonging to the family Liliaceae is commonly known as “garlic” and locally called as “vellapundu.”

2.3.1. Antiulcer Activity

In Ayurvedic. Mustard or coconut oil in which garlic has been fried is an excellent application for maggots infesting ulcers, ulcerated surfaces, and wounds. Garlic juice mixed with 3 or 4 parts of ordinary or distilled water has been used as a lotion for washing wounds and foul ulcers [16].

2.4. Aloe vera. *Aloe vera* belonging to the family Liliaceae is commonly known as “aloe gel.” It is locally called “kattalai” which is found all over India. Chemical constituents in this plant are aloin, isobarbaloin, and emodin [17].

2.4.1. Antiulcer Activity Leaves are being used successfully in America in the local treatment of chronic ulcers. First the pain diminishes and after a few weeks the ulcers heal [18].

Azadirachta indica. *Azadirachta indica* (family Meliaceae) is indigenous to and cultivated nearly all over India and in Bengal. It is commonly known as “neem” and locally called “vembu.”

2.4.2. Antiulcer Activity

A poultice of leaves mixed with sesamum seeds is very useful in unhealthy ulcerations [19].

2.5. Balsamodendron mukul. *Balsamodendron mukul* (Burseraceae) is commonly known as “gum-gugul.”

2.5.1. Antiulcer Activity

Guggul gumis mixed with lime juice or coconut oil it is applied as a plaster or in the form of a lotion in indolent ulcers. Gum obtained from other species, *B. pubescens* found in Sind, Karachi, and Baluchistan, is used as ointment in bad ulcers such as Delhi sores, combined with sulphur, catechu, and borax [20].

2.6. Berberis aristata. *Berberis aristata* (family Berberidaceae) is grown on the Nilgiris and all over the temperate Himalayas, from Bhutan to Kunawer. It is commonly known as “Indian or Nepal barberry” and locally called “kasturimanjal.”

2.10.1. Antiulcer Activity

Crude extracts known as rasaut (in Hindi) are prepared from the root; bark mixed with honey is useful application to ulcerations of the skin [21].

2.8 Beta vulgaris. *Beta vulgaris* (Chenopodiaceae) is commonly known as “beetroot.” It is native of the sea-coasts of tree Mediterranean, now extensively cultivated in Europe and America, and is known as sugar-beet.

2.8.1. Antiulcer Activity

In Ayurvedic. A decoction of the root with a little vinegar added is excellent for all kinds of ulcers and running sores [22].

2.9 Carica papaya. *Carica papaya* (Caricaceae) is commonly known as “papaya.”

2.9 1. Antiulcer Activity

In Folk Medicine. It is largely used in tropical folk medicines. The ripe fruit is edible and unripe can be eaten cooked for indolent ulcer. The

unripe fruit can be cooked as parts of salads, jellies, and stews while the ripe fruits are usually eaten raw without the skin or seed. Intake of the unripe fruit of the plant has been linked with an antiulcer effect [23].

2.10 Euphorbia neriifolia. Euphorbia neriifolia (Euphorbiaceae) is commonly known as “common milk hedge.” It is locally called “ilaikkalli.”

2.10.1. Antiulcer Activity

Plant juice is largely used with clarified or fresh butter as an application to unhealthy ulcers and scabies [24].

2.11. Ficus religiosa. Ficus religiosa (Urticaceae) is commonly known as “sacred fig.” It is locally called “arasha-maram.”

2.11.1. Antiulcer Activity

Bark is useful in ulcers in infusion or decoction (simple kashayam) with a little honey [25].

2.12 Galea purpurea. Galea purpurea (Papilionaceae) is commonly known as “purple tephrosia.” It is locally called “kolluk-kay-welai.”

2.12.1. Antiulcer Activity

Root powdered and mixed with honey is applied to ulcers [26].

2.13. Indigofera tinctoria. Indigofera tinctoria (Papilionaceae) is commonly known as “true indigo.” It is locally called “neelum; avari.”

2.13.1. Antiulcer Activity

Leaves crushed are used as stimulant poultice or plaster in various skin affections and to cleanse and to heal wounds and ulcers. Powdered indigo is also used for sprinkling on ulcers [27].

2.14 Lawsonia alba. Lawsonia alba (Lythraceae) is commonly known as “henna.” It is locally called “maruthoni.”

2.14.1. Antiulcer Activity

An ointment prepared from the leaves is used to cure wounds and ulcers [28].

2.15. Mangifera indica. Mangifera indica (Anacardiaceae) is commonly known as “mango tree.” It is locally called “mangaai.”

2.15.1. Antiulcer Activity

Leaf extracts were dissolved in rice bran oil and given orally for ulcer. Traditionally the plant is reported to have antiulcer activity [29].

2.16 Mimosa pudica. Mimosa pudica (Fabaceae) is commonly known as “touch me not.” It is locally called “thottal sinungee

2.16.1. Antiulcer Activity

Decoction of the fresh leaves and seeds are consumed for intestinal ulcer [30].

2.17 Moringa oleifera. Moringa oleifera (Moringaceae) is commonly known as “drumstick, horse radish tree.” It is locally called “murungai.”

2.17.1. Antiulcer Activity

In Folk Medicine. The medicinal value of the different parts of the plant has long been recognized in folklore medicine. The leaf tea treats gastric ulcers by Kani tribals of Pechiparai Hills, TamilNadu, India. Flower buds of *M. oleifera* are widely consumed in Pakistan and have been reported to possess

antiulcer activity [31].

2.18 Myrica nagi. Myrica nagi (Myricaceae) is commonly known as “box myrtle; bay-berry.” It is locally called “marudam-pattai.”

2.18.1 Antiulcer Activity

A poultice made by bruising the bark and simmering it in water and stirring in Indian meal till it obtains

the proper consistence cures scrofulous ulcers (Tukina). Fruits when boiled yield a kind of wax

called myrtle wax which is used as a healing application to ulcers [32].

2.18.1. *Ocimum sanctum*. *Ocimum sanctum* (Lamiaceae) is commonly known as “holy basil.” It is locally called “tulsi” **Antiulcer Activity**

Indian materia medica describes the use of the plant in a variety of ailments. The fresh leaves are taken as Prasad by millions of Indian for many years. A tea prepared with the leaves of Tulsi is commonly used for intestinal disorders [33].

2.20. *Oryza sativa*. *Oryza sativa* (Gramineae) is commonly known as “rice; paddy.” It is locally called “arshi; nellu.”

2.20.1. Antiulcer Activity

Where there is an irritable or inflammatory state of the stomach, rice gruel or conjee water, as it is commonly called, (Decoction 1 in 40) or thicker liquid made by boiling the rice powder in water, with a pinch of salt and a squeeze of lemon, makes a good drink and without the lime-juice

and salt in gastric ulcer. Schnabel in American Journal of Medical Science reports good results from the use of rice water mixture in the treatment of gastric and duodenal ulcers [34].

2.21. *Psidium guyava*. *Psidium guyava* (Myrtaceae) is commonly known as “guava.” It is locally called “koyya.”

2.21.1. Antiulcer Activity

Locally, decoction of the leaves is employed in unhealthy ulcers and is an efficacious gargle for swollen gums and ulceration of the mouth [35].

Conclusion:

2.16. Gastric ulcer one of the most widely spread gastro intestinal disorder believed to be due to an imbalance between aggressive and protective factor. From this study it is concluded that plant extracts have significant antiulcer activity in animal models. we can conclude that studies with plant sources can result in novel and effective pattern of treatment. In this respect,

traditional medicine has introduced protocols for treatment of various gastrointestinal disorders.

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