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**Review Article**



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**Peptic Ulcers and Its Cure Using Herbal Extracts**

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**Abstract**

The main purpose of present review is to give the information regarding various plant parts used to treat Peptic ulcer, gastric hyperacidity, gastro inflammation and ulcers. The usage of synthetic drugs increases the irritation rather than curing it. Herbal extracts have been found to be one of the potential remedy and cure in recent times. Moreover the side effects were not seen or minimum compared to that of the synthetic drugs. Hence we made an attempt to explore the plants with chemical constituents which showed anti-peptic characteristics.

**Key words:** Peptic ulcer, Gastric hyperacidity, Gastro inflammation

**Introduction**

Peptic ulcer is a chronic disease associated with serious and life threatening complications including bleeding or perforation. The disease is characterized by life-long symptomatic recurrences which exert negative economical and health impact from disability and absence from work that may necessitate surgery or if untreated can cause death [1-2]. A breakdown in what is called the balance between aggressive factors and gastric mucosal defenses was hypothesized to account for the occurrence of peptic ulcers [3-4]. The gastric hydrochloric acid and oxyntic gland parietal cells as the gastric acid secretory cells were identified in 1823 and the mechanisms of acid secretions have proved to be an interesting area of investigation [5]. Aggression is considered to be inflicted by hydrochloric acid and pepsin secreted by the gastric mucosa itself, and a number of exogenous factors e.g., drugs such as steroidal [6] non-steroidal anti-inflammatory drugs (NSAIDs) ethanol smoking stress [7-12]. A number of factors on the other hand constitute the gastric mucosal defense against damaging agents tight junctions between the surface epithelial cells, rapid cell turnover, epithelial restitution, gastric mucus gel and bicarbonate secretion, gastric mucus phospholipids, sulphydryl compounds, prostaglandins, gastric mucosal blood flow[13-16].The historical rediscovery

of gastric *H. pylori* in the stomach of patients with chronic gastritis by Warren and Marshall [17] was considered an important event with regard to our understanding of the pathogenesis of peptic ulcer ulceration. The bacterium turned out to be one of the most if not the only important aggressive factors. Indeed, since that time peptic ulcer disease has been largely viewed as being only of infectious etiology, as can be seen from the huge number of publications in that field dealing with the bacterium. Further, an increasingly growing body of literature suggests an association between colonization by *H. pylori* in the stomach and a risk for developing gastric mucosa-associated lymphoid tissue (MALT), lymphoma [18] gastric adenocarcinoma [19] and even pancreatic adenocarcinoma [20].

The importance of the bacterium is now moving from gastric diseases towards a number of extra-gastrointestinal disorders such as ischemic heart disease, ischemic cerebrovascular disease, atherosclerosis, Raynaud's phenomenon, and skin diseases [21-24]. Eradication of *H. pylori* thus seems to be of beneficial impact on human health. It would seem pertinent therefore to try to survey and discuss the data and relevant literature concerning the role proposed for this bacterium in different disease processes and especially in pathogenesis of gastric cancer and primary gastric lymphoma [25].

### Different Forms of Peptic Ulcers

#### Peptic ulcers (PU)

The acute peptic ulcer, which penetrates the lamina muscularis mucosa but does not extend more deeply than the sub mucosa. It is mainly related to stress in the form of severe burns (*Curlings ulcer*) and brain damage (Cushing's ulcer). Second, the chronic peptic ulcer, which penetrates the full thickness of the *muscularis propria* and has its base in the serosal layer of the organ involved or out with the gut altogether. It includes gastric and duodenal ulcers [26] the common forms of peptic ulcer are duodenal ulcer (DU), gastric ulcer (GU), stress ulcer; non-steroidal anti-inflammatory drug (NSAID) induced ulcers and recurrent oral ulceration (aphthous ulceration).

#### Duodenal Ulcers (DU)

DU occurs commonly in younger individuals and predominantly affects males in the duodenum; there may appear ulcers on both the anterior and posterior walls called "kissing ulcers". Patients with DU produce more acids, particularly at night [27-29].

#### Gastric Ulcers (GU)

GU is particularly common in older age groups especially in females. Although patients with GU have normal or even diminished acid production, ulcers rarely may occur even in complete absence of acid [27, 29].

#### Stress Ulcers (SU)

SU are ulcers of the stomach or duodenum that occurs in the context of a profound illness or trauma requiring intensive care. The etiology of stress related ulcers differs somewhat from that of other peptic ulcers involving acid and mucosal ischemia. [29]

#### NSAID induced ulcers

NSAIDs like aspirin and indomethacin are known to induce gastric ulceration Chronic NSAIDs users have 2%-4% risk of developing symptomatic ulcer, GI bleeding and/or perforation [30].

#### Recurrent oral ulceration

Recurrent painful fibrin-covered ulcers are a common and troublesome problem, particularly in childhood and in elderly. It may be associated with vitamin B group deficiencies, iron deficiency or various food allergies [27].

### Symptoms and Complications

Epigastric discomfort is the most common symptom of peptic ulcer disease [31] the patient perceives a gnawing and burning pain in the abdomen between the sternum and the navel. Duodenal ulcers are typically relieved by food intake while gastric ulcers are exacerbated by it. Epigastric pain is often accompanied with nausea, vomiting, loss of appetite, abdominal bloating and fullness. In case of bleeding ulcer the patient may suffer from weakness and tiredness. Complications associated with peptic ulcer are bleeding, perforation and obstruction [32] bleeding may result due to disruption of blood vessels in the lining of the gastrointestinal tract. Gastrointestinal bleeding may also cause vomiting of blood (hematemesis). Perforation is caused when peptic ulcer burrows completely through the stomach or duodenal wall. This can lead to spillage of stomach or intestinal content into the abdominal cavity. Peptic ulcer may even obstruct the passage of food in the gastrointestinal tract.

### Herbal Extracts For Anti Ulcer Activity

Chemical drugs such as Proton Pump Inhibitors (PPIs) and H<sub>2</sub> blockers used in the treatment of peptic ulcer produces side effects on long term use. Extensive research has been carried out in the area of treatment of ulcers through medicinal plants. The plant parts which are used for treating peptic ulcers were listed in table [1-9].

### Conclusion

Peptic Ulcer is one of the common diseases which trouble the human these days. The wide usage of synthetic drugs for many killer diseases these days were found to be one of the reasons for the gastric irritation and peptic ulcer. In this review the different types and the causes have been discussed. Even though the herbal extract were found to be beneficial in curing these problems the mechanism of action has not been understood clearly. This will give an insight to explore the possible mechanism of action and to develop an effective herbal drug for this common problem.

**Table 1. Extract from Arial plants**

Arial plants	Family	Chemical Constituents
<i>Alhagimaurosum</i> [32] (camelthorn)	Fabaceae	Potent flavonoids, kaempferol, chrysoeriol, isorhamnetin
<i>Bidens pilosa</i> L. var. <i>radiata</i> Schult. Bip. [33]	Asteraceae	Quercetin, Terpenes
<i>Commiphora opobalsamum</i> (L.) Engl. [34]	Burseraceae	Flavonoids, Saponins, volatile oil, sterol and/or Triterpenes
<i>Equisetum palustre</i> [35] L.	Equisetaceae	kaempferol-3- <i>O</i> -1''-d-glucopyranosyl-3- <i>O</i> 1'''-d-glucopyranoside
<i>Mouriri pusa</i> [36]	Melastomataceae	Flavonoids
<i>Solanum variabile</i> [37] (false "jurubeba")	Solanaceae	Saponins

**Table 2. Extract from barks**

Plants	Family	Chemical Constituents
<i>Amphipterygium adstringens</i> [38]	Julianaceae	Anacardic acids, Triterpenes: masticadienonic acid; 3 $\alpha$ hydroxymasticadienonic Acid; 3-epi-oleanolic; sterol $\beta$ -sitosterol.
<i>Anogeissus latifolia</i> [39]	Combretaceae	Gallic acid and Ellagic acid
<i>Aparisthmium cordatum</i> [40]	Euphorbiaceae	Furan diterpenoid, (Aparisthman)
<i>Croton cajucara</i> Benth[41]	Euphorbiaceae	sesquiterpenes
<i>Curatella americana</i> L [42].	Dilleneaceae	Oligomeric & polymeric proanthocyanidins
<i>Galipea longiflora</i> Krause[43]	Rutaceae	2-phenylquinoline
<i>Mimusops elengi</i> [44]	Sapotaceae	Taraxerol, taraxerone, ursolic acid, betulinic acid, $\alpha$ -spinosterol, $\beta$ -sitosterol glycoside, quercitol alkaloid isoretronecyl tiglate and mixture of triterpenoid Saponins.
<i>Pradosia huberi</i> [45]	Sapotaceae	Flavonoids, 2,3-dihydromyricetin 3- $\alpha$ -l-rhamnoside, astilbin, engelitin and 2,3-dihydromyricetin
<i>Pterocarpus santalinus</i> [46]	Fabaceae	Carbohydrates, Steroids, Anthocyanins, Saponins, Tannins, Phenols, Triterpenoids, Flavonoids, Glycosides and Glycerides.
<i>Qualea grandiflora</i> [47]	Vochysiaceae	Terpenes, Steroids, Saponins, Phenolic compounds and Tannins.
<i>Quassia amara</i> L[48]	Simaroubaceae	Quassinoids, Triterpenes.
<i>Terminalia arjuna</i> [49]	Combretaceae	Steroids, Triterpenoids, Phenols, Tannins, Flavonoids, Alkaloids and Glycosides
<i>Voacanga africana</i> [50]	Apocynaceae	voacangine, ibogamin, alkaloids

Table 3. Extract from Flowers

Plants (Flowers)	Family	Chemical Constituents
<i>Achyrocline satureoides</i> DC[51]	Asteraceae	Terpenoids & Flavonoids
<i>Centaurea solstitialis</i> L. ssp. <i>Solstitialis</i> [52]	Asteraceae	Guaianolide type sesquiterpene lactones; 13-acetyl solstitialin A, Solstitialin A and chlorojanerin.
<i>Cistus laurifolius</i> L[53]	Cistaceae	3-O-methylquercetin (1), 3,7-O-dimethylquercetin (2) and 3,7-O-dimethylkaempferol
<i>Senecio brasiliensis</i> [54]	Asteraceae	pyrrolizidine alkaloids
<i>Spartium junceum</i> [55]	Fabaceae	Five Flavonoid glycosides, luteolin 4'b-glucoside; quercetin 3, 4%-diglucoside; Azaleatin 3b-glucoside (quercetin 5-methylether 3b-glucoside), quercetin 4%b-glucoside.

Table 4. Extract from Fruits

Plants	Family	Chemical Constituents
<i>Amomum subulatum</i> Roxb[56]	Zingiberaceae	Protocatechualdehyde, protocatechuic acid
<i>Emblica officinalis</i> [57]	Phyllanthaceae	flavonoids, kaempferol, ellagic acid, gallic acid
<i>Citrus aurantium</i> [58]	Rutaceae	d-linalool and glucoside hesperidin
<i>Momordica charantia</i> L[59]	Cucurbitaceae	Momordicin I and II, and cucurbitacin B, glycosides, momorcharin
<i>Morinda citrifolia</i> [60]	Rubiaceae	Gamma amino butyric acid
<i>Solanum nigrum</i> (L.)[61]	Solanaceae	alpha, beta gamma chaconines, alpha, beta gamma solanines, Solanidine

Table 5. Extract from Leaves

Plants	Family	Chemical Constituents
<i>Allophylus serratus</i> [62]	Sapindaceae	Steroids, Pentacyclic Triterpenes, Alkaloids
<i>Bambusa arundinacea</i> [63]	Bambusaceae	Flavonoids, Glycosides, traces of Alkaloids and Phytosterols
<i>Eupatorium aschenbornianum</i> [64]	Asteraceae	Encecanescin
<i>Gynostemmapentaphyllum Makino</i> [65]	Cucurbitaceae	Saponins
<i>Jasminum grandiflorum</i> L[66]	Oleaceae	Alkaloids, Phenolics, Flavonoids, Saponins, Carotenoids, Carbohydrates and Glycosides
<i>Lantana camara</i> [67]	Verbenaceae	Alkaloids, Saponins, Glycosides, Carbohydrates, Tannins, Flavonoids, Steroids and Triterpenoids
<i>Maytenus robusta</i> [68]	Celastraceae	Flavonoids, Pentacyclic Triterpenes, sesquiterpenes, alkaloids
<i>Mikania laevigata</i> Schultz Bip[69]	Asteraceae	Coumarins, Terpenes and Organic acids
<i>Moringa oleifera</i> [70]	Moringaceae	pterygospermin, moringine, moringinine spirochin, behenic acid, moringic acid, niazinin A & B
<i>Smithia conferta</i> [71]	Leguminasae	Isoflavonoids, Alkaloids and Carbohydrates
<i>Solanum torvum</i> Swartz[72]	Solanaceae	Flavonoids, Sterols and Terpenoids

Table 6. Extract from Oleo gum resin

Plant	Family	Chemical Constituents
<i>Commiphora Molmol</i> [73]	Burseraceae	Volatile oils (up to 17%), resins (up to 40%), and gum (up to 60%). Terpenes, Esters, Sesquiterpenes, Cinnamaldehyde, m-cresol Cuminaldehyde, Cumic alcohol, Eugenol, Heerabolene, Limonene, Dipentene, Pinene

Table 7. Extract from Roots

Plants	Family	Chemical Constituents
<i>Asparagus racemosus</i> [74]	Liliaceae	Saponins
<i>Cyclea peltata</i> (Lam.) Hook. f. & Thoms.	Menispermaceae	Alkaloids, Phenolics and Coumarins
<i>Decalepishamiltonii</i> [75]	Asclepiadaceae	vanillin, salicylaldehyde, <i>p</i> -anisaldehyde, 2-hydroxy-4-methoxybenzaldehyde, bis-2,3,4,6-galloyl- $\alpha/\beta$ -dglucopyranoside, borneol, inositol, saponins, ketonic substances, Sterols, amyrins and lupeols.
<i>Kaempferia parviflora</i> [76]	Zingiberaceae	Alkaloids, Anthrones, Coumarins and Flavonoids.

Table 8. Extract from Seeds

Plants	Family	Chemical Constituents
<i>Anacardium occidentale</i> [77]	Anacardiaceae	Anacardic acids (AAs)
<i>Laurus nobilis</i> [78]	Lauraceae	phenolics and volatile Oils, cineol.
<i>Strychnos potatorum</i> [79]	Loganiaceae	Polysaccharides

Table 9. Extract from Woody

Plants	Family	Chemical Constituents
<i>Cedrus deodara</i> (Roxb.) Loud[80].	Pinaceae	Terpenoid, Phenolics, Alcohol, Aldehyde and Ketone

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