International Journal of Botany Studies
ISSN: 2455-541X
www.botanyjournals.com
Volume 1; Issue 2; February 2016; Page No. 19-23

Anti-ulcer plants present in west Godavari District of Andhra Pradesh, India: A short review

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Abstract
Ulcers are characterised by the sores in the intestinal tracts. Peptic ulcers are more prevalent in India and rest of the world. Plants are the natural inhibitors of various fatal diseases. The Phytochemicals present in the plants are very efficient in eliminating diseases. As the modern medicines have hazardous effects on the human systems the best source of drugs without adverse effects could be herbal sources. The present review aims at the some of the medicinal herbs such as *Ocimum sanctum*, *Azadirachta indica*, *Carica papaya*, *Mangifera indica*, *Ficus religiosa*, *Jasminum grandiflorum*, *Cucumis sativus*, *Cucumis melo*, *Musa paradisiaca* and *Zingiber officinale* present in the West Godavari district of Andhra Pradesh, India which have potent anti-ulcer activity and their photographs have also been given in this mini review.

Keywords: Peptic ulcers, Fatal, Phytochemicals, Sores.

Introduction

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]. Peptic ulcer is a sore on the lining of the gastrointestinal tract caused due to mucosal erosions [2]. The predominant causes of peptic ulcer are infection with the bacterium called *Helicobacter pylori* (*H. pylori*) and the use of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) such as aspirin and ibuprofen [3]. There are large number of synthetic drugs present in the market which shows anarchic toxicity. The use of phytoconstituents as drug therapy to treat major ailments has proved to be clinically effective and less relatively toxic than the existing drugs and also reduces the offensive factors serving as a tool in the prevention of peptic ulcer [4]. As the herbs have natural inhibiting potency various explorations are being conducted to find inhibitors. In most of the rural areas of India people prefer herbal medications because of apprehensions the people have on the modern medicines because of side effects [5]. The best source of drugs without hazardous effects to the human systems could be the plant sources and this has been proved by the traditional healing systems and the recent studies conducted on the experimental animals [6]. Medicinal plants gaining lot of importance now a days because of efficacy they have been showing in the traditional healing [7]. Herbs are the source of magnificent inhibitors that could act on wide variety of diseases. One of the great aspect of herbs is they show 100% results when comes to the healing. Herbs have all sorts of answers against various diseases [8]. The present review aims on the Medicinal plants which have potent anti-ulcer activity present in the West Godavari District of Andhra Pradesh, India. The plants such as Ocimum sanctum, Azadirachta indica, Carica papaya, Mangifera indica, Ficus religiosa, Jasminum grandiflorum, Cucumis sativus, Cucumis melo, Musa paradisiaca and Zingiber officinale are reviewed and photographed in this study.

Symptoms of Ulcers [9]

dull pain in the stomach
weight loss
not wanting to eat because of pain
nausea or vomiting
bloating
burping or acid reflux
heartburn (burning sensation in the chest)
pain improves when you eat, drink, or take antacids

Treatment for Ulcers [10]

Nonsurgical Treatment

1. H2 blockers: to prevent your stomach from making too much acid
2. proton pump inhibitors: blocks the cells that produce acid
3. over-the-counter antacids: to help neutralize stomach acid
4. cytoprotective agents: to protect the lining of the stomach and small intestine, such as Pepto-Bismol

Surgical Treatment

1. removal of the entire ulcer
2. taking tissue from another part of the intestines and sewing it over the ulcer site
3. tying off a bleeding artery
4. cutting off nerve supply to the stomach to reduce the production of stomach acid

Anti-Ulcer Plants Present In West Godavari District of Andhra Pradesh

***Ocimum sanctum* (Labiatae)**

The fixed oil of *Ocimumsanctum* was administered in the doses of 1.0, 2.0 and 3.0 ml/kg intraperitoneally, in the animal

in which ulcers is induced by different model like aspirin, indomethacin, alcohol, histamine, reserpine, serotonin and stress-induced ulceration. Fixed oil reduces the ulcer index in a dose dependent manner, both in aspirin-induced (500 mg/kg, p.o.) and in indomethacin- induced (20 mg/kg, p.o.) gastric lesions in rats. The fixed oil offered significant dose dependent protection against 50% ethanol-induced (5 ml/kg, p.o.) gastric ulceration in rats (at 1.0, 2.0 and 3.0 ml/kg, i.p.) as well as in histamine-induced (50 mg base, i.p.) gastric ulcer in guinea pigs at (3.0 ml/kg, p.o) [11].

Fig 1: *Ocimum sanctum* (Tulasi)

***Mangifera indica* (Anacardiaceae)**

Mangiferaindica flowers decoction was administered at the doses of 250, 500, 1000 mg/kg orally, in rats with gastric lesions induced by ethanol, decrease the gastric lesions in dose dependent manner. Pretreatment with aqueous decoction at the doses of (250, 500 and 1000 mg/kg) to mice with HCl/ethanol- or stress induced gastric lesions resulted in a dose-dependent significant decrease of lesion index [12].

Fig 2: *Mangifera indica* (Mamidi chettu)

***Ficus religiosa* (Moraceae)**

The hydroalcoholic extract leaves of *Ficus religiosa* were studied at two dose levels (250 mg/kg and500 mg/ kg, oral) in rats against absolute ethanol (0.2 ml, oral), aspirin (200 mg/kg) and pyloric ligation induced gastric ulcer. Ranitidine (50 mg/kg, oral), was used as standard drug. Administration of *Ficus religiosa* extracts to rats significantly decreases the ulcer index value when compared with controlled treated group [13].

Fig 3: *Ficus religiosa* (Raavi chettu)

***Jasminum grandiflorum* (Oleaceae)**

Antiulcerogenic activity of *Jasminum grandiflorum* leaf extract (JGLE) (100 and 200 mg/kg, b.w., orally) was evaluated employing aspirin + pylorus ligation (APL) and alcohol (AL) induced acute gastric ulcer models and ulcer-healing activity using acetic acid-induced (AC) chronic ulcer model in rats. Both the antisecretory and cytoprotection hypothesis were evaluated. There was a significant (P<0.01) dose-dependent decrease in the ulcerative lesion index produced by all the three models in rats as compared to the standard drug famotidine (20 mg/kg, b.w. orally). The reduction in gastric fluid volume, total acidity and an increase in the pH of the gastric fluid in APL rats proved the antisecretory activity of JGLE. Additionally, JGLE completely healed the ulcer within 20 days of treatment in AC model as evidenced by histopathological studies. Like antiulcer activity, the free radical scavenging activities of JGLE depends on concentration and increased with increasing amount of the extract. These results suggest that leaves of *Jasminum grandiflorum* possess potential antiulcer activity, which may be attributed to its antioxidant mechanism of action [14].

Fig 4: *Jasminum grandiflorum* (Malli)

***Azadirachta indica* (Meliaceae)**

Effects of *Azadirachta indica* extract (AIE) (500 mg/ kg) was studied on various parameters of offensive acid-pepsin secretion in 4 hr pylorus ligation, pentagastrin (PENTA, 5 µg/kg/hr)- stimulated acid secretion and gastric mucosal proton pump activity and defensive mucin secretion including life span of gastric mucosal cells in rats. AIE was found to inhibit acid-pepsin secretion in 4 hr pylorus ligated rats. Continuous infusion of PENTA significantly increased the

acid secretion after 30 to 180 min or in the total 3 hr acid secretion in rat stomach perfusate while, AIE pretreatment significantly decreased them. AIE inhibited the rat gastric mucosal proton pump activity and the effect was comparable with that of omeprazole (OMZ). Further, AIE did not show any effect on mucin secretion though it enhanced life span of mucosal cells as evidenced by a decrease in cell shedding in the gastric juice. This data suggest that the ulcer protective activity of AIE may be due to its anti-secretary and proton pump inhibitory activity rather than on defensive mucin secretion [15].

Fig 5: *Azadirachta indica* (Vepa)

***Cucumis sativus* (Cucurbitaceae)**

The ethanolic extract of *Cucumis sativus* used to evaluate the anti-ulcer activity in wistar albino rat model. Pretreatment with ethanolic extract cucumber shows significant ulcer protective effect. Thus, it can concluded that ethanolic extract of cucumber possesses significant antiulcer activity [16].

Fig 6: *Cucumis sativus* (Dosa kaya)

***Carica papaya* (Caricaceae)**

Gastro protective effects of aqueous *Carica papaya* seed extract on ethanol induced gastric ulcer were investigated in male rats. Thirty two (32) male rats weighing between 180 and 250 g were randomly divided into four groups. Group 1 served as the negative control (distilled water), groups 2 and 3 received 50mg/kg and 100mg/kg *Carica papaya* seed extract respectively, while group 4 received 200mg/kg cimetidine (positive control). Two weeks after the oral administration, gastric ulcer was induced in all rats with ethanol (1 ml of 80% orally). Gastric juice volume, gastric acidity, ulcer index and percentage ulcer inhibition were determined. The results showed that the extract protected the gastric mucosa against ethanol effect. *C. papaya* extract significantly reduced the gastric juice volume and gastric acidity ($p<0.05$) in dose dependent manner when compared with the control. The percentage ulcer inhibition was significantly high ($p<0.05$) in rats treated with the extract when compared with the control and the effect is similar to that of rats treated with cimetidine. This study shows that *C. papaya* seed extract may possess gastro protective effects against ethanol induced gastric ulcer in male rats [17].

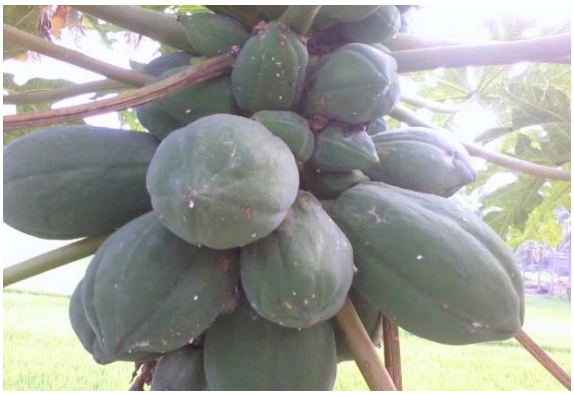

Fig 7: *Carica papaya* (Boppayi)

***Zingiber officinale* (Zingiberaceae)**

The gastro-protective effect of aqueous extract of *Zingiber officinale* was studied using the model of indomethacin-induced gastric damage and compared with omeprazole. *Zingiber officinale* (200mg/kg or 400mg/kg) or omeprazole (10mg/kg) were administered alone in separate group of rats. The percentage inhibition of gastric ulcers was 40.91%, 57.58% and 65.91% by ginger 200mg/kg and ginger 400mg/kg and omeprazole respectively. This shows that ginger root extract significantly inhibited the gastric damage induced by indomethacin and its efficacy as a gastro-protective agent was comparable to that of omeprazole. Ginger root showed significant antiulcerogenic activity in the model studied, it can be a promising gastro-protective agent [18].

Fig 8: *Zingiber officinale* (Allamu)

***Cucumis melo* (Cucurbitaceae)**

Gill *et al* (2011) used methanolic extract of *Cucumis melo* seeds for antiulceric property against pyloric ligation, stress and NSAIDs indiced ulcers in various animal models. The result confirmed significant antiulcer activity. The activity was due to its high antioxidant activity [19].

Fig 9: *Cucumis melo* (Karbooza)

***Musa paradisiaca* (Musaceae)**

The antiulcer poential of ethanolic extract of *Musa paradisiaca* leaves was evaluated by ethanol induced ulcer models. Effect of administration of ethanol extract of *Musa paradisiaca* leaves at adose of 100 mg/kg b.w. was given by oral route. Ethanol extract of *Musa paradisiaca* reduced the gastric content, total acidity, ulcer index and increase in p^H of gastric pylorus ligation ulcer model [20].

Fig 10: *Musa paradisiaca* (Arati)

Conclusion

Herbs are the exemplary source of natural phyto inhibitors that have effect on various diseases. In Traditional healing practices the medicinal herbs have been showing wonderful results. Now it is time for the scientific community to prepare drugs consisting of natural phyto inhibitors that could completely cure the Ulcers.

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