IJPSR (2020), Volume 11, Issue 11 (Review Article)

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH

Received on 13 January 2020; received in revised form, 29 September 2020; accepted, 19 October 2020; published 01 November 2020

A REVIEW OF SOME MEDICINAL PLANTS ON THEIR ANTIULCER AND ULCER HEALING POTENTIAL

Bushra Chaudhary, Monika Singh Saxena *, Shalini Sharma, Bushra Ansari and Mohseen

Sunderdeep Pharmacy College, Ghaziabad - 201002, Uttar Pradesh, India.

Keywords:

Antiulcer, Glutathione, Antacid, Malondialdehydes, Myeloperoxidase

Correspondence to Author:
Monika Singh Saxena

Assistant Professor,
Sunderdeep Pharmacy College,
Ghaziabad - 201002, Uttar Pradesh, India.

E-mail: monika.singh2423@gmail.com

ABSTRACT: The imbalance between aggressive (pepsin, Hydrochloric acid) and protective elements (bicarbonate and mucosa) in the inner lining of the stomach lead to the formation of peptic ulcers. The presence of Body fluids, mucosal hydrophobicity, fast epithelial cell recharging, and rich mucosal blood flow is involved in mucosal protection of the Stomach. Prostaglandins E2 and I2 are the predominant prostaglandins which synthesized by the gastric mucosa and known to hinder the emission of gastric acid and stimulate the discharge of body fluid and bicarbonate. The treatment of peptic ulcers can either be achieved with declination in aggressive elements or elevation of mucosal resistance in the stomach and duodenum with cytoprotective agents. In this review, 30 herbal medicinal plants have been discussed along with its respective extracts; these are *Bauhinea veriegata, Euphorbia umbellata, Azadirachta indica, Centella asiatica, Indigo feratinctoria, Mangofera indica, Moringa oleifera, Mimosa pudica, Aegle marmelos, Lawsonia inermis, Tephrosia purpuria, Plantago lanceolata, Solanum nigrum, Annonas quamosa, Ocimum sanctum, Morus alba, Pinusrox burghi, Allium sativum, Hibiscus cannabinus, Emblica officinalis, Curcuma longa, Zingiber officinale, Withania somnifera, Terminalia arjuna, Asparagus racemosus, Sesbania grandiflora, Ficus religiosa, Spondias mombin, Aerva persica* and *Feronia elephant.* Reduction in raised Glutathione (GSH), Malondialdehyde (MDA), Myeloperoxidase (MPO), Lipid Peroxidation (LPO), Total acidity are some of the mechanisms of action of these medicinal plant observed in indomethacin, pylorus ligation, ethanol, aspirin-induced *in-vivo,* and *in-vitro* models. Accordingly, this review provides numerous evidences that show these medicinal plants can be used for the treatment and prevention of ulcer and the related problems.

INTRODUCTION: Peptic Ulcer is typically an erosion phenomenon of the gastrointestinal system, which distresses innumerable people upsetting their everyday schedules and causes mental desolation. It is generally found in the individuals who keeps themselves in stress and ends up by adding peptic ulcer as their ailment [1].

QUICK RESPONSE CODE

DOI: 10.13040/IJPSR.0975-8232.11(11).5308-21

This article can be accessed online on www.ijpsr.com

DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.11(11).5308-21

A peptic ulcer can be described by aggravated injuries or excavations of the mucosa that protects the gastrointestinal tract from having such injuries to the gastric tissues [2]. Prostaglandins E1 and E2 are the predominant prostaglandins synthesized by the gastric mucosa and are known to hinder the emission of gastric acid and stimulate the release of protective body fluid and bicarbonate. The treatment of peptic ulcers can either be achieved with declination in aggressive elements or elevation of mucosal resistance of stomach and duodenum with cytoprotective agents [3, 4].

Peptic ulcers (PU) are sore or injuries in the gastrointestinal mucosa extending all through the

muscularis mucosae, normally characterized by various phases of necrosis, neutrophil infiltration, blood flow decrease, expanded oxidative pressure and inflammation. PU can be categorized as a non-deadly sickness, symptomize by occasional epigastric pain, which is regularly soothed on the administration of a soluble base [5, 6].

Various synthetic drugs are used for the treatment of peptic ulcers for most of the parts of stomach depending upon stomach-settling characteristics. Anticholinergics, proton pump inhibitors and H2 - receptor antagonist are some of the categories of the drugs for peptic ulcers. In many cases, these medications are costly and are probably going to create progressive reactions. The significant drawback of these medications are unnecessary erectile dysfunction, cardiac arrhythmia hematological disorders, and many more. Subsequently, there is an urgent need to formulate a promising elective treatment regimen that corrects the source of gastric ulcers. One of the promising regimens to fulfill the said objective is plant extract [7].

Since time immemorial, natural products have been used by humans, like animals, plants,marine organisms and numerous microorganisms, in different medicines in order to improve the treatment of diseases. However, as per the fossil records, use of plants as medicines by the human may be recordedin the past for about 60,000 years [8]. Nevertheless, the traditional medical systems (TMS) for centuries were the major medical system in the countries where it originated [9]. In recent times, according to WHO classification, the herbal medicines were classified into four different classes according to their evolution, origin, and dosage forms of current usage.

- Herbal medicines in systems
- Indigenous herbal medicines
- Modified herbal medicines

- Imported products with a base of herbal medicine [10]. According to the World Health Organization (WHO, 1977) “A medicinal plant” can be defined as any plant, in which more than one of itsorgan contains substances which can be used for the therapeutic purposes or which, are precursors for the synthesis of useful drugs [11].

Individual Drugs:

1. *Euphorbia umbellata:* *Euphorbia umbellata* (leitosinha), Due to its unique pain-relieving and anti-inflammatory properties this drug is used to treat gastric problems in southern Brazilian society. A portion of its activities may be identified by the presences of phenolic compound that have been reported in this. The crude hydro-ethanolic extract of the bark of *E. umbellata* indicated high anti-oxidant action and anti-inflammatory properties. Effects on carrageenan-instigated rat paw edema, which is most likely to be caused by the presence of the phenolic compound.

Anti-ulcer activity was performed by utilizing ethanol and indomethacin models with various MF focuses (50, 100, or 200 mg/Kg). The stomachs of the animal were sent for histological evaluation, and to assess the ABTS þ radical capture. The 200 mg/Kg b.w dose was calculated to break down the mechanism engaged in hostile to ulcerogenic properties of the methanolic part. Prostaglandins, nitric oxide/cyclic guanosine monophosphate pathway, and inclusion of the protein segments of the glutathione complex are the portion of the components related with this potential anti-ulcer activity.The histological examination of the stomachs of the animal indicated that the methanolic fractions like the local action of offensive agents [12, 13].

2. *Allium sativum:* Garlic, known as *Allium Sativum,* is a natural plant from the family Liliaceace. The history of garlic would suggest it to be a home drug. Garlic is widely used in various societies as a condiment. Since the very beginning garlic was utilized for the treatment of many diseases like hypertension and has anti-hypercholesterolemia, and cancer preventive properties. Garlic extract showed the cancer-preventive properties and is required for keeping up the gastric mucosa homeostasis. Along with these actions, it is found to keep the necessary harmony between forceful and protective factors in the stomach. Garlic concentrate can be utilized for the prophylactic treatment in patients who tend to develop gastric ulceration. In spite of the fact that omeprazole was better option than garlic however

it removes and restore the gastro defensive parameter [14].

3. *Hibiscus cannabinus:* *Hibiscus cannabinus* is a warm-season yearly fiber crop which was developed in Asia for economic purposes in the country like China, India, Malaysia, and Thailand. Numerous evidence concentrate the world for the use of *H. cannabinus* stems for papermaking and pulping as it is a great cellulose fiber source. Despite of the fact that *H. cannabinus* seed is high in oil content ranging from 21.4% to 26.4% the potential for utilizing *H. cannabinus* seeds for the production of palatable oil is overlooked.

The defensive activity of HCSE against indomethacin prompted gastric injuries may be because of 5-lipoxygenase inhibitory impact. In addition to this it might have invigorated prostaglandin emission or produce prostaglandins like substances to secure the stomach [15].

4. *Emblica officinalis:* The organic product *Emblica officinalis (Euphorbiaceae*), Emblic Myrobalan privately known as Amla or Amlaj is one of the significant herbal drug utilized in Unani and Ayurvedic frameworks of medication. It is used both as a medication and as a tonic to develop lost essentialness and force.

In Unani medication, it is depicted as a tonic for heart and cerebrum. The products of (Amla) are utilized in numerous restorative arrangements of Ayurvedic and Unani frameworks of medication. The organic products are bitter, cool, and diuretic in nature. They are valuable in discharge of protective agents and to create looseness in bowel and diarrhoea.

An ethanol extract of 'Amla' *Emblica officinalis* Gaertn was inspected for its antisecretory and antiulcer exercise utilizing diverse exploratory models. Oral administration of Amla extract at portions 250 mg/kg and 500 mg/kg fundamentally repressed the improvement of gastric injuries in all test models utilized. It additionally caused critical decline in the pyloric-ligation actuated basal gastric discharge, titratable sharpness and gastric mucosal damage. Additionally, Amla extract offer security against ethanol-incited exhaustion of stomach divider body fluid and decrease in non-protein sulfhydryl concentration[16, 17, 18].

5. *Curcuma longa:* *Curcuma longa* is generally utilized in Asia as a colouring agent and tastemaker since ages. In the present examination, it was assessed that the gastroprotective action of turmeric basic oil, extracted as TEO, restrained ulcer by 84.7%. Decreased cell reinforcement compounds, for example, GPx, SOD, catalase, and GSH delivered by liquor organization, were altogether ($p<0.001$) increased by a concurrent organization of TEO. However, TEO could diminish the gastric ulcer in rodent stomach as observed from the ulcer list and histopathology of the stomach [19].

6. *Zingiber officianale:* *Zingiber officianale* is widely exploited as customary prescription and for nourishment fixings. In the present investigation, we have assessed the gastroprotective action of turmeric fundamental oil. It has been found that GEO restrained ulcer by 85.1%, individually, as observed from the ulcer file. Diminished cancer prevention agent chemicals, for example, GPx, SOD, catalase, and GSH created by liquor organization were essentially ($p<0.001$) increased by a concurrent organization of GEO. GEO could lessen the gastric ulcer in rodent stomach as observed from the ulcer file and histopathology of the stomach [20, 21].

7. *Terminalia arjuna:* *Terminalia arjuna* (Combretaceae) is a deciduous tree found throughout in India which grows up to a height of 60–90 feet's. The thick, white to pinkish-grey bark is being used in India's native ayurvedic medicine since more than three centuries, most often as a cardiac tonic. *Terminalia arjuna* Wight and Arnott, known locally as Kumbuk, commonly as Arjuna, is indigenous to India and Bangladesh and has been used in the Indian System of Medicine (ISM) since 3000 years.

The gastric ulcer defensive movement of *Terminalia arjuna* may be ascribed to its constituent triterpenoid saponins, flavonoids, polyphenols, proanthocyanidins and tannins. A few natural medications and ayurvedic arrangements, including saponin glycosides have been appeared to ensure remedy for mucosal damage. Its flavonoids have demonstrated antiulcer properties in various test models. Proanthocyanidins and polyphenols have free radical searching properties. Tannins have antiulcer and anti lipidperoxidant activities [22, 23].

8. *Withania somnifera:* This is generally viewed as one of the restorative plants, which is prevalently known as Ashwagandha. It is used in Ayurveda and other Indian framework of medication. Ashwagandha contains steroidal alkaloids and lactones, which together are known as "withanoilides". *Withania somnifera* root removes the standard medication, ranitidine, in different models of gastric ulcer.

After-effects of *W. somnifera* methanolic extract (100 mg/kg bw/day p.o.) when given orally for 15 days, decreased the ulcer, volume of gastric emission, free acidity, and complete corrosiveness. A critical increment in the overall sugar and absolute starch/protein proportions was watched. Concentrate additionally demonstrated an expansion in cell reinforcement safeguard that is chemical superoxide dismutase, catalase, and ascorbic corrosive, expanded fundamentally, though a huge lessening in lipid peroxidation [24, 25].

9. *Asparagus racemosus:* *Asparagus racemosus* belonging to the family Liliaceae and is commonly known as Satawar, Satamuli, Satavari, found at low altitudes throughout India. *A. racemosus* is native to Sri Lanka, India, preferably on the Himalayas. It grows up to a height of one to two meters and flourishes in gravelly, rough soils high up in piedmont fields. The dried underlying foundations of the plant are utilized as medication. The roots are said to be tonic, diuretic, and galactagogue. The medication has ulcer healing impact likely to occur by strengthening the mucosal production or cytoprotection.

Asparagus racemosus root extract with standard medication, ranitidine, in different models of gastric ulcer. Consequences of *A. racemosus* methanolic (100 mg/kg bw/day p.o.) when given orally for 15 days altogether diminished the ulcer file, volume of gastric discharge, free acidity, and all-out acidity. A significant increment in the total content of starch and complete sugar/protein proportion was likewise watched. Concentrate additionally demonstrated an expansion in cancer prevention agent resistance, that is, chemicals superoxide dismutase, catalase, and ascorbic acid, expanded fundamentally, though increased significantly in lipid peroxidation was watched [26].

10. *Tephrosia purpurea:* In Ayurvedic writing, *Tephrosia purpurea* is the name given to 'Sarwawranvishapaha', which implies that it has the property to fix all kind of wounds. Since gastric and duodenal ulcers are inward injuries, we have examined the antiulcer capability of this plant on various models of gastric and duodenal ulcers.

AETP was managed in the portion of 1 to 20 mg/kg orally 30 min before ulcer enlistment. *Tephrosia purpurea* may be associated with this activity as flavonoids have been reported for to have anti-ulcer movement in different trial models of gastric and duodenal ulceration. The defensive impact of AETP which maybe because of the reinforcing of duodenal mucosa or by different components like expanded gastric and duodenal basic emission or by increased luminal prostaglandin levels [27, 28, 29].

11. *Centella asiatica:* *Centella asiatica* (Linn) is an ethno therapeutic plant utilized in various nations by assorted antiquated societies and trial group. It is one of the common herbs professed to have different physiological impacts as it involves a significant place in the indigenous arrangement of medication as a tonic in skin maladies and sickness. Various utilizes guaranteed for the plant, the more typical being its utilization is for wound recuperating memory improvement, treatment of mental weariness, bronchitis, asthma, dysentery, kidney inconvenience, urethritis, hypersensitivity, leucorrhoea, and lethal fever.

Additionally, the leveling of the mucosal folds watched as it proposes the gastroprotective impact of *C. asiatica*, and the effect may be because of abatement in gastric motility. The adjustments in the gastric motility can be assumed to have a job in the improvement and counteractive action of exploratory gastric sores. Smoothing of the folds may secure the gastric mucosa by unwinding of round muscles. It was demonstrated that the decrease in ulcer zones in the gastric divider similar to the decrease or restraint of edema and leucocytes penetration of sub-mucosal layers, and an assurance was most noticeable at a portion of 400 mg/kg leaf separate [30].

12. *Bauhinia variegata:* *Bauhinia variegata* Linn (Caesalpiniaceae) develops as a medium raised, a deciduous tree found all over India. It is found to be dynamic in antibacterial and antifungal role. The phytochemical contemplates uncovers the presence

of 5-7 dimethoxy and dihydroxyflavononerhamno-pyranosy l-β-D glucopyranosides, lupeol, β-sitosterol and quercetin. The investigation is seen to establish importance in postulating that delayed use to manufactured anti-ulcer drugs prompts antagonistic medication response, consequently enables to look for new anti-ulcer agent specialist that hold restorative adequacy and are devoid of medication response. The control animal had ulcers and hemorrhagic streaks, though in animals directed with the alcoholic extract of *B. variegata* there was a significance decrease in ulcer record ($P<0.001$). It is commonly acknowledged that gastric ulcers result from and imbalance between aggressive elements and the maintenance of the mucosal integrity through the endogenous defense mechanism [31, 32, 33].

13. *Indigofera tinctoria:* *Indigofera tinctoria* is a crosswise growing leguminous plant that is far-reaching covers tropical areas around the world. As it is being cultivated and is said to be exceptionally esteemed for quite a long time and is designated as the primary wellspring of indigo color, prompting its common name as 'true indigo' and 'common indigo'. Medicinal uses include employing juice of the leaves for the prophylaxis against hydrophobia, decoction for Blennorrhagia, plant extract for treatment for epilepsy, nervous disorders, bronchitis, and as an ointment for sores, old ulcers, and hemorrhoids; and roots for hepatitis, scorpion nibbles, and urinary grievances

The bioactivity-guided phytochemical screening of EEIT uncovered the presence of flavonoids, tannins, saponin, and terpenoids, which might be liable for the counter ulcer impact in the volume of acid secretion; however, the total corrosiveness, ulcer score, and ulcer record was decrease and pH of the gastric juice was increased. The impacts of ethanol extract of *I. tinctoria* on corrosive parameters show significant ($p<0.01$ and $p<0.05$) impact at 125, 250 mg/kg dosages. Ethanol extract of EEIT at 250 mg/kg decrease the gastric volume 0.76±0.25, total acidity 30.67±6.43, ulcer score 2.33±0.76, ulcer list 0.14±0.025, and increase the gastric pH 2.83±0.59 [34, 35].

14. *Mangifera indica:* *Mangifera indica* (Family: Anacardiaceae) is extensively used in Ayurvedic and indigenous medicinal systems for the treatment of different disease, including gastric ulcers. *Mangifera indica* L. (Anacardiaceae) is one of the most significant tropical plants. Globally some portion of this plant is advantageous in all systems of medicine. Seed part of this plant contributed to around 17-22% of the natural product while the rest is disposed of as waste. The seed is wealthy in phenolic mixes and stable fat rich in saturated fatty acids. Generally, M. indica seed part (MISK) is seen to fix the bowels' interminable looseness, wound healing, removal of tapeworms, and other different worms.

MISK ethanolic extract altogether decreased the mean ulcer score. It was expected that the secretory effect of MISK, which essentially lessens the arrangement of ulcers, is likely to increase the pH, decrease the acidity of the stomach and furthermore it decrease the protein content in ulcer-affected animal. Phytochemical constituents of the MISK ethanolic extract removes were exceptionally liable for decrease impacts of acid alcohol by preventing pole cell movement and standardize the H2 secretion in the stomach. Tannins, flavonoids were liable for antiulcer movement and for free radicals searching components, respectively [36, 37].

15. *Mimosa pudica:* *Mimosa pudica* (Fabaceae) known as ChueMue, is a heavy straggling prostrate shrubby plant with the compound leaves, which gets delicate on contact. Morphologically, it is characterized by spinous stipules, and globose pinkish flower heads develop as weed in practically all part of the country. The plant contains turgorins. The leaves and roots are utilized in the treatment of piles and fistula. The glue of leaves is applied to hydrocele. In Ayurvedic and Unani arrangement of medication, this plant is being used for reduction arising from undermined blood and bile, nauseous fever, heaps, jaundice, disease, ulcers, and smallpox. These plants are found to possess polyphenolic constituents like flavonoids, Quercetin, Naringin, Saponins, glycosides, tannins, gums, and adhesives. The *Mimosa pudica* plant has been chosen for investigating the anti-ulcer study.

The anti-ulcer movement of the plant of *Mimosa pudica* was assessed by utilizing aspirin, alcohol, and pylorus ligation ulcer models. These models are probably the most widely recognized reasons for gastric ulcers in people. It may factor and

implicate in the ulcerogenesis and gastric mucosal harm actuated by various models utilized in the present study including, consumption of gastric divider, mucin mucosal harm instigated by non-steroidal anti-inflammatory medications and free radical generation animal treated with *Mimosa pudica* removes altogether repressed the development of pylorus ulcer in the stomach and decrease both acid fixation, gastric volume and increased the pH value [38].

16. *Ocimum Sanctum*: The plant Tulsi or Holy Basil (Botanical name *Ocimum Sanctum Linn.)* has a place in the family Lamiaceae. It is a tropical plant that develops as weed. Tulsi is revered by Hindus and has a significant image in the Hindu religion. In the Ayurvedic system of medicine various parts (leaves, stem, bloom, root, seeds, and even entire plant) of *Ocimum sanctum* Linn. have been suggested for the treatment of bronchitis, jungle fever, looseness of the bowels, diarrhea, skin disease, joint pain, eye sicknesses, *etc*. The *Ocimum sanctum* Linn. has additionally been proposed to have anticancer, anti-diabetic, antifungal, antimicrobial, cardioprotective, pain-relieving, antispasmodic and adaptogenic activities.

The extract of *Ocimum sanctum*, at the dose of 100mg/kg a 200 mg/kg per oral, showed a protective effect against gastric ulceration. The *Ocimum sanctum* showed critical antiulcer movement by upgrading the cancer prevention capability of gastric mucosa by and reduces mucosal harm. Plant extracts are utilized to inhibit gastric acid secretion or to stimulate the mucosal defense mechanism. The mucosal resistance mechanism is achieved by induction of the body fluid, creating a shield securing the surface of epithelial cells, or by interfering with the PG synthesis [39].

17. *Morus alba*: *Morus alba* L. (mulberry) is a non-toxic characteristic therapeutic specialist belonging to family of Moraceae. The entire plant of *M. alba* L. has different therapeutic qualities. Due of its mitigating properties in hypoglycemia, hypolipidemia, and cell reinforcement jobs, the root, bark, leaves, and products of Morus alba has traditional medicinal use in Asian countries . A few studies have indicated that *Morusalba* has neuroprotective, antiphlogistic, liver and kidney defensive, hypotensive, diuretic, anticough, and pain-relieving impact too.

M. alba extract fundamentally decreases the gastric mucosal damage by stamping a decrease in the leucocytes penetration into the submucosal layer. The cytoprotective effect was observed by a decrease in the perceptibly and small-scale scopically noticeable sores. Oral dose of plant extract before ethanol administration all together decreased neutrophil infiltration of gastric mucosa. The anti-ulcer mechanism of gastric mucosa might be due to strengthening activity on gastric mucosal covering and the suppression of harming impacts of free radicals. Ulcer protective effect of *Morus alba* extract on gastric mucosal harm and that the gastroprotective activity of this plant may be because of its anti-inflammatory and cancer prevention agent properties [40, 41].

18. *Aegle marmelos*: The *Aegle marmelos* or Bael is a holy plant and it's all parts are valuable. Itis generally seen that if one piece of any plant show any pharmacological effect, at this point it is significant that the other part give the equivalent or related activity. *Aegle marmelos* is a moderate developing sharp medium size tree of height around 12 to 15 meters with short trunk, thick, delicate, flaking bark, and the lower ones dropping.

The anti-ulcer impact is established by the potential connection between security of mucosal damage, inhibition of the acid secretion and the antioxidant nature of *A. marmelos* extract. *A. marmelos* extract are utilized to repress the gastric acid secretion or to support the mucosal barrier instruments by expanding mucosal assurance, balancing out the surface epithelial cells or interfering with the prostaglandin synthesis. The *Aegle marmelos* leaves extract fundamentally reduce the complete acidity, this recommends tobe having anti-secretory effects [42, 43, 44].

19. *Lawsonia inermis:* This plant is multi spread, deciduous sharp, and little having a height of about 2.6 m. Leaves of this plant are 1.3-3.2cm broad and elliptic-lanceolate shape. Flowers are white or rose color, which are utilized as a fragrant agent in local scent. This plant is mostly present in subtropical and tropical zones and is utilized throughout the world. The basic name of *L. inermis* is Henna and

Mehndi. Its coloring properties are widely used in cosmetics since 9000 years in Asian nations like India and Pakistan. Plant leaves are applied to hands, hairs and feet.

The treatment and counteractive action of the acid-related issue are practiced either by decreasing the degree of gastric acidity or by improving mucosal assurance. It is hypothesized that henna helps in healing the mucosal sores. This recommends the parts present in the extract must be suppressing gastric harm. Leaves extract of *L. inermis* altogether decrease the gastric volume, total acidity, free acidity, and ulcer list [45, 46].

20. *Plantago lanceolata:* *Plantago* is the most significant class of the Plantaginaceae family and is utilized in customary medication around the globe for various purposes. *Plantago lanceolata* L. is a locally utilized species in Turkish customary prescription. *P. lanceolata* has been utilized for irritation, cell recovery, and ulcers, and was shown to have antimicrobial and nematicidal activities. The utilization of the plant against an ulcer in Ethiopia, individual communication with traditional healers indicated that the plant can be utilized for ulcer treatment.

P. lanceolata 400 demonstrated an intriguing movement as confirmed by the significant decrease in the ulcer score. It showed that reduced ulcer record (proportion of the ulcer zone), ulcer score (proportion of depth of ulcer) stayed unaltered, indicating the reality that *P. lanceolata* 200 mg/kg was not a sufficient dose for treatment of PUD. The decrement in principle parameters, including ulcer region and ulcer record, saw with the larger dose of the leaf extract. The aqueous extract of fresh leaves of *P. lanceolata* demonstrated a superior movement [47].

21. *Cerdus deodara:* *Cedrus deodara* (Pinaceae.) Loud, usually called deodar, is a type of cedar local towards the Western Himalayas in Eastern Afghanistan, Northern Pakistan, North-Central India, South-Western Tibet, and Western Nepal. The synthetic constituents acquired from various pieces of plant include wikstromal, matairesinol, dibenzylbutyrolactol, berating, isopimpillin, lignans 1, 4 diaryl butane. It is glorious and attractive tree that develops to an extraordinary stature and wide size and lives to an incredible age. It is a pyramidal shape tree having delicate greyish green (or blue) needles and drooping branches, develop quickly to 40-50 feet tall and 20-30 feet wide. It is the most seasoned tree of age, about 745 years with 900 rings.

Cedrus deodara decreased the gastric substance, total acidity, and free acidity. The finding implies that the *Cedrus deodara* increases the gastric pH and decreases the gastric volume, complete acidity, and free acidity; hence recommends that antisecretory activity is likely to be credited for its anti-gastric ulcer effects. The chloroform extract of *Cedrus deodara* likewise fundamentally decreased the number of ulcers, ulcer score, and ulcer file at a dose of 100 mg/kg. The ulcer inhibition was seen as 60.44% at a dose of 100 mg/kg [48, 49].

22. *Azadirachta indicia:* *Azadirachta indica* (A. Juss), called Arishta in Sanskrit, is an evergreen tree found in many parts of India. The Ayurvedic experts in India have been utilizing the tree in curing illnesses like peptic ulcers disease, fever, asthma, epistaxis, intestinal worms, piles, diabetes, urinary tract contaminations, scabies, ringworm, and spermatorrhoea. Advanced research has prompted the approval of a large portion of these folkloric claims. The bark, leaves, and seeds of *A. indica* have risen to a valuable source for new bioactive compounds due to its pleiotropic pharmacological exercises. The leaves explicitly have proven their value by their immuno-modulatory, anti-inflammatory, antihyperglycemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, cancer preventive, antimutagenic, and anticarcinogenic properties.

The AE in a dose of 150, 300, and 600 mg/kg b.w. caused a significant ($p < 0.05$) and dose-dependent decline in the UI along with an expansion in the PI compared with the control group in each of the 3 models utilized in the investigation. There was a significant raise in the pH with a decrease in the volume of gastric substance, free acidity, and total acidity. The antisecretory movement could be due to the inhibition of the H^+ - K^+ - ATPase protein. The leaves of *A. indica* have antiulcer movement and possibly act by means of numerous systems, including inhibition of the histamine-2 receptors H^+ - K^+ - ATPase, prostaglandin regulation, or antioxidation [50, 51].

TABLE 1: LIST OF HERBAL DRUGS AND THEIR MODEL SUMMARY

S. no.	Botanical Name/Family	Common Name	Extract/dose	Standard dose	Model	Parameter	Animal
1	*Bauhinia variegata* (Caesalpiniaceae)	Kachnar	Alcoholic 200mg/kg b.w 400mg/kg b.w	ranitidine 20mg/kg b.w	aspirin-induced ulcer rat	Percentage of protection of ulcer, ulcer index	Albino male Wistar rats n=6
2	*Euphorbia umbellata* (Euphorbiaceae)	Synadenium umbellatum	ethanol / 10mg/kg b.w	ranitidine 100 mg/ Kg b.w	Ethanol-induced gastric lesions	Histological study/Urease inhibition, total phenolic content determination	Female Wistar rat n=7
3	*Azadirachta indica* (meliaceae)	Neem	aqueous 150mg/kg b.w 300 mg/kg b.w 600 mg/kg b.w	Ranitidine 20 mg/kg b.w	Pylorus ligation induced ulcer model	Estimation of total acid output/ Estimation of pepsin activity	Male Wistar rat n=6
4	*Centella asiatica* (Apiaceae)	Gotu kola,	ethanol 5 ml/kg b.w	Omeprazole 5 ml/kg b.w	Gastric ulcer induction	Ulcer index	S.D n=6
5	*Indigofera tinctoria* (Fabaceae)	Black henna	ethanolic 125mg/kg b.w 251 mg/kg b.w	Famotidine 30mg/kg b.w	Pylorus ligation induced ulcer model	Total acidity, ulcer score, gastric pH , gastric volume, ulcer index	S.D n=6
6	*Mangifera indica* (anacardiaceae)	Mango	Ethanolic 200mg/kg b.w 400 mg/kg b.w	Ranitidine 32mg/kg b.w	Acid alcohol induced ulcer /Ethanol Induced Ulcer Model	Evaluation of pH , Evaluation of gastric acidity, Ulcer scoring	female albino rats n=6
7	*Moringa olefera* (Moringaceae)	Drumstick tree	Aqueous extract 200mg/kg b.w	Ranitidine 10mg/kg b.w	aspirin induced peptic ulcer	Determination of ulcer index, mucosal thickness, free mucin content, Evaluation and staining of EC cell, (S.O.D), (L.P.O)	Swiss Albino mice n=10
8	*Mimosa pudica* (Fabaceae)	Humble plant/chui-mui	methanolic, chloroform 100mg/kg b.w 200mg/kg b.w	Ranitidine 20mg/kg b.w	pylorus ligation induced ulcer model	Determination of ulcer index, Total acidity	S.E.M n=6
9	*Tephrosia purpuria* (Fabaceae)	Sarphanka	aqueous 5mg/kg b.w 10mg/kg b.w	Omeprazole 8mg/kg b.w	Pyloric ligation metho method	Estimation of pepsin activity, Estimation of total acid output, Ulcer Index	albino rats n=6
10	*Lawsonia inermis* (Lythraceae)	Henna plant /mehendi	Ethanol, chloroform 200mg/kg b.w 400mg/kg b.w	Ranitidine 50mg/kg b.w	Pyloric ligation method	Ulcer Index	Swiss albino rats n=6
11	*Plantago lanceolata* (Plantaginaceae)	Isabgol	aqueous 200mg/kg b.w 400mg/kg b.w	Ranitidine 70 mg/kg b.w	Pyloric ligation method	Determination of mucin content, Ulcer Index	Swiss albino rats n=6
12	*Solanum nigrum* (Solanaceae)	Black berry	Methanolic 200mg/kg b.w 400mg/kg b.w	Omeprazole 10mg/kg b.w	pylorus ligation induced ulcer model	Histological examination, Gastric measurement	Male albino rats n=6
13	*Annona squamosa* (Annonaceae)	Sugar apple	Aquous 200mg/kg b.w 400mg/kg b.w	Omeprazole, 175mg/kg b.w	indomethacin Induced ulcer method	Ulcer Index	Swiss albino rats n=6
14	*Ocimum sanctum* (Lamiaceae)	Tulsi	aqueous 100mg/kg b.w 200mg/kg b.w	Omeprazole 10mg/kg b.w	Ethanol induced gastric ulcer	Ulcer index	Wistar rat n=6

15	*Morus alba* (moraceae)	Mulberry	Ethanolic 250mg/kg b.w 500mg/kg b.w	Omeprazole 20 mg/kg b.w	ethanol-induced	Macroscopic examination, Histological examination	Sprague Dawley n=6
16	*Pinusrox burghi* (Pinaceae)	Chir	alcoholic 50mg/kg b.w 100mg/kg b.w	Famotidine 20 mg/kg b.w	pylorus ligation induced ulceration in rats	pH of gastric content, Ulcer Index	Wistar rats n=7
17	*Allium sativum* (Amaryllidaceae)	Garlic	Aged garlic extract	omeprazole 5 mg/kg b.w	Indomethacin induced ulcer	GSH, MDA, ulcer index	Male albino rat n=8
18	*Hibiscus cannabinus* (Malvaceae)	Indian hemp/kenaf	Hexane extracts	omeprazole 30 mg/kg b.w	Cold-Restraint Stress Induced Ulcer	Measurement of Ulcer index	S.D n=5
19	*Emblica officinalis* (Phyllanthaceae)	Amla	Ethanolic 250mg/kg b.w 500mg/kg b.w	Sodium hydroxide 30mg/kg b.w	Indomethacin induced ulcer	Estimation of non-protein sulfhydry (NP-SH) group Histopathological studies	Wistar albino rat n=6
20	*Curcuma longa* (Zingibreaceae)	Turmeric	essential oil/ 100mg/kg b.w 500mg/kg b.w 1000mg/kg b.w	paraffin oil TEO 100mg/kg b.w	Alcohol-induced gastric ulcer	Superoxide dismutase (SOD), GSH, GP_X ulcer index, histopathology	Wistar rat n=6
21	*Zingiber officianale* (Zingibreaceae)	Ginger	essential oil/ 100mg/kg b.w 500mg/kg b.w 1000mg/kg b.w	paraffin oil GEO 100mg/kg b.w	Alcohol-induced gastric ulcer	SOD, GSH, GP_X ulcer index, histopathology	Wistar rat n=6
22	*Withaniasomnifera* (Solanceae)	Ashwagandha	Methanolic extract 100mg/kg b.w	Ranitidine 100 mg/kg b.w	Indomethacin induced ulcer	Histopathological studies, Ulcer of gastric content, total acidity	Wistar rat n=6
23	*Terminalia arjuna* (Combretaceae)	Arjuna	Methanolic 100mg/kg b.w 200mg/kg b.w 500mg/kg b.w	Ranitidine 35 mg/kg b.w	diclofenac sodium induced gastric ulcer	LPO, SOD, GSH, Ulcer index	Male albino Wistar rat n=6
24	*Asparagus racemosus* (Asparagaceae)	Shatawar	Methanolic extract 100 mg/kg b.w	Ranitidine 100 mg/kg b.w	Indomethacin induced ulcer	Histopathological studies, Ulcer index	
25	*Sesbania grandiflora* (Fabaceae),	Basna	ehanolic 400 mg/kg b.w 200 mg/kg b.w	Ranitidine 20 mg/kg b.w	pylorus ligation induced ulceration in rats	Estimation of total acid output	Albino Wistar rats n=6
26	*Ficus religiosa* (Moraceae)	Peepal	ethanolic extract 250 mg/kg b.w 500 mg/kg b.w	Ranitidine 250mg/kg b.w 500 mg/kg b.w	Stress induced ulcers (cold water immersion method)	Ulcer index	Wistar rats n=6
27	*Spondia smombin* L. (anacardiaceae)	Hog plub	ethanolic extract 50 mg/kg b.w 100 mg/kg b.w 200 mg/kg b.w	Ranitidine 60 mg/kg b.w	Indomethacin-Induced Gastric 3Ulcer	Determination of Gastric Acid Secretion.	Wistar rats n=5-7
28	*Aerva persica* Merrill (amaranthaceae)	Desert cotton	Ethanolic Extract 200 mg/kg b.w	ranitidine 50 mg/kg b.w	Alcohol-induced ulcer model	Determination of the reduced glutathione Level/Determination of the malondialdehyde (MDA) Level	Albino Wistar rats n=6
29	*Feronia elephantum* (Rutaceae)	Wood apple	ethanolic extract 250 mg/kg b.w	ranitidine 20 mg/kg b.w	Indomethacin-induced Gastric Ulcer	Gastric ulcer Index	Swiss albino rats n=6

23. *Sesbania grandiflora:* *Sesbania grandiflora* Miq (Fabaceae), prevalently known as "Basna", is a fleeting, speedy developing wooded tree of 6.9 m height and 0.6 m in size and is popular as an ornamental plant. It is local to Malaysia but present in abundance in Indian states like Punjab, Delhi, Bengal, Assam, and the Andaman. The bark and leaves are accounted tofix looseness of the bowels, snake chomp, intestinal sickness, smallpox, eruptic fever, scabies, ulcer, and stomach issue in children. The bark of *Sesbania grandiflora* has an astringent, unpleasant cooling taste loaded with anthelmintic and antipyretic properties. The natural products are accepted to be purgative and energizer. It has additionally been utilized in treatment of sickliness, bronchitis, fever, agony, thirst, and tumors.

Ulcer list parameter was utilized for the evaluation of anti-ulcer action since ulcer development is directly identified with factors, namely decrease in gastric volume and decrease in free and all acidity. Ethanolic extract of leaves of *S. grandiflora* at the portion of 400 mg/kg has diminished the force of gastric mucosal harm prompted by ulcerogenic agents. Headache medicine causes direct aggravation impact and mucosal harm by meddling with prostaglandin combination, expanding corrosive discharge by expanding the H+ particle transport/back diffusion of H+ particles, coming with overproduction of leukotrienes and different results of 5 lipoxygenase pathway. Further knowledge of the exact system of activity is basic to abuse the total intensity of EELSG and increase its use in contemporary prescription[52].

24. *Spondia smombin:* *Spondia smombin* L. of the Anacardiaceae family is local to Brazil. Essentially found in the north and upper east areas with a developing interest for foods made from the ground items (mash, juice, and ice cream) it has excited enthusiasm for the agribusiness and cultivator divisions for commercial activities. The leaves are utilized in ethnomedicine for the treatment of a few topical and fundamental provocative sicknesses and for gastrointestinal issues. Certain pharmacological properties, including anti-oxidant and anti-inflammatory activities, have been ascribed to *S. mombin*. The effect might be due to the phenolic compound present in *S. mombin.* Phytochemical investigations of various pieces of *S. mombin* were performed; through HPLC; however, ellagic acid was distinguished as the significant compound of the hydromethanolic concentrate of the leaves. However, the inhibitory impact by the concentrate on acid secretion and the event of stress-actuated gastric injuries might be ascribed to the hindrance of H^+ and K^+-ATPase action [53].

25. *Aervapersica merrill:* In perspective on the above mentioned, the present examination was performed to research the antiulcer action of the ethanolic extract of the root of *Aervapersica*. The impacts of this plant were confirmed by examining it is *in-vivo* cancer-preventive impacts agents, cell reinforcements, for example, malondialdehyde and glutathione, appear to have protective roles against gastric ulcers and carcinomas.

The concentrate was controlled at the portion of 200 mg/kg orally, p.o. for 15 back to back days. The ulcer score of the ethanol extract was seen as altogether reduced when compared with the control animals. The impact was additionally evaluated by deciding the free acidity, pepsin movement, absolute starch (TC), and protein content (PK) in charge, standard, and test group animal. The *in-vivo* cancer prevention agent movement was determined by deciding the decreased glutathione level (GSH) and malondialdehyde (MDA) level in the tissue homogenates. The result reveals the significant decrease in the degree of malondialdehyde and the expansion in the degree of decrease glutathione in the rodents that got the ethanolic extricates [54].

26. *Feronia elephantum:* Medications from plant inception are expanding in prominence and are being examined for various issues, including peptic ulcer. *Feronia elephantum* (Corr.) (basic names: Bela, Billin, Kath, Kavitha) of the family Rutaceae is local to the Indian subcontinent. The organic product mash of the plant has been accounted as za traditional drug for remedial in different afflictions like diarrhea, pruritis, barrenness, loose bowels, coronary illness, heaving, and anorexia, and has also been utilized for the treatment of asthma and tumors, and as a liver tonic. A decoction (Kadha) controlled orally before breakfast has been advocated by local traditional medicinal experts for tonic reasons. The natural product mash of *Feronia elephantum* (Corr.) contains flavonoids, phytosterols, tannins, sugars, triterpenoids, and amino acids as its chemical constituents.

Gastric ulcers are because of unevenness among forceful and guarded variables of the gastric mucosa. The adrenergic system is associated with gastric emission. It has been demonstrated that in the gastrointestinal tract, activation of presynaptic α-adrenoceptors located on the vagus nerve inhibits corrosive gastric discharge. The counter ulcer property of the extract is most likely because of a decrease in corrosive gastric emission since it caused a height of gastric pH. The most extreme non-harmful portion of 5000 mg/kg was acquired from the toxicity studies, and $1/10^{th}$ of this dose was taken as the dose for anti-ulcer examines. Its anti-ulcer property most likely acts by means of a decrease in gastric corrosive emission [55].

27. *Pinusrox burghii*: The plant *Pinusrox burghii* is sharp, warming, oleaginous, intestinal clean, and a few sections have been utilized in the traditional system of medication for a disease of the eye, ear, throat, skin, bronchitis, tuberculosis, diaphoresis, diuretic, rubefacient, energizer, skin illnesses, vermifuge, happiness, ulcer, irritation, and itching. Recently, different in-vivo and in-vitro investigations of *Pinusrox burghii* have shown that this plant displays hostility to anti-dyslipidemic and anti-oxidant, anti-inflammatory and pain-relieving, hepatoprotective, and antimicrobial activities.

These components are related to the improvement of upper gastrointestinal damage, including sores, ulcers, and perilous puncturing and discharge. In the pylorus ligation method, chloroform extract of *Cedrus deodara* (50 and 100 mg/kg) and *Pinus roxburghii* (100 mg/kg) significant it decrease the gastric substance, all-out acidity, and free acidity induced by pylorus ligature. This extract's defensive impact was related to a marked decrease in gastric hemorrhage and the support of tissue integrities. Then again, just *Cedrus deodara* (100 mg/kg) significantly increases the pH [56].

28. *Moringa oleifera:* The *Moringa* plant, found in tropical and subtropical nations, gives a rich and uncommon blend of zeatin, quercetin, kaempferom, and numerous different phytochemicals. It is significant for its therapeutic worth. Different pieces of plant, for example, the leaves, roots, seed, bark, organic product, blooms, and juvenile units go about as cardiovascular and circulatory energizers have antitumor antipyretic, antiepileptic, Anti-inflammatory, and antiulcer. Thus, the present research was undertaken to think about the pretended by mucosal anti-ulcer acid pepsin and protective mucin discharge, glycoproteins and free radical rummaging and cell reinforcement action of the homegrown medication *(Moringa oleifera Lam)* in creature models [33, 34, 35.]

The said extract of *Moringa oleifera* Lam. was found to decrease ulcer and acid pepsin emission. A change was additionally found in SOD, CAT, and LPO levels in rodent gastric mucosa because of anti-oxidant property of alcoholic leaves extract of *Moringa oleifera* Lam. anti-oxidant agent barrier component of the extract was most likely due to processing lipid peroxides and searching H2O2.The present investigation of 50% ethanolic leaves extract of *Moringa oleifera* was viable in cool limitation stress-induced gastric ulcer assume a significant role in the of gastroduodenal ulceration. Anti-stress drugs were seen as successful in stress-actuated gastric mucosal harm. Oxidative pressure has been proposed to be significant etiopathological factor in beginning of peptic ulcer [57, 58, 59].

29. *Solanum nigrum:* *Solanum nigrum* Linn. (Solanaceae) ordinarily known as 'Dark nightshade' that have been widely utilized in customary prescription in India and different pieces of world to fix liver issue, ceaseless skin illnesses (psoriasis and ringworm), provocative conditions, excruciating periods, fevers, the runs, eye infections, hydrophobia. The plant contains glycoalkaloids (solanine, solamargine, solanigrine and solasodine (0.09–0.65%)), steroidal glycosides (-solamargine, solasonine and , - solansodamine), steroidal saponins (diosgenin 0.4–1.2%)), steroidal genin (gitogenin), tannin (7–10%) what's more, polyphenolic mixes. Develop natural products are low in alkaloid solanine) content.

Ulcer recuperating and antisecretory property of *Solanum nigrum*, which is significant plant in home grown prescription practice. Danger investigations of SNE completed in rodents show no deadly impact in any event up to an oral portion of 4.0 g/kg for 14 days demonstrating that LD_{50} of SNE will be higher than that dose. Gastric ulcers have various etiopathogenesis. Ulcers brought about by PL are because of expanded nearness of corrosive and pepsin in the stomach and harm by IND are

because of reduction in PG combination which are basic for the honesty of mucosa. SNE indicated corresponding weakening of gastric secretory volume, causticity and pepsin emission in ulcerated rodents. Furthermore, SNE (200 and 400 mg/kg b.w.) quickened the recuperating of acidic corrosive instigated ulcers after the treatment for 7 days [60].

30. *Ficus regiosa:* *Ficus regiosa (F. religiosa)* Miq. (Moraceae) is a significant therapeutic plant appropriated throughout in India, mostly close to the Indian temple for the profoundly. It has a few vernacular names including pepal tree and arasamaram. The bark of the plant contains carbohydrates, flavonoids, aminoacids, steroids, saponins and tannins *etc*. are present bark and leaf extract in gonorrhoea, diarrhoea, dysentery, leucorrhoea, and menorrhagia, vaginal and other urogenital issue haemorrhoids, ulcer and gastrohelcosis. It is likewise valuable in irritation, consuming sensation, anti -ulcer to bacterial, analgesics, anti-diabetic and against oxidant. In the present examination, we considered the counter (ulcer preventive) and intense toxicological impacts of *F. religiosa* ethanolic leaf separate.

Anti-ulcer activity of *F. religiosa* ethanolic extract (250and 500 mg/kg body weight) was considered on induced ulceranimal model. Ranitidine was utilized as standard. The anti-ulcer activity of *F. religiosa* was evaluated with the help of ulcer zone and Histopathological examination. The extract treatment prevents ulcer area and gastric emission in a portion subordinate manner. Administration of 2000 mg/kg extricate didn't show any acute toxicity in albino mice [61].

CONCLUSION: From this examination, we can reason that reviews with plant sources can result about novel and powerful example of treatment. Current stalemates of modern medicine of present day prescription in the administration of different diseases slant investigate inclinations to customary medication. In this regard, customary prescription has presented great conventions for treatment of different gastrointestinal disorders. The entirety of the cures introduced here had satisfactory proof from customary or scientific sources for their viability in the executives of ulcers. As indicated by the old speculation, acid secretion was believed to be the sole reason for ulcer arrangement and decrease in acid secretion was believed to be the significant methodology towards therapy. However, in the light of late confirmations this idea has changed. Presently treatment of ulcer for the most part focuses on the potentiation of the guarded framework alongside bringing down of acid secretion. Chemical substances derived from plants have been utilized to treat human sicknesses since the beginning of medication. Generally, half of the new substance elements presented during the previous two decades are from common items. Later innovative advances have re-established enthusiasm for common items in medicate revelation.

In this way, Ayurveda's information upheld by present-day science is important to separate, portray, and institutionalize the dynamic constituents from natural sources for antiulcer activity. The mix of combination and modern information can create better medications for the treatment of peptic ulcer with fewer symptoms. It is clear that test assessment of homegrown medications for the treatment of gastric ulcer is fairly great yet not very many have arrived at clinical preliminaries, and still not many have been advertised. This shows the advantages of research are not contacting the individuals to whom medicinal research is coordinated, and thus the time, labor, and assets are not effectively used.

Thus, pharmacologists need to take progressively dynamic enthusiasm for assessment of homegrown medications for potential antiulcer movement and institutionalization of such natural medications to be clinically successful and universally focused.

ACKNOWLEDGEMENT: The authors want to thank the Management of Sunder Deep Pharmacy College (SDPC), Ghaziabad, for providing the resources to write this article.

CONFLICTS OF INTEREST: The authors declare no conflicts of interest, financial or otherwise.

REFERENCES:

1. Maury PK, Jain SK and Alok S: A review on antiulcer activity. IJPSR 2012; 3(8): 2487-93.
2. Anwar J, Siddique A, Jafri T and MA: A review on gastric ulcer remedies in Unani system of medicine finding effect of ulcers: Natural Product Radiance 2006; 5(2): 153-59.

3. Kannappan N, Jaikumar S, Manavalan R and Muthu A: Antiulcer activity of methanolic extract of Jatropha curcas (Linn.) on aspirin-induced gastric lesions in wistar rats. Pharmacology Online 2008; 1: 279-93.
4. Choi EM and Hwang JK: Effects of *Morus alba* leaf extract on the production of nitric oxide, prostaglandin E2 and cytokines in RAW 264.7 macrophages. Fitoterapia 2005; 76: 608-13.
5. Rad MS, Tsouh PVF, Sharopov F , Martorell M, Martins N, Iriti M and Rad JS: Antiulcer Agents From Plant Extracts to Phytochemicals in Healing Promotion. Molecules 2018; 23(1751): 2-37.
6. Hamedi S, Arian AA and Farzaei MH: Gastroprotective effect of aqueous stem bark extract of *Ziziphus jujube* L. against HCl/ethanol-induced gastric mucosal injury in rats. J.Tradit.Chin. Med. 2015; 35: 666-70.
7. Rambhai PA and Sisodia SS: Indian Medicinal Plants for Treatment of Ulcer Systematic Review. UK Journal of Pharmaceutical and Biosciences 2018; 6(6): 38-44.
8. Haidan Y, Qianqian M, Li Y and Guangchun P: The Traditional Medicine and Modern Medicine from Natural Products. Molecules 2016; 21: 559.
9. Fabio F and Luigi G: Herbal Medicine Today: Clinical and Research Issues. Evi Ba Com Alt Med 2007; 4(S1): 37–40
10. Quazi M and Ahamad A: Herbal Medicine: A Comprehensive Review. International Journal of Pharmaceutical Research 2016; 8(2): 1-5.
11. Sivakrishnan S. Traditional herbal medicines - A review. IJRAR 2018; 5(4): 611-14.
12. Subapriya R and Nagini S: Medicinal properties of neem leaves: a review anticancer agents. Curr Med Chem 2005; 5(1): 49-156.
13. Minozzo BR, Lemes BB, Justo AS, EllenLara J, KubaskiPetry VE and Fernandes D: Anti-ulcer mechanisms of polyphenols extract of *Euphorbia umbellata* (Pax) Bruyns (Euphorbiaceae). Journal of Ethnopharmacology 2016; 191: 29-40.
14. Muthuraman A, Sood A and Saini K: Ameliorative Effect of *Allium sativam* in pyloric ligation induced peptic ulcer in Rat. Pharmacologia 2014; 5(7): 256-62.
15. Nyam KL, Tang JLK and Long K: Anti-ulcer activity of *Hibiscus cannabinus* and *Hibiscus sabdariffa* seeds in ulcer-induced rats. International Food Research Journal 2016; 23(3): 1164-72.
16. Sairam K, Rao CV, Dora Babu M, Kumar KV, Agrawal, VK and Goel RK: Antiulcerogenic effect of methanolic extract of *Emblica officinalis*: An experimental study. J Ethanopharmacol 1986; 18: 33-44.
17. Gopinathan S and Rameela N: Anti-ulcer activity of *Aloe vera* Juice and *Aloe vera* and Amla fruit combined juice in ethanol induced ulcerated rats. Int J Pharm Pharm 2014; 6(6): 190-97.
18. Al-Rehaily AJ, Al-Howiriny TA, Al-Sohaibani MO and Rafatullah S: Gastroprotective effects of 'Amla' *Emblica officinalis* on *in-vivo* test models in rats. Phytomedicine 2002; 9: 515-22.
19. Liju VB, Jeena K and Kuttan R: An Evaluation of antioxidant, anti-inflammatory and antinocicptive activity of essential oils *Curcuma longa* L. Indian J Pharmacol 2011; 43: 526-31.
20. Chioma AA, Obidoa O, Lawrence US and Nwuba EMM: Anti-inflammatory and anti ulcerogenic activity of the ethanol extract of ginger (*Zingiber officinale*). African Journal of Biochemistry Research 2009; 3(12): 379-84.
21. Liju VB, Jeena K and Kuttan R: Gastroprotective activity of essential oils from turmeric and ginger. J Basic Clin Physiol Pharmacol 2015; 26(1): 95-103.
22. Raju D, Ilango K, Chitra V and Ashish K: Evaluation of Anti-ulcer activity of methanolic extract of *Terminalia chebula* fruits in experimental rats. J Pharm Sci & Re 2009; 1(2): 101-07.
23. Devi RS, Narayan S, Vani G, Srinivasan P, Mohan KV, Sabitha KE and Devi CSS: Ulcer protective effect of *Terminalia arjuna* on gastric mucosal defensive mechanism inexperimental rats. Phytoether Res 2007; 21: 762-67.
24. Bhatnagar M, Siddhraj A, Sisodia S and Bhatnagarc BR: Antiulcer and antioxidant activity of *Asparagus racemosus* willd and *Withania somnifera* dunal in Rats. New York Academy of Sciences 2005; (1056): 261-78.
25. Nahla E, Ashmawy EI, Khedr EG, Hoda A, Bahrawy EI and Selim HM: Gastroprotective effect of garlic in indomethacin induced gastric ulcer in rats. Accepted Manuscript 2005; 1-35.
26. Singh N, Abbas SS, Singh V and Singh A: Adaptogen anti-stress agent: A study focusing on Indian plants. Antiseptic 2002; 90: 243-249.
27. Deshpande SS, Shah GB and Parmar NS: Antiulcer activity of *Tephrosia purpurea* in rats. Indian Journal of Pharmacology 2003; 35(3): 168-72.
28. Baranwal A, Mazumder A, Chakraborthy G.S. and Gupta S, Phytopharmacological uses of *Tephrosia purpurea* - A review, Pharmacophore 2014; 5(4): 658-65.
29. Murthy MSR and Srinivasan M: Hepatoprotective effect of Tephrosiapurpurea in experimental animals. Indian J Pharmacol 1993; 25: 34-6.
30. Abdulla MA, AL-Bayaty FH, Younis LT and Abu Hassan MI: Anti-ulcer activity of *Centella asiatica* leaf extract against ethanol-induced gastric mucosal injury in rats. Journal of Medicinal Plants Res 2010; 4(13): 1253-59.
31. Rozza AL, Cesar DAS, Pieroni LG, Saldanha LL, Dokkedal AL, De-Faria FM, Souza-Brito ARM, Vilegas W, Takahira RK and Pellizzon1 CH: Antiulcerogenic activity and toxicity of *Bauhinia holophylla* hydro-alcoholic extract. Hindawi Publishing Corporation 2015; 1-9.
32. Rajkapoor B, Jayakar B, Anandan R and Kavimani S: Anti-ulcer effect of *Bauhinia variegata* Linn. in rats. Journal of Natural Remedies 2003; 3(Pt 2): 215-17.
33. Nadkarni AK: Indian Materia Medica. Popular Pakashan Pvt., Ltd., 1996; 1: 184-85.
34. Venkatachalam D, Thavamani S, Krishnaiah M, Vijayan S and Vinod KR: Evaluation of anti-ulcer activity of ethanolic extracts of *Indigofera tinctoria* on albino rats. International Journal of Advanced Research, Ideas and Innovation in Technology 2018; 4(3): 2118-22.
35. Daya L, Chothani and Vaghasiya HU: A phyto-pharmacological overview on *Physalis minima* Linn. Indian Journal of Natural Products and Resources 2012; 3(4): 477-82
36. Prabhu K and Rajan S: Assessment of antiulcer activity of ethanolic extract of *Mangifera indica* seed kernel using acid ethanol induced ulcer model. Int J Curr Microbiol App Sci 2015; 4(4): 854-60.
37. Gandhu S, Hussaini SF, Kumar GS and Rao BSS: Anti-ulcer activity of *Sechium edule* ethanolic fruit extract. Pharma Innovation 2012; 1(4): 77-81.
38. Rao USM, Ahmad BA, Khamsah SM and Zin T: Antiulcer activity of *Mimosa pudica* (Banana) tepal and skin extract in ulcer induced albino mice. Malaysian Journal of Analytical Sciences 2016; 20(Pt 5): 1203-16.
39. Ghangale GR, Tushar M and Jadhav ND: Evaluation of antiulcer activity of *Ocimum sanctum* in rats. Veterinary World 2009; 2(12): 465-66.

40. Mahmood AA, Hapipah MA, Ahmed KAA, Suzita MN and Ismail S: Evaluation of the anti-ulcer activities of *Morus alba* extracts in experimentally-induced gastric ulcer in rats. Biomedical Research 2009; 20(1): 35-39.
41. Sohn HY, Son KH, Kwon CS, Kwon GS and Kang SS: Antimicrobial and cytotoxic activity of prenylated flavonoids isolated from medicinal plants. Phytomedicine 2004; 11: 666-72.
42. Shenoy AM, Singh R, Samuel RM, Yedle R and Shabraya AR: Evaluation of anti-ulcer activity of *Aegle marmelos* leaves extract. IJPSR 2012; 3(5): 1498-1501.
43. Rani P and Khullar N: Antimicrobial evaluation of some medicinal plants for their anti-enteric potential against multi-drug resistant *Salmonella typhi*. Phytother Res 2004; 18(8): 670-73.
44. Djahanguiri B: The production of acute gastric ulceration by indomethacin in the rat. Scand J Gastroenterol 1969; 4: 265-67.
45. Goswami M, Kulshreshtha M, Rao CV, Yadav S and Yadav S: Anti-ulcer potential of *Lawsonia inermis* l. Leaves against gastric ulcers in rats. Journal of Applied Pharmaceutical Science 2011; 1: 69-72.
46. Goswami M, Kulshreshtha M, Rao CV, Yadav S and Yadav S: Anti-ulcer potential of *Lawsonia inermis* L. Leaves against gastric ulcers in rats. Journal of Applied Pharmaceutical Science 2011; 1: 69-72.
47. Melese E, Asres K, Mohammed A and Engidawork E: Evaluation of the antipeptic ulcer activity of the leaf extract of *Plantago lanceolata* L. in rodents. Phytotherapy Research 2011; 25: 1174-80.
48. Chaudhary AK, Ahmad S and Mazumder A: Protective effect of *Cedrus deodara* and *Pinusrox burghii* on experimentally induced gastric ulcers in Rat. Int J Pharm PharmS ci 2014; 6(4): 587-91.
49. Puri A, Srivastava AK, Singhal B, Mishra SK, Srivastava S and Lakshmi V: Antidyslipidemic and antioxidant activity of *Pinusrox burghii* needles. Med Chem Res 2011; 20: 1589-93.
50. Bhajoni PS and Lahkar: Evaluation of the antiulcer activity of the Leaves of *Azadirachta indica* an experimental Study. Med Int 2016; 3: 10-16.
51. Biswas K, Chattopadhyay I, Banerjee RK and Bandyopadhyay U: Biological activities and medicinal properties of neem (*Azadirachta indica*). Current Sci 2002; 82(1): 1336-45.
52. Bhalke RD, Giri MA, Anarthe SJ and Pal SG: Antiulcer activity of the ethanol extract of leaves of *Sesbania grandiflora* (linn.). Int J Pharm Pharm Sci 2010; 2(S 4): 206-08.
53. Brito SA, De Almeida, Santana TID, Oliveira ARDS, Figueiredo JCBN and Souza IT: Antiulcer activity and potential mechanism of action of the leaves of *Spondia smombin* L., Hindawi, 2018; 1-20.
54. Vasudeva N, Sethi P, Sharma S.K, Kumar S and Sharma S: Antiulcer potential of the ethanolic extract of *Aerva persica* merrill root in rats. J Acupunct Meridian Stud 2012; 5(2): 80-86.
55. Mishra A, Arora S, Gupta R, Manvi, Kumar R and Sharma AK: Effect of *Feroniael ephantum* (Corr) fruit pulp extract on indomethacin-induced gastric ulcer in albino rats. Tropical Journal of Pharmaceutical Research 2009; 8(6): 509-14.
56. Kaushik D, Kumarm A, Kaushik P and Rana AC: Analgesic and anti-inflammatory activity of *Pinusrox burghii* Sarg. Adv Pharmacol Sci 2012; 1-6.
57. Fahey JW: *Moringa oleifera*: A review of the medical evidence for its nutritional, therapeutic and prophylactic properties. Trees for Life Journal, 2005; 10(6 pt 1): 1-5.
58. Bennett RN, Mellon FA, Foidl N, Pratt JH, Dupont MS and Perkings L: Profiling glucosinolates and phenolics in vegetative and reproductive tissues of the multipurpose trees *Moringa oleifera* L. (Horseradieh Tree) and *Moringa stenopetala* L. J AgricFoodChem, 2003; 51(8): 3546-53.
59. Hamid AK, Shariq B, Jiyauddin K, Kaleemullah M, Samer AD, Sakina R and Rasha S: Anti-ulcer activity of *Moringa oleifera* leave's extract in swiss albino mice against aspirin induced peptic ulcer. World Journal of Pharmaceutical Research 2012; 4(2): 406-21.
60. Jainu M and Devi CSS: Antiulcerogenic and ulcer healing effects of *Solanum nigrum* (L.) on experimental ulcer models: Possible mechanism for the inhibition of acid formation. Journal of Ethnopharmacology 2006; 104: 156-63.
61. Gregory M, Divya B, Mary RA,Viji MMH, Kalaichelvan VK and PalaniveV: Anti-ulcer activity of *Ficus religiosa* leaf ethanolic extract. Asian Pac J Trop Biomed 2013; 3(7): 554-56.
62. Madhu CH, Brainard PJ, Raj GP, Swapn J, Samba A and Rao S: Anti-ulcer activity of aqueous extract of *Annona squamosa* leaves on rats. IJPSR 2012; 3(11): 4429-33.

How to cite this article:
Chaudhary B, Saxena MS, Sharma S, Ansari B and Mohseen: A review of some medicinal plants on their antiulcer and ulcer healing potential. Int J Pharm Sci & Res 2020; 11(11): 5308-21. doi: 10.13040/IJPSR.0975-8232.11(11).5308-21.

All © 2013 are reserved by the International Journal of Pharmaceutical Sciences and Research. This Journal licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.

This article can be downloaded to **Android OS** based mobile. Scan QR Code using Code/Bar Scanner from your mobile. (Scanners are available on Google Playstore)