



TO STUDY ANTI-ULCER ACTIVITY OF HERBAL DRUGS:

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Abstract:

Ulcer is a broad term that include injury to the stomach and duodenal The formation of peptic ulcer depends on the presence of acid and peptic activity in gastric juice plus a breakdown in mucosal defenses. There are different type of ulcer . ulcer is dangerous disease that cause the breakdown of the inner lining of the stomach. ulcer is found in the mouth also. Ulcer is caused due to the consumption of alcohol, beverage, coffee etc. the fast food, spicy food, late night meal etc. are the reason of the ulcer formation.

There is different herbal plant used in the treatment of the ulcer. the herbal plant having no side effect .it gives fast relief from the ulcer. there are the different herbal plant used traditionally in the treatment of ulcer i.e. Ocimum sanctum, carica papaya L, punica granatum, Agle marmelos ,hibiscus rosa sinenesis ,magnifera indica ,zingiber officinalis ,cupehea aequipetala ,mimosa pudica ,moringa oleifera ,emblica officinalis etc. this all plant are used in the treatment of the ulcer .the plant having no more side effect .the herbal formulation is used in the treatment.

The ulcer is diffentiated into many types like gastric acid , duodenal ulcer gastroesophageal reflex disease [GERD] etc. type of ulcer can found . the treatment of ulcer in not easy .but some herbal plants are really useful in the treatment and having no adveres effect .now a day the modern technique are established to treat the ulcer. Now a day the ulcer can completely treated with the help of herbal plant. the other drugs having the side effect and that is harmful to our body that's why the herbal plant is used in the treatment of the ulcer.

Keywords: ulcer, herbal, Treatment, Side effect, Herbal plant, Injury, Stomach

Introduction:

Antiulcer drugs are a class of drugs exclusive of the antibacterial agents, used to treat ulcers in the stomach and the upper part of the small intestine.

Ulcer is a common gastrointestinal disorder which is seen among many people. It is basically an swollen break in the skin or the mucus skin coating the alimentary tract. Ulcerations due to occurs in there disturbing of the normal equilibrium caused by either enhanced aggressions or reduce mucosal resistance. Ulcers come in many different forms – all of which can be throbbing.

It may be due to the regular usage of drugs, irregular food habits, stress, and so forth. Peptic ulcers are a broad term that includes ulcers of digestive tract in the stomach or the duodenum. The formation of peptic ulcers depends on the presence of acid and peptic activity in gastric juice plus a collapse in mucosal battlements.[1]

herbal medicines are considered as better alternatives for the treatment of peptic ulcer For Example, proton pump inhibitors (omeprazole, lansoprazole) may cause nausea, abdominal pain Due to the occurrence of many side effects by use of synthetic drugs for many Diseases, medicinal plants are considered as the main source of new drugs as they have less or No side effects. As herbal medicines are considered as safe for the treatment of ulcers with lesser Adverse effects, economical, effective, relatively less toxic, extensive research is carried out Search for potent antiulcer agents of plant origin .

The Number of synthetic drugs is available to treat ulcers. But these drugs are expensive and are likely to produce more side effects when compared to herbal medicines. many medicinal plants and polyherbal formulations are used for the treatment of ulcer by various ayurvedic doctors and traditional medicinal practitioners the treatment of peptic ulcer disease and gastroesophageal disease are to relieve pain, heal the ulcer, and delay ulcer recurrence Finally, the Ayurvedic knowledge and modern medicine generate preferable antiulcer drugs derived from medicinal plants with less side effects Numerous medicinal plants with significant antibacterial activity against H. pylori and benefits for gastric ulcer disease[2]

• **The types of ulcer disease**

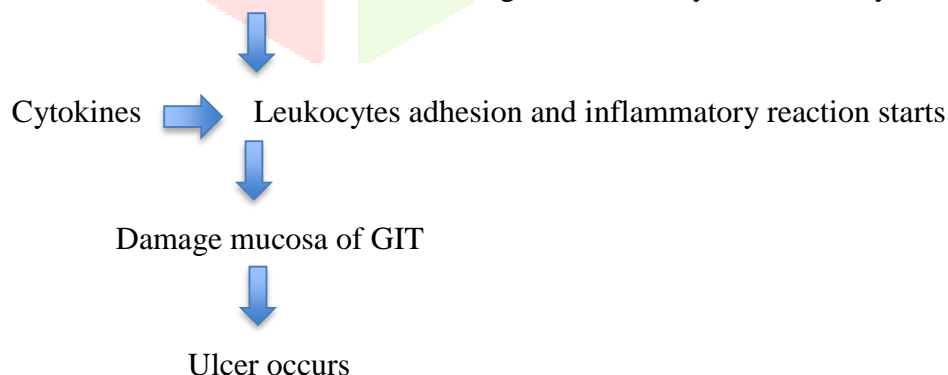
- 1.The gastroesophageal reflux disease GERD
- 2. Peptic ulcer disease PUD
- 3.Duodenal ulcer disease [3]

• **The risk factors of peptic ulcers:**

- **Smoke:** Smoking may increase the risk of peptic ulcers people are infected with H. pylori
- **Drink alcohol:** Alcohol can irritate and erode the mucous lining of your stomach, and it increases the amount of stomach acid that's produce
- Have untreated stress.
- Eat spicy foods. [4]

• **Pathophysiology Of Ulcer .**

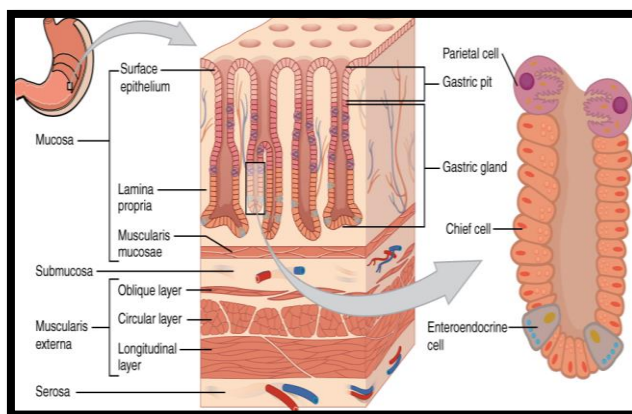
Ammonia cause infection of mucosal lining and ultimately inflammatory mediators mediator s release



These agents act by inhibition of gastric acid production neutralization of acid or protection of the

gastrointestinal mucosa from acid injury. The stomach contains cells that secrete the different substances as part of the digestive process parietal cells, chief cells, and a surface epithelium cells. Show in the stomach image showing labeled parts of stomach with the enlargement of gastric gland surface epithelium cells are found within the lining of the stomach and secreted mucus as protective coating.

Fig:1 layer of stomach



Parietal cells and chief cells are found within the gastric glands. Parietal cells produce and secrete hydrochloric acid (HCl) to maintain the acidity of environment of a pH of 1 to 4. [5]

1)Gastroesophageal reflex disease GERD

A digestive disease in which the stomach acid or bile irritates the food pipe lining. This is a chronic disease that occurs when stomach acid or bile movements into the food tube and annoys the lining. Acid reflux and heartburn more than twice a week may indicate GERD.

Gastroesophageal reflux disease (GERD) is defined as the Condition which the develops when the reflux of stomach. The disease is highly preventing especially in Developed countries, affecting 18–27% of the North Americans, 8–25% of Europeans, 23% of South American 11% of Australians, and 2–7% of Eastern Asians 2.[6]

Causes:

- Eating large meal
- Eating late night
- Eating fatty food
- Drinking certain beverage such as alcohol or coffee

Symptoms:

- Heartburn (acid indigestion)
- Painful burning sensations in the throat or chest
- Wheezing, symptoms of asthma, chronic coughing and difficulty breathing
- Trouble swallowing or eating normally
- Sour or bitter taste in the mouth
- Excessively salivating

• **Treatment:**

Lifestyle Changes

Lifestyle changes can reduce GERD symptoms, primarily weight loss in obese patients and tobacco smoking cessation in smokers in the presence of nocturnal GERD, particularly regurgitation, Elevation of the head of the bed and avoiding late meals are Recommended. Exclusion of food items that patients report trigger symptoms of GERD (eg, alcohol, spicy food, chocolate) is recommended, whereas alkaline water and a Mediterranean diet can be beneficial.[7]

2) Peptic ulcer disease (PUD):

Peptic ulcers are open sores that develop on the inside lining of your stomach and the upper portion of your small intestine. The most common symptom of a peptic ulcer is stomach pain. Peptic ulcers are included Gastric ulcers that occur on the inside of the stomach and Duodenal ulcers that occur on the inside of the upper portion of your small intestine duodenum, peptic ulcer is a chronic disease affecting up to 10% of the world population. The formation of peptic ulcers depends on the presence of gastric juice pH and the decrease in mucosal defenses. Non-steroidal anti-inflammatory drugs (NSAIDs) and Helicobacter pylori (H. pylori) infection are the two major factors disrupting the mucosal resistance to injury, H. pylori commonly infects the stomach [9]. About 50% of the world population has H. pylori infection, without finally, the Ayurvedic knowledge and modern medicine generate preferable antiulcer drugs derived from medicinal plants with less side effects. Numerous medicinal plants with significant antibacterial activity against H. pylori and benefits for gastric ulcer disease.[8]

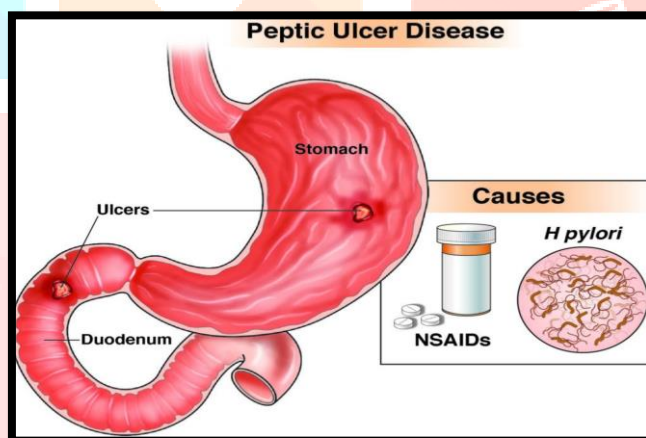


Fig:2 Peptic ulcer

Causes of Peptic Ulcer Disease:

- Peptic ulcer disease (PUD) has various causes; however, Helicobacter pylori-associated PUD and NSAID-associated PUD account for the majority of the disease etiology.
- H. pylori infection
- NSAIDs
- Medications [9]

H. pylori infection:

H. pylorus is a gram-negative bacillus that is found within the gastric epithelial cells. This bacterium is responsible for 90% of duodenal ulcers and 70% to 90% of gastric ulcers. H. pylori infection is more predominant among those with lower socioeconomic status and is commonly developed during baby. [10]

NSAIDs:

If the Nonsteroidal anti-inflammatory drugs use in second most common cause of PUD after H. pylori infection. The secretion of prostaglandin normally protected gastric mucosa. NSAIDs are block prostaglandin synthesis by inhibit the COX-1 enzyme, result in decreased gastric mucus and bicarbonate production and decrease in mucosal blood flow.[11]

• Medication

Apart from NSAIDs, corticosteroids, potassium chloride, and fluorouracil have the implicated in the etiology of PUD. and Smoking also appears to play a role in duodenal ulcers, but correlation is not linear. Alcohol can irritate the gastric mucosa and induce acidity.[12]

• Symptoms

Burning stomach pain

1. Feeling of fullness, bloating or belching
2. Intolerance to fatty foods
3. Heartburn
4. Nausea
5. Lower part bleeding

• Treatment

The used in medicinal plants in healing numerous diseases is the old human beings and well known as phytotherapy. in the past few years, there has been a rising interest in alternative therapy and use of herbal products, in particular if produced from medicinal plants due to appears of various side effects by usage of conventional drugs for numerous diseases, medicinal plants are considered the major pounds of potentially new drugs. Plant extracts crude are the most significant sources of new drugs and have shown to cause promising results in the treatment of gastric ulcer and It is known that numerous pharmaceutical agents such as proton pump inhibitors, anticholinergics, antacids, antimicrobial agents, H₂-receptor antagonists, sucralfate, and bismuth is not fully effective.

3)Duodenal Ulcer disease:

Fig :3 duodenal ulcer

A duodenal ulcer is an ulcer that occurs in the lining in the part of the small intestine just beyond the stomach (the duodenum). An ulcer in the lining of the stomach is called a gastric ulcer.

Duodenal ulcers are a mutual cause of abdominal pain. Once preserved, they usually get better in a matter of weeks. A duodenal ulcer is a painful that forms in the lining of the duodenum. Your duodenum is the first part of your small intestine. This is the part of your digestive system types of peptic ulcers. Ulceration occurs from damage to the mucosal surface that extends beyond the superficial layer. injury caused Duodenal ulcers are the result of the corrosive action of gastric food travels through, after it leaves your stomach, Stomach ulcers and duodenal ulcers are both

secretions on the surface epithelium of the small intestine that has undergone prior injury. H. pylori also can increase acid production via inflammatory mechanisms, further exacerbating the initial by the infection and initial acid-driven injury.[13]

• **Causes**

- Smoking
- Drinking a lot of alcohol
- Experiencing stress

• **Symptoms**

- Have pain in your stomach or abdomen
- Have indigestion
- Feel very full and bloated after eating
- Feel like you might vomit (nauseous)
- Lose weight [14]

• **Treatment**

- Lose weight if you are overweight
- Avoid any trigger foods, such as coffee, chocolate, tomatoes, fatty foods or spicy foods
- Eat smaller meals and eat your evening meal 3-4 hours before going to bed.
- Stop smoking
- Reduce alcohol consumption to recommended limits.[15]

▪ **Classification of Anti-ulcer agent:**[16]

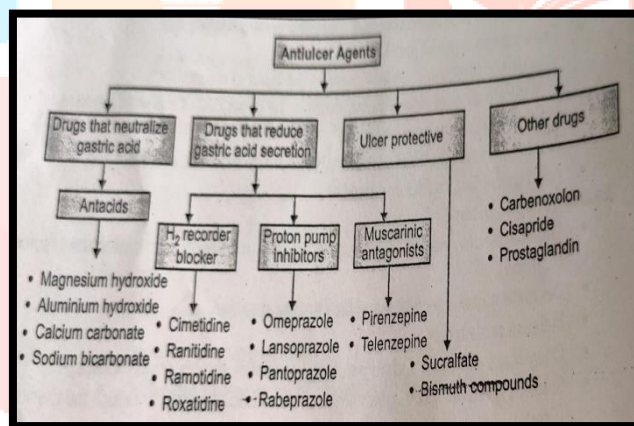


Fig :4 classification of antiulcer agent

▪ **The mechanism of action Anti-ulcer**

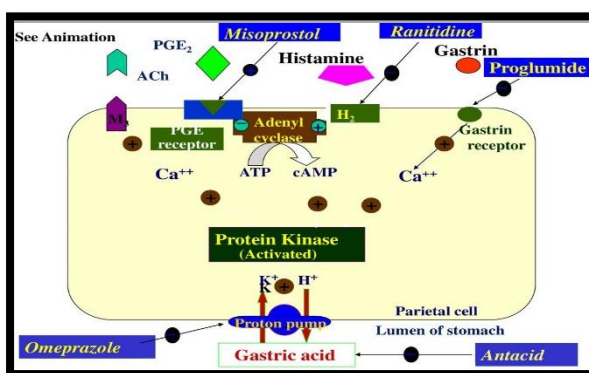


Fig :5 Mechanism of ulcer

• **Adverse effect of anti-Ulcer drugs:**

- 1) Headache, dizziness, bowel upset, dry mouth, rashes
- 2) CNS effect like confusional State restiness convulsions and coma have occurred infrequently in elderly patients.
- 3)Diarrhea, constipation, nausea, loose stools
- 4) abdominal pain muscle and joint pain abdominal cramps uterine bleeding abortion (misoprostol)
- 5) bradycardia arrythmia cardiac Arrest, skin rashes' vitamin B12 diffisene

The unwanted effects most commonly seen are gynaecomastia when used alone in high doses, confusion in the elderly or those with impaired excretory mechanisms, and modest inhibition of the oxidative metabolism of other drugs.[17]

Table no.1: the herbal medicinal plant Use in the treatment of anti-Ulcer

<u>Medicinal plant</u>	<u>Family</u>	<u>Part use</u>	<u>Extract</u>	<u>Mechnism of action</u>
1)Ocimum sanctum	Liliaceae	Leaves	Ocimum sanctum ethanolic extract/fresh juice.	Decrease acid secretion & increase mucous secretion
2)carica papaya L	Caricaceae	Fruit	C. papaya powder,dried leaves.	.c.papaya having anti-oxidant analgesic & anti inflammatory
3)Punica granatum	• Lythraceae	Seed,fruit	The powdered seeds were extracted with ethanol by simple maceration proceress .	
4)Agle marmelos	• Rutaceae	Beal fruit	Dried the collected leaves and fruits powder .	
5)Hibisius rosa sinesis	malvaceae	Flower, roots	Dried powder root of H.rossis asine (1000g) were extracted .	
6)Magnifera indica	Anacardiaceae	Seeds	M indica seed powder	Protect gastric mucosa due to incereas PGE 2 mucous production
7)Zingiber officinalis	Zingiberaceae	Rhizome	Fresh ginger rhizome powder	Inhibition ulcer prevanted oxidative damage gastric mucosa.
8)Cuphea aequipetala	Liythraceae	Aerial parts	Dried leaves powder	CAI increase the prostaglandin

9]Mimosa pudica	Fabaceae	Leaves & root	Fresh leaves M.pudica Linn dried powder	Gstro protective activity
10]Moringa oleifera	Moringaceae	Root,Bark,Seeds	The seeds of moringa lam dreied coarse powder& ethanol extract	Anti H.pylori
11]Embllica officinalis	Euphorbiaceae	Fruit,fresh juice	Ethanol extract & methanol extract	Mucous productive

1)Ocimum sanctum



Fig no 6 : Ocimum sanctum

- **Synonyms:** Holy basil,
- **Biological source:** Tulsi consists of the fresh and dried leaves of Ocimum species like Ocimum sanctum L. and Ocimum basilicum L. etc.
- **Genus:** Ocimum L. 9
- **Family:** Lamiaceae
- **Part used:** Leaves
- **Chemical Constituents:** The main chemical constituents of Tulsi are: Oleanolic acid, Ursolic acid, Rosmarinic acid, Eugenol, Carvacrol, Linalool, and β -caryophyllene. plant are alkaloids, tannins, saponins, flavonoids, and sterols.[18]

(Ocimum sanctum)

Tulsi (Ocimum sanctum L.) common household plant, Ocimum sanctum (Lamiaceae) is commonly known as “holy basil.” It is locally called “tulsi.” It grows throughout India. a potent adaptogen has been used for its medicinal property for many years. It is known in Ayurveda as Incomparable one, Mother of medicine of Nature and The Queen of Herbs. The present study evaluated the stress induced anti-ulcer effect of tulsi leaves in albino rats. Methods: Albino rats chemical Constituents plant use in alkaloids, tannins, saponins, flavonoids, and sterols [19]

- **Extraction process of ocimum Sanctum (leaves)**

Ocimum sanctum ethanolic extract (OSEE): A weighed quantity (30 gm) of the coarse powder was extracted with ethanol (90%) in a Soxhlet apparatus. The extract was concentrated on a water bath at a temperature not exceeding 60° C. The percentage yield of the extract was 10%.9,10

- **Antiulcer activity:**

In Ayurvedic. Indian materia medica describes the use of the plant in a variety of ailments. A tea prepared with the leaves of Tulsi is commonly used for intestinal disorders. In Recent Studies. The fixed oil (*Eugenol*) of O. sanctum was administered in the doses of 1, 2, and 3 mL/kg intraperitoneally, in the rats in which ulcer is induced by aspirin, indomethacin, alcohol, and stress-induced ulceration. It reduces the ulcer index in dose-dependent manner Active Constituents. Fixed oil eugenol is considered.

2) carica papaya L



Fig no 7: carica papaya L

- **Synonyms:** papali-pazham
- **Botanical source:** Papayas are cultivated for their fruits, which are quite sweet when it is ripe. It is also loaded with nutrients, especially vitamin C and antioxidants such as lycopene.
- **Genus:** Carica
- **Family:** Caricaceae
- **Part use:** fruit
- **Chemical constituents:** plant is Papain, chymopapain, pectin, carposide, carpaine, carotenoids, and antheraxanthin. rich in vitamins A, B and C, has also as constituents carbohydrates, proteins, alkaloids (carpaine and pseudocarpaine), proteolytic enzymes (papain and quimiopapain), and benzyl isothiocyanate, [21]

Carica papaya L:

Carica papaya (Caricaceae) is commonly known as ‘papaya.’ It is locally called ‘papali-pazham.’it grows in all tropical countries and many subtropical regions of the world. Papaya has been used for digestion problems. This product should not be used for intestinal parasite infections because it may be ineffective.

Carica papaya is an important fruit with its seeds used in the treatment of ulcer in Nigeria. This study investigated the anti-ulcerogenic and antioxidant activities of aqueous extract of Carica papaya seed against indomethacin-induced peptic ulcer in male rats.

- **Extraction process of Carica papaya L (fruit)**

. C. papaya powder (7.5 g) were extracted in 100 mL of methanol for 20 min at a frequency of 60 Hz. The extract was filtered using Whatman No. 1 filter paper and evaporated to dryness. The dried extracts were stored at -20°C until further use.[22]

- **Antiulcer activity:**

In Folk Medicine or traditional-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 (1)

Recent Studies. The aqueous seed extract of C. papaya was administered at the doses of 50 and 100 mg/kg orally, in rats against ethanol induced gastric ulcer. The extract protected the gastric mucosa against ethanol effect. C. papaya extract significantly reduced the gastric juice volume and gastric acidity, Active Constituents. papain is known as being useful for digestive disorders and disturbances of the gastrointestinal tract.[23]

3)Punica granatum:



Fig 8:punica grantum

- **Synonyms:** pomegranate,
- **Botanical source:** Punica granatum, the divine fruit• Grown in arid or semiarid environmental areas, this plant, which originated from Iran to the Himalayas in northern India, is today cultivated in most parts of the World, with the main producers being India, Iran, Turkey, China, and the United States of America.
- **Family:** Lythraceae
- **Species:** P. granatum
- **Parts use:** fruit, seeds
- **Chemical constituents:** flavonoids, ellagitannin, punicalagin, ellagic acid, Vitamins and minerals.[24]

Extraction process of punica grantum:

The powdered seeds were extracted with ethanol by simple maceration process for 24 h. The solvent was completely removed using rotary evaporator at 40-45°C under reduced pressure. The crude extract was defatted with hexane. Extract obtained was stored in the refrigerator at 0-4°C to prevent any degradation. This extract was used for various investigations such as antioxidant and antiulcer activity.

Antiulcer activity:

Gastric ulcers were induced in euglycemic and diabetic rats by physical (Pylorus ligation) method. The extract of various parts (peel, rind and seed) of Punica granatum fruit (PGF) produced a significant reduction in the ulcer index. Administration of extract of peel, rind and seed of the PGF showed percentage of ulcer inhibition as 76.25%, 84.05% and 88.05%, respectively. The antiulcer activity was showed by changes in parameters like ulcer index, free acidity and total acidity. The antiulcer activity of the different extracts may be due to the presence of the various compound as flavonoids which are well known anti-oxidants.(25)

4)Agle marmelos :**Fig 9: Agle marmelos**

- **Synonyms:** Belou marmelos (L.) A.Lyons.
- **Biological source:** Aegle marmelos (L.) Correa (A. marmelos), commonly known as Bael. A. marmelos is native to Northern India, but widely found throughout the Indian and Burma, Bangladesh, Thailand and Indo-China. It is a medium to large sized deciduous glabrous, armed tree with the axillary and 2.5 cm long alternate trifoliate leaves, short flower and globular fruits. **Family:** Rutaceae

Genus :Aegle**Species.** A. marmelos**Parts use:** bael (fruit)[26]

- **Chemical constituents :**in plant the are flavonoids , tannins ,and saponins.
- **Extraction process of Aegle marmelos :**

The collected leaves and fruits were air dried, the powdered plant was kept in tightly-closed containers. Leaves and fruits (1 kg of each part) were successively extracted using a soxhlet apparatus with solvents

of increasing polarities (pet. Ether, chloroform, ethyl acetate and methanol). The MEL & MEF were evaporated to dryness at 40 °C to yield 10.9, 12.0% w/w respectively, the chemical constituents of leaves and fruits were determined by LC/MS/MS technique as revealed in Table 1. The hepatoprotective effect against CCl₄ toxicology was also performed. (27)

- **Antiulcer activity:** In Folk Medicine. Efruitof *A. marmelos* is traditionally used for the treatment of ulcer among the kani tribes in Kanyakumari district, Tamil Nadu, India In Recent Studies. Ulcers are induced by aspirin plus pylorus ligated gastric ulceration in rats and aqueous extract of leaves it to be administered , orally for 24 days daily dose 1 gm/kg. result indicated a significant reduction in the ulcer lesion count compared to control .Active Constituents Luvangetin, a pyranocoumarin isolated from the seeds is considered.(29)

5) Hibiscus Rosa sinensis :



Fig 10: Hibiscus Rosa Sinensis

- **Synonyms:** hibiscus liliiflorus griff.
- **Biological source:** An evergreen shrub growing 1-3 meters, the Hibiscus rosa-sinensis flowers frequently in hot and humid conditions. Endemic to south east Asia, Hibiscus rosa-sinensis is grown ornamentally world wide, and is one of the most common plants to use in laboratories for its flower. Hibiscus rosa-sinensis does not tolerate cold conditions.
- **Genus :** Hibiscus L.
- **Family:** Malvaceae.
- **Parts use:** flower, roots.
- **Chemical constituents:** Hibiscus rosa-sinensis contained tannins, anthraquinones, quinines, phenols, flavanoides, alkaloids, terpenoids, saponins, cardiac glycosides, protein free amino acids, carbohydrates, reducing sugars, mucilage, essential oils and steroids.[30]

Extraction process of Hibiscus rosa sinensis : The dried, powdered roots of *H. rosa sinensis* (1000 g) were extracted by cold maceration [11,12] method with petroleum ether, alcohol (70%) and water separately for six days. The extracts were concentrated under vacuum on rotary evaporator (Buchi, USA) and then dried in lyophilizer (Labconco, USA) under reduced pressure [13] and obtained 13.2, 28.3 and 43.29 g of extracts respectively.

- **Antiulcer activity:**

In Folk Medicine. eroot of H. Rosa sinensis is traditionally used for the treatment of ulcer among the kani tribes in Kanyakumari district, Tamil Nadu, India]. In Recent Studies. aqueous and alcohol extract H. rosa sinensis roots possessed significant antiulcer activity in pylorus ligated rats at the doses of and 250 and 500 mg/kg. Us, it has been scientifically proven that these extracts possess enough potential as an anti ulcerogenic agent. Active Constituents. Flavonoids and quercetin are considered. [31]

6) magnifera indica:



Fig 11: magnifera indica

- **Synonyms:** Mangifera amba Forsk.
- **Biological source :** Mangifera indica L. is one of the most important tropical plants, part of this plant is used in all system of medicine throughout the globe (Sharma et al., 1997). It is a large fruit tree, capable of growing to a height of 30 metres (100 feet). There are two distinct genetic populations in modern mangoes – the “Indian type” and the “Southeast Asian type”.
- **Genus :** Mangifera
- **Species:** M. indica.
- **Family:** Anacardiaceae
- **Part use :** fruit seeds
- **Chemical constituents :** carbohydrates, proteins, amino acids, lipids, fatty, and organic acids), micronutrients (vitamins and minerals), and (phenolic, polyphenol, pigments, and volatile constituents). [1] alkaloids, sterols, saponins, tannins, flavonoids. [32]
- **Extraction process of mangnifera indica :**

200gm of M. indica seed kernel powder was Soaked in 1200ml of ethyl alcohol and Incubated for 72 hrs. Then it was filtered And evaporated to dryness. The extract MISKEE) obtained were subjected to pre clinical screening.

Antiulcer activity : In Ayurvedic. Leaf extracts were dissolved in rice bran oil and given orally for ulcer. Traditionally the plant is reported to have antiulcer activity In Recent Studies. Ower decoction was administered in the doses of 250 and 500 1000 mg/kg orally, in rats with gastric lesions in dose-dependent

manner. the extract significantly reduced the gastric juice volume and gastric acidity Active Constituents magnifera is considered.[33]

7) zingiber Officinalis:



Fig 12:Zingiber Officinalis

- **Synonyms** :Canton ginger, ginger pop, ginger ale
- **Biological source:** ginger consists of the rhizomes of *Zingiber officinale*, Roscoe and dried in the sun.
- **Genus** :Zingiber
- **Species** : *Z. officinale*
- **Family:** Zingiberaceae
- **Part Used** : Rhizome
- **Active constituents:** Gingerol, shogaol proteins, vitamin B6, vitamin C, calcium magnesium, phosphorus, potassium, sulfur and linoleic acid.[34]
- **Extraction process of zingiber Officinalis :**

Ginger (*Z. officinale* Roscoe.) rhizome was purchased from the local market at Mysore, India and used for studies. One kilogram fresh ginger rhizome was cleaned, washed under running tap water, cut into small pieces, air dried, powdered for particle size of 20 mesh and Ginger powder (10 g) was defatted using hexane in a soxhlet apparatus. One gram of defatted powder was taken in 10 mL distilled water and boiled for 5 min, cooled and centrifuged at 1000 g for 10 min. The clear supernatant was separated and referred as ginger aqueous extract (GRAE). A total yield of 8 g/100 g accounting to an average of 8% (w/w) was obtained with triplicate extractions. Obtained aqueous extract was analyzed for bioactivity—anti-oxidants, inhibition of H⁺, K⁺-ATPase/H. pylori.

Antiulcer activity : Zingiber zerumbet has a major role in gastroprotection activity against ethanol-induced gastric ulcer model in rats. They demonstrated that pretreatment with zerumbone or omeprazole in rats significantly reduced ulcer area formation compared to the ulcer control group.[35]

8) cuphea aequipetala:

Fig 13:cuphea aequipetala

- **Synonyms** :Cuphea hyssopifolia f. Melanium P.Browne.
- **Biological source** : Cuphea is a genus containing about 260 species of annual and perennial flowering plants native to warm temperate to tropical regions of the Americas. The species range from low-growing herbaceous plants to semi-woody shrubs up to 2 m (6 fit 7 in) tall. Commonly they are known as cupheas.
- **Genus**: Cuphea P.Browne.
- **Family**: Lythraceae.
- **Part use** : Aerial parts.
- **Chemical constituents**: genus Cuphea are tannins , Polyphenol flavonoids, triterpenes, sterols, aromatic acids, carbohydrates, unsaturated fatty acids and alkanes.[36]
- **Extraction process of cuphea aequipetala**:

Extraction type of antioxidant compounds. For these evaluations, 100 mg of the powdered dried leaves of C. aequipetala were used. Following extraction methods were evaluated: 1) sequentially extraction: 100 mg of the homogenized samples were extracted with 50 mL of hexane under agitation for 24 h at room temperature, filtered through a Whatman No. 1 filter paper (Whatman, Maidstone, UK) and the supernatant collected. [2]

Antiulcer activity: Cupheaa Eqipetala infusion CAI,CAI Increases the prostaglandin content then stimulates gastric mucous production and bicarbonate leading to protect the secretion mucosa from damage which induced by noxious agents. CAI may decrease active oxidant species production and may decrease active oxidant species production, involving sulfhydryl-containing compounds of the mucosa.[37]

9) mimosa pudica :

Fig 14: mimosa pudica

- **Synonyms:** *Mimosa hispida* Kunth.(Laajvanti).Touch me not.
- **Biological source:** The plant is a native of tropical America and naturalized nearly all through the tropical and subtropical parts of India.
- **Genus:** *Mimosa*
- **Species:** *M. pudica*
- **Family:** Fabaceae
- **Parts use:** leaves and root
- **Chemical constituents:** The ethanol extract consisted of alkaloids (9.05%), flavonoids (8.32%), steroids (2.49%), saponins (8.15%), phenols (1.02%), tannins (0.083%), cyanogenic glycosides (0.122%) and anthocyanins (1.913%) .[1]
- **Extraction process of Mimosa pudica:**
The Fresh leaves of *Mimosa Pudica* Linn were first collected from the plants. These leaves were washed plants. thoroughly 10-15 minutes with running tapwater and then with sterile water. They were dried in shade, powdered and used for Extraction.20gm of the *Mimosa Pudica* leaves Powder was dissolved in 100 ml of 50% Methanol to prepare the extract. Extraction was done by Soxhlet Apparatus.
- **Antiulcer activity:** In Ayurvedic. Decoction of the fresh leaves and seeds are consumed for intestinal ulcer .In Recent Studies. Ethanolic extract of the leaves of *Mimosa pudica* have been reported to possess antiulcer activity in a dose-dependent manner and these leaf extracts maybe useful as a natural antioxidant in treatment of ulcer .
- **Active constituents** alkaloids in mimosine is considered .[38]

10) moringa oleifera:



Fig 15: moringa oleifera

- **Synonyms** :*Guilandina moringa* L.
- **Biological source** :*Moringa oleifera* (MO) is an indigenous tree from the north of India, Pakistan, and Nepal, of which all its components (leaves, seeds, flowers, and bark),*Moringa*, native to parts of Africa and Asia The name is derived from murungai, the Tamil word for drumstick, and the plant is commonly referred to as the drumstick tree.
- **Genus** : *Moringa*
- **Species** : *M. oleifera*
- **Family** *Moringaceae*
- **Parts use:** root and bark.. seeds,
- **Chemical constituents** : *Moringa* species contain various phytoconstituents such as alkaloids, saponins, tannins, steroids, phenolic acids, glucosinolates, flavonoids, [39]
- **Extraction process of Moringa Oleifera:**

the seeds of moringa oleifera shade dried and reduce the course powder in mechanical grinder and passed through the seive no. 40 the powder can be extracted using 90% ethanol .500gm of dried powder plant was taken in round bottom flask using maceration process .in thus method the plant powder was soaked with 90%ethanol and warm at 40 degree celcius temp. for 1 hour .cool it and filtered it by vacume filtration using whatman filter paper no.1.[2]

antiulcer activity:

Antiulcer activity of seeds of Moringa Oleifera was studied in rats in which gastric ulcers were induced by oral administration of ethanol and pylorus ligation. Seeds extract of Moringa Oleifera was administered in the dose of 150 and 200 mg/kg orally. The antiulcer activity was assessed by determining and comparing the ulcer index in the test group with that of the vehicle control group. Gastric fluid total acidity and free acidity were estimated in pylorus ligated rats. Omeprazol was used as a reference drug. The results suggested that ethanolic extract of Moringa Oleifera possesses significant antiulcer activity.[40]

Emblica officinalis:



Fig 16 : emblica officinalis

- **Synonyms:** Phyllanthus Emblica
- **Biological source:** emblica Indian goose berry. Amla.thise consist of deried as well ae fresh fruits of the plant emblica of officinalis garth ((phyllanthus emblica linn) it is small or medium size of tree with a crooked trunk ang spreading branches, and grayish green bark that peels off in flakes.
- **Genus:** Phyllanthus
- **Species:** emblica
- **Family:** euphorbiaceae
- **Part use:** fruit, leaves

Chemical constitution:

Fixed oil, amino acid, vitamin, gallic acid, and flavonoids.

Extraction process:

E. officinalis Gaertn. (Euphorbiaceae) fruits were procured locally from Bangalore, India. Fruits (10 kg) were cut into small pieces and expressed to obtain juice. Filtered juice (2.1 L) was spray dried to get 30 g of dry powder. The spray dried extract of *E. officinalis* was separated into seven major fractions using a preparative high-performance liquid chromatography (HPLC) system as described in a previous study.²⁰ Different fractions 1–7 were collected as white amorphous powders.¹[41]

Future aspects :

According to the World Health Organization (WHO), approximately 65-80% of the world's population living in developing countries depends essentially on plants for primary health care. Since ancient times medicinal plants have been used as a source to cure numerous human diseases. In the present days, one fourth of the world population depends on traditional medicines. As per the recent data the global traditional market is

increasing at the rate of 7-15 percent per year. Herbal medicinal preparations are normally very popular in developing countries.

Marketed formulation:

1. Neuzyme syrup
2. Arjuna
3. Alsahar
4. Adhawa Anti-ulcer Capsule
5. Herbopearl Mouth Ulcer Gel
6. Ulcer Care Powder
7. Varan Powder
8. Dr. Thanki's Acidity Capsule

Conclusion:

Gastric ulcer is most widespread disease and this is due to imbalance between aggressive and defensive factors. Various parts of plants like root, rhizome, bark, leaves, fruit, flower or even the whole plants are used in the treatment of ulcer by the Indian community especially those belongs to the tribals and rural areas. This is well known that various constituents present in plants like flavanoids are responsible for antiulcer activity. This study is aimed to collect some plants of antiulcer property to provide information regarding to cure the ulcer.

The antiulcer activity is probably due to the presence of flavonoids in all few herbal plants. Our review results showed that above-mentioned medicinal plants could prevent ulcer with the principle on dose-dependent. A variety of botanical products have been reported to possess antiulcer activity.

The plants are widely used in treatment of ulcers are *Benincasa hispida* fruit extract (RS), *Aspilia africana*, *Azima tetracantha*, *Ficus religiosa*, *Zingiber officinale*, and *Ocimum sanctum*. An ulcer is basically an inflamed break in the skin or the mucus membrane lining the alimentary tract.

Reference:

- 1] G. Vimala and F. Gricilda Shoba, A Review on Antiulcer Activity of Few Indian Medicinal Plants, International Journal of Microbiology, Published 25 May 2014, Volume 2014, page no 98 to 100
- 2] T Lakshmi Srinivas, S Mohana Lakshmi, S Neelufar Shama, G Koteswara Reddy, k R prasana, medicinal plant of Anti-ulcer activity, published 20 june 2013 page no 250,
- 3]) joginder singh pathania , rupendra kumar Bharti, vikas sood, pharmacology for BSc nursing student, chapter 7 and 3 Anti-ulcer.
- 4] Aghareed M. Asali, Mohammed A. Alghamdi, Sumayah A. Fallatah, Risk factors leading to peptic ulcer disease: systematic review in literature, International Journal of Community Medicine and Public Health, volume 5, published by 2018 October 5, page no 1-8.
- 5] joginder singh pathania , Rupendra kumar Bharti, vikas sood, pharmacology for BSc nursing student, chapter 7 and 3 Anti-ulcer.
- 6] Mariano A. Menezes¹ • Fernando A. M. Herbella² Pathophysiology of Gastroesophageal Reflux Disease, Published online: 3 March 2017 Socie'te' International de Chirurgie 2017, World J Surg (2017) 41:1666–1671.
- 7]) John Maret-Ouda, MD, PhD; Sheraz R. Markar, MD, PhD; Jesper Lagergren, MD, PhD, Gastroesophageal Reflux Disease: A Review, JAMA December 22/29, 2020 Volume 324, Page Nbeneficia
- 8] Mechu Narayanan, MD, Kavya M. Reddy, MD, and Elizabeth Marsicano, MD, Peptic Ulcer Disease and *Helicobacter pylori* infection, Missouri State Medical Association Mo Med. 2018 May-Jun; 115(3): 219–224
- 9] Mechu Narayanan, MD, Kavya M. Reddy, MD, and Elizabeth Marsicano, MD, Peptic Ulcer Disease and *Helicobacter pylori* infection, Missouri State Medical Association Mo Med. 2018 May-Jun; 115(3): 219–224

10]Lucija Kuna, Martina Smoli, Robert Smolic, Nikola Raguz-Lucic, Aleksandar Vcev, Martina Smolic, Peptic Ulcer Disease: A Brief Review of Conventional Therapy and Herbal Treatment Options,manuscript (L.K., J.J.)

11] SYED MISBAHUL HASAN1*, SHIVBHADRA SINGH2,3, RAVI KANT,BIOMEDICINAL AND GASTROPROTECTIVE ASPECTS OF ORGANOBISMUTH COMPOUNDS: RECENT APPROACHES AND FUTURE PERSPECTIVES, Asian journal pharmaceutical and clinical research, published by Received: 12 February 2019, Revised and Accepted: 03 April 2019, volume 12 issue 5.2019, page no 172-181.

12) dr. manjunatha p.mudagal ,dr uday raj sharma, Pharmacology -3 nirali publication in raju shakhe pune .page no 3.5-3.6

[13] ,Malik TF, Gnanapandithan K, Singh K. Peptic Ulcer Disease. [Updated 2022 Jun 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-.

14] G. Bianchi Porro,F. Parente ,Long Term Treatment of Duodenal Ulcer,Published: 11 November 2012, 41, pages38–51 (1991)The Journal of the History of Biology.

15] Ocasio Quinones GA, Woolf A. Duodenal Ulcer. [Updated 2022 May 7]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-.

16]) dr.manjunatha p.mudagal , dr uday raj sharma, Pharmacology -3 nirali publication in raju shakhe pune first edition Feb 2020,.page no 6.4and 6.5.

17)] D henry, m.langman , adverse effects anti-ulcer drugs ,of medicine drugs published by 1 june 1981.

18] Ayesha vaseem, mazher ali, khuleja Afshan , Activity of tulsi leaves ocimum Sanctum)in protecting Gastric ulcer in rats by clod restrain method , published by September 2017, international journal of basic and clinical pharmacology 6(10)-2343

19] Kochikar Pai, Sham S Bhat, [...], and Jagadish Chandra , Use of an Extract of Indian Sacred Plant *Ocimum sanctum* as an Anticariogenic Agent: An *in vitro* Study, International Journal of Clinical pediatric Dentistry, 11 August 2015,

20]Husnul Hanani Soib, Hassan Fahmi Ismail, [...], and Mohamad Roji Sarmidi, Bioassay-Guided Different Extraction Techniques of *Carica papaya* (Linn.) Leaves on In Vitro Wound-Healing Activities, Multidisciplinary Digital Publishing Institute (MDPI),Published online 2020 Jan 24.

21] 1)Hussein O B Oloyede et al. J Integr Med, Matthew C Adaja, Anti-ulcerogenic activity of aqueous extract of *Carica papaya* seed on indomethacin-induced peptic ulcer in male albino rats,. 1Department of Biochemistry, University of Ilorin, Ilorin 240001, Nigeria. Published by 2015 Mar;13(2):105-14.

22)G. Vimala and F. Gricilda Shoba, Review on Antiulcer Activity of Few Indian Medicinal Plants, international journal of microbiology, PG & Research Department of Zoology, Voorhees College, Vellore, Tamilnadu 632001, India, Published online 2014 May 25.

23)Husnul Hanani Soib, Hassan Fahmi Ismail, [...], and Mohamad Roji Sarmidi,Bioassay-Guided Different Extraction Techniques of *Carica papaya* (Linn.) Leaves on In Vitro Wound-Healing Activities

24] 1) N.S. Gill S Dhawan, A. Jain, R. Arora, m bail, Antioxidant and Anti-Ulcerogenic Activity of Wild *Punica granatum* Ethanolic Seed Extract, Research Journal of Medicinal Plants, published by 2012 ,volume 6 issue 1 Page no 47-55.

25)R, gautan, S.C sharma, Anti-ulcer activity of *Punica granatum* linn.in diabetic rats, International Journal of Pharmacy and Pharmaceutical Sciences, published by 2012, page no 459-461.

27] Nabaweya A. Ibrahim, Efficiency of the leaves and fruits of *Aegle marmelos* methanol extract (L.) Correa and their relative hepatotoxicity induced by CCL4 and identification of their active constituents by using LC/MS/MS, 2021, Journal of Reports in Pharmaceutical Sciences, published by 2018, volume 5 Page no 1161-1168.

28] Shahedur Rahman and Rashida Parvin, therapeutic potential of *Aegle marmelos* (L) . Asian Pacific journal of tropical disease, published by 4 feb 2014 page no 71 to 77.

29] J. R. Ilavarasan, S. Monideen, and M. Vijayalakshmi, "Antiulcer activity of *Aegle marmelos*," Ancient Science of Life, vol. 21 no 4-pp published by 2003 page no 23-26.

30] Ali Esmail Al-Snafi, Chemical constituents, pharmacological effects and therapeutic importance of *Hibiscus rosa-sinensis*- A review, IOSR journal of pharmacy, published by 11 july 2018, volume 8 issue 7 Page no pp 101-119

31] A. V Anita gnana Kumari A palavedam, j Anbujeba sunilson, k, Anandaraja gopal, m. vignesh, j. parkavi, preliminary phytochemical and Antiulcer studies of *hibiscus rosa sinensis* Lino root extract, international journal of green pharmacy, published by 2010 page no 100 to 118.

32] maria Elena maldonado-celis, Elhadim yahia Ramiro bedoya, chemical composition of mango *mangifera indica* fruit nutritional and phytochemical compound. the research of plant metabolism chemo diversity. published by 17 Oct 2019 page no 1731-1735.

33] Prabhu K1 and Ranjan S2, Assessment of Antiulcer Activity of Ethanolic Extract of *Mangifera indica* Seed Kernel Using Acid Ethanol Induced Ulcer Model, international journal of current microbiology and applied science, volume 4 number (4) 2015 PP 854-860

34] Tayyeba Rehman Qindeel Fatima, ginger (*zingiber officinale*) A international journal of complementary and Alternative Medicine published by 11 2018, PP 88-89

35] Siddaraju M. Nanjundaiah, 1 Harish Nayaka Mysore Annaiah, 1 and Shylaja M. Dharmesh, Gastroprotective Effect of Ginger Rhizome (*Zingiber officinale*) Extract: Role of Gallic Acid and Cinnamic Acid in H⁺, K⁺-ATPase/H. pylori Inhibition and Anti-Oxidative Mechanism, Evidence-Based Complementary and Alternative Medicine, published by 23 Jun 2011, Volume 2011 | Article ID 249487, page no 1 to 11

36] José Antonio Morales-Serna, 1 Eréndira García-Ríos, 1 Domingo Madrigal, 2 Jorge Cárdenas, 1 Manuel Salmón 1 * Constituents of Organic Extracts of *Cuphea hyssopifolia*, Mex. Chem. Soc. 2011, 55(1), Sociedad Química) De México ISSN 1870-249X PP 62-64.

37] Osman Albarri 1 • Khaled W. K. Alzeini 2 • Işıl Var 3 • Amani Boushahassan 1 • Melda Meral 4, Anti-ulcer Activity of Some Selected Medicinal Plants: , International Journal of Biotechnology and Food Science, published by july 2018, volume 6 (2) pp 18-32

38] Rajesh Singh Tomar*, Vikas Shrivastava and Shuchi Kaushik, In vitro efficacy of methanolic extract of *Mimosa pudica* against selected micro-organisms for its broad spectrum antimicrobial activity, international journal of current microbiology applied science, volume 3 number 4 PP 780-784.

39] 2. swati s. kansara, manmohan singhal, evaluation of antiulcer activity of *moringa oleifera* seed extract, journal of pharmaceutical science and bioscientific research, jan feb 2013, page no 20-21

40] Ranjeet Kumar Ranjan 1, M. Sathish Kumar 1, I. Seethalakshmi 2 and M. R. K. Rao, Phytochemical analysis of leaves and roots of *Mimosa pudica* collected from Kalingavaram

41] Muhammed Majeed, Shaheen Majeed, Lakshmi Mundkur, Kalyanam Nagabhushanam, Sivakumar Arumugam, Kirankumar Beede, Furqan Ali, Standardized *Emblica officinalis* fruit extract inhibited the activities of α -amylase, α -glucosidase, and dipeptidyl peptidase-4 and displayed antioxidant potential, *The Journal of the Science of Food and Agriculture* has a new sister journal ,5 sep. 2019,vol.19 ,issue 2,page no.509-516.

42] . A.J. Al-Rehaily, T.A. Al-Howiriny, M.O. Al-Sohaibani and S. Rafatullah, Gastroprotective effects of 'Amla' *Emblica officinalis* on in vivo test models in rats, *international Journal of Phytotherapy & Phytopharmacology*(Vol. 9, Issue 6), Sept. 2002,

