

## ANTI-ULCER ACTIVITY OF SOME INDIAN MEDICINAL PLANT

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### ABSTRACT

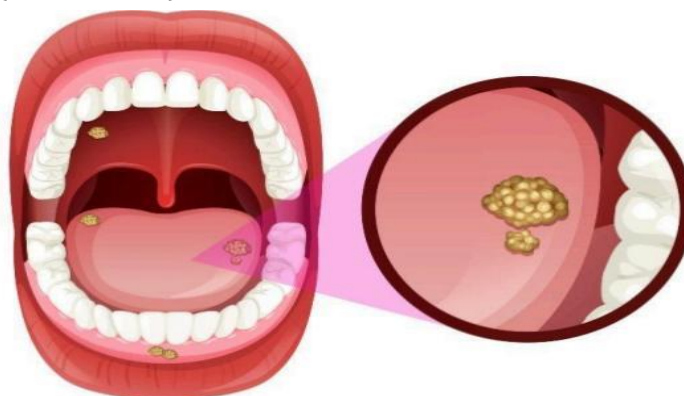
Ulcer is a common gastrointestinal disorder now-a-days most of the people affected. Ulcer basically an inflamed break in the skin or the mucous membrane lining the alimentary tract. Ulceration occurs when there a disturbance of the normal equilibrium caused by either enhanced aggression or diminished mucosal resistance. It may be regular uses of the drug. Irregular food habits, stress, and so forth. The herbal and natural are practiced world-wide for the treatment of antiulcer since ancient times. The various herbal plants are claimed to posses antiulcer activity. The combination of traditional and modern knowledge can produce better antiulcer drug with fewer side effects. In the review attempts have been made to know about some medicinal plants which may be used in Ayurvedic as well as modern science for the treatment and prevention of ulcer.

**Keywords:** Antialcer, Gastric Lesion, Lantana Camara, Annona Muricata, Kalanchoe Pinnata, Free Acidity, Total Acidity, Ulcer Index, Gastric Juice.

### I. INTRODUCTION

Ulcer is a break on the skin, in the lining of an organ, or on the surface of a tissue. Ulcers are open sores or wounds caused by the erosion of tissue. Ulcers are most Common on the skin of the lower extremities and in the Gastrointestinal tract, although they may be encountered at almost any site. There are many types of ulcer such as mouth ulcer, oesophagus ulcer, peptic ulcer, and genital ulcer. Among these the peptic ulcer is seen mostly common in peoples. Peptic ulcer occurs in that part of the gastrointestinal tract (g.i.t.) which is exposed to gastric acid and pepsin, i.e. the stomach and duodenum. The etiology of peptic ulcer is not clearly known. Peptic ulcer disorder arises due to imbalance between defensive factor (gastric mucus and bicarbonate secretion, prostaglandins, nitric oxide, high mucosal blood flow, innate resistance of the mucosal cells) and the aggressive (acid, pepsin, NSAIDs, bile and H. pylori).

#### Aphthous stomatitis (mouth ulcers)



#### Experimental Models Used for Peptic Ulcer

- Water-immersion stress or cold-water-restraint or cold-restraint stress,
- NSAIDs (indomethacin, aspirin, and ibuprofen) induced gastric ulcers,
- Ethanol-induced gastric ulcers,
- Acetic acid-induced gastric ulcers,
- Histamine-induced gastric ulcers, reserpine-induced gastric ulcers,
- Serotonin-induced gastric ulcers,

- Pylorus-ligated-induced peptic ulcers,
- Diethyldithiocarbamate- (DDC)-induced peptic ulcers,
- Methylene blue-induced ulcers,
- Ischemia-reperfusion- (I-R-) induced gastric ulcers,
- Cysteamine-induced duodenal ulcers,
- Indomethacin-histamine-induced duodenal ulcers.
- Ferrous iron-ascorbic acid-induced gastric ulcers
- Acetic acid-H. pylori-induced ulcers

### Traditional Uses and Recent Studies

#### **Acacia arabica**



Traditional use: In Ayurvedic. As gargle it is useful as wash in haemorrhagic ulcer and wounds. Bruised tender leaves formed into a poultice and applied to ulcers act as stimulant and astringent. Recent Studies: Acacia senegal gum protected against cold restraint stress-induced gastric ulcer in rats. Aqueous extract of *A. arabica* gum showed protection against meloxicam-induced intestinal damage and attenuated intestinal enzymes activity

#### **Allium sativum**



Traditional use: In Ayurvedic. Mustard or coconut oil in which garlic has been fried is an excellent application for maggots infesting ulcers, ulcerated surfaces, and wounds. Garlic juice mixed with 3 or parts of ordinary or distilled water has been used as a lotion for washing wounds and foul ulcers. Recent Studies: The extract of *A. sativum* bulb juice was administered at the doses of 250 and 500mg/kg orally in rats, against cysteamine induced gastric ulcer. The extract significantly increases healing of gastric ulcer and prevents the development of experimentally induced gastric and duodenal ulcers in rats

#### **Aloe vera**



Traditional use: In Ayurvedic, A poultice of leaves mixed with sesamum seeds is very useful in ulcers. Recent Studies: *Azadirachta indica* leaf extract protected against pylorus ligation and cold restraint stress induced gastric ulcer in rats. Traditional use: In Ayurvedic. Leaves are being used successfully in *A. vera* in the local treatment of chronic ulcers. First the pain diminishes and after a few weeks the ulcers heal. Recent Studies: *Aloe vera*

vera powder was mixed with gum acacia; the solution was administered in rats at a dose of 200mg/kg against indomethacin-induced gastric ulcer. The extract showed significant anti-ulcer activity comparable to control.

### **Ginseng**



Traditional use: Through the ages, the root has been used in the treatment of asthenia, atherosclerosis, blood and bleeding disorders, erectile dysfunction, hypertension, liver dysfunction, and colitis, as well as to relieve the effects of aging, cancer, postmenopausal disorder, and senility.

### **Curcuma lon**



Traditional use: Curcuma longa has been commonly used as a traditional remedy for a variety of symptoms such as inflammation, gastritis and gastric ulcer.

Recent Studies: When C. longa extract was administered per os to pylori-ligated rat stomachs, it reduced gastric acid secretion and protected against the formation of gastric mucosal lesions.

### **Terminalia Billerica**

Traditional use: Traditional use of Terminalia hillerica in the treatment of liver disease.

### **Aegle marmelos**

Traditional use: In Folk Medicine. The fruit of A. marmelos is traditionally used for the treatment of ulcer among the Kani tribes in Kanyakumari district, Tamil Nadu, India. Recent Studies: Ulcers are induced by aspirin plus pylorus ligated gastric ulceration in rats and aqueous extract of leaves is to be administered orally for 21 days, daily dose of 1gm/kg. International Journal of Microbiology 3. The result indicated a significant reduction in the ulcer lesion count compared to control,

### **Annona squamosa**

Traditional use: In Ayurvedic. Decoction of the bark is a useful wash in ulcers. A preparation known as kanchanara guggula made of the following ingredients is useful in ulcers:

take the bark of Bauhinia variegata (10 parts), 3 myrobalans, ginger, blackpepper, long-pepper, bark of Crataeva nurvala, cardamoms, cinnamon, and Tejpatra leaves, each one part. Powder them all and add guggula (15 parts) to make a pill mass. This is given in doses of half a tola every morning with a decoction of Sphaeranthus mollis or of Triphala or of catechu

Recent Studies: The ethanolic and aqueous extract of root of B. variegata was administered at the doses of 200 and 400mg/kg orally, in rats against pylorus ligation, ethanol, and aspirin-induced gastric ulcer. The extract significantly inhibited gastric mucosal damage and reduced the basal gastric acid secretion

**Berberis aristata**

Traditional use: In Ayurvedic. Crude extracts known as rasasaut (In Hindi) are prepared from the root, bark mixed with honey is useful application to ulcerations of the skin.

**ANTIULCER HERBAL SYRUP OF GINGER EXTRACT.**

**Ginger :**

Canton ginger, belonging to the Zingiberaceae family, is a herbaceous perennial plant widely used as both a spice and herbal medicine. Its rhizome, the horizontal stem from which roots grow, is the main edible part. Ginger's spicy taste, attributed to ketones like gingerol, is a focus of health-related scientific studies. Its name derives from various languages, with its true origin uncertain. Indian and Chinese cultures have utilized ginger for over 5,000 years for its medicinal properties, with its cultivation now widespread in humid tropics. Ginger has been a valuable trade item for millennia, exported from India to the Roman Empire over 2,000 years ago for its perceived healing benefits. Its popularity persisted in Europe, where it was highly valued even after the Roman Empire's fall, with Arab merchants controlling its trade. In the Middle Ages, ginger was introduced to Europe in raw and preserved forms, and Queen Elizabeth I of England is credited with inventing gingerbread as a popular Christmas treat.

**Herbal syrup:**

Herb syrup is typically prepared by combining a concentrated herbal extract with sugar, and sometimes alcohol is also added. The extract is often made through a process called decoction, which involves boiling the herbs to extract their properties. Mixing this decoction with sugar helps thicken the syrup and extend its shelf life. Additionally, sweeteners can enhance the taste of certain herbs. The resulting syrup is a thick, sticky liquid containing a concentrated solution of sugar and water, with or without added flavoring or medicinal ingredients. It's commonly used in culinary applications or as a base for herbal remedies.

**II. MATERIALS AND METHODS**

• **Material:**

Chemical: Ethanol, Ginger extract

Apparatus: Beaker, stirrer, Volumetric Flask

Instruments: Soxhlet distillation

**Role of ingredients:**

Sr.No.	Ingredients	Role
1	Ginger	Antioxidant, Anti-ulcer
2	Rose water	Flavouring agent
3	Ethanol	Preservative
4	Sugar base invert	Preservative
5	Henna	Colouring agent

**METHODS OF PREPARATION:**

• **Preparation of Ginger Extracts:**

**Method of ginger extract**

Step1. Wash the ginger.

Step2. Steaming the ginger.

Step3. Extracting it with 70% ethanol.

Step4. Filtering the extract.

Step5. Concentrating the extract.

Step6. Spray-drying the extract to obtain a powder.

Step7. Storing the powder at -20°C until use.

• **Preparation of herbal syrup:**

**Method of herbal syrup**

By decoction method,

Step1.Extract of ginger prepared in a lab .

Step2.The extract is used to make an ethanolic extract to get specific active constituents using Soxhlet extraction.

Step3.Extract was filter.

Step4. Take extract solvent in a beaker

Step5. Add drug extract

Step6. Add colouring agent.

Step7. Add flavoring agent

Step8. 50 ml of syrup was obtained

Step9. Transfer syrup into amber colour bottle

**FORMULA FOR HERBAL SYRUP:**

1. Formula for F1.

Sr. No.	Ingredients	Quantity
1	Ginger extract	8ml
2	Rose water	6ml
3	Invert sugar base	36ml

2. Formula for F2.

Sr. No.	Ingredients	Quantity
1	Ginger extract	4ml
2	Rose water	3ml
3	Invert sugar base	34ml
4	Ethanol	9ml

3. Formula for F3.

Sr. No.	Ingredients	Quantity
1	Ginger extract	7ml
2	Rose water	3 ml
3	Invert sugar base	32ml
4	Alcohol	7ml

1. Formula for F4.

Sr. No	Ingredients	Quantity
1	Ginger extract	16ml
2	Rose water	5ml
3	Invert sugar base	19ml
4	Alcohol	10ml





### III. EVALUATION

**Density:**

The formula for density can be expressed as:

$$\text{Density} = (\text{Weight of liquid under test}) / (\text{Volume of liquid under test}).$$

This formula is used to evaluate the density of the liquid, such as syrup.

**Specific gravity**

The formula for specific gravity can be expressed as:

$$\text{Specific Gravity} = (\text{Weight of liquid under test}) / (\text{Weight of water})$$

This formula is used to evaluate the specific gravity of the liquid, such as syrup, by comparing its weight to the weight of an equal volume of water.

**Viscosity:**

The formula for viscosity calculation can be expressed as:

$$\text{Viscosity} = (\text{Density of test liquid} * \text{Time required to flow test liquid}) / (\text{Density of water} * \text{Time required to flow water})$$

This formula is used to determine the viscosity of the test liquid by comparing its flow rate to that of water.

**Ph:**

The pH (potential of Hydrogen) is a measure of the acidity or basicity of a solution. It is determined using a pH meter, which measures the concentration of hydrogen ions in the solution. The term “pH” stands for “power of Hydrogen” and is calculated using the negative logarithm of the hydrogen ion concentration in moles per liter (pH = -log[H+]). It indicates whether a solution is acidic (pH < 7), neutral (pH = 7), or basic (pH > 7).

### IV. RESULT

The final formulation (F4) has been determined to be more stable than formulations F1, F2, and F3, likely due to optimizations made during the minimization process. Additionally, formulation F4 exhibits antioxidant properties, which can be valuable for both researchers and industries seeking to develop similar formulations on a larger scale. This suggests that formulation F4 may offer enhanced stability and beneficial antioxidant effects compared to the earlier formulations, making it a promising candidate for further research and industrial applications.

Sr. No.	Parameter	F1	F2	F3	F4
1	Density	1.49gm	1.42gm	1.30gm	1.51gm
2	Specific gravity	0.6478	0.6575	.6591	.6591
3	Viscosity	3.84cp	3.88cp	3.65cp	3.65vp
4	Determination a)pH paper b)pH meter	Neutral 7.54.	Neutral 7.64	Neutral 7.43	Neutral 7.43
5	Organoleptic character 1)Colour	Reddish Aromatic Sweet	Reddish Alcoholic Sweet	Reddish Aromatic Sweet	Reddish Aromatic Sweet

	2)Odour	Turbid	Turbid	Clear	Clear
	3)Taste				
	4)Appearance				

## V. CONCLUSION

From this study we can conclude that studies with plant Sources can result in novel and effective pattern of treatment. Current stalemates of modern medicine in the management of various ailments incline research tendencies to traditional Medicine. In this respect, Traditional medicine has introduced Good protocols for treatment of various gastrointestinal Disorders. All of the remedies presented here had adequate Evidence from traditional or scientific source for their efficacy in management of ulcers. There are various medicinal plants and their extracts (containing active chemical constituents, e.g., tannins and Flavonoids) that have significant antiulcer activity in in Vivo experiments on animal models. Ayurveda, the oldest medicinal system in the world, provides leads to find therapeutically useful compounds from plants. Therefore, Ayurvedic knowledge supported By Modern science is necessary to isolate, characterize, and Standardize the active constituents from herbal sources for Antiulcer activity. The combination of traditional and modern Knowledge can produce better drugs for the treatment of Peptic ulcer with fewer side effects

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