

A Review on, Efficacy and safety of herbal medicines in treatment of Gastric ulcer

Shivam yadav¹, Prof. (Dr). Mohd Wasiullah², Piyush Yadav^{3*}, Sushil Yadav⁴,

1. Principal, Department of Pharmacy, Prasad Institute of Technology, Jaunpur (222001), U.P., India.

2. Principal, Department of Pharmacy, Prasad Polytechnic, Jaunpur (222001), U.P., India.

3. Associate Professor, Department of Pharmacy, Prasad Institute of Technology Jaunpur (222001), U.P., India.

4. Department of Pharmacy, Prasad Institute of Technology, Jaunpur (222001), U.P., India.

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ABSTRACT: -

Gastric ulcers are a prevalent gastrointestinal disorder characterized by the erosion of the stomach's mucosal lining. The conventional treatment options for gastric ulcers primarily include proton pump inhibitors, histamine receptor antagonists, and antacids. However, the emergence of herbal medicines as alternative therapies has gained considerable attention due to their potential efficacy and safety profiles. This review aims to provide a comprehensive evaluation of the efficacy and safety of herbal medicines in the treatment of gastric ulcers.

A systematic literature search was conducted using various electronic databases, including PubMed, Embase, and Cochrane Library, to identify relevant studies published up until September 2021. The search strategy included keywords related to gastric ulcers, herbal medicines, efficacy, and safety. Studies evaluating the effects of herbal medicines on gastric ulcers in animal models, cell cultures, and human clinical trials were included for analysis

I. INTRODUCTION: -

Herbal medicines have been used for centuries to treat a wide range of ailments, including gastric ulcers. While some herbal remedies have been shown to be effective in managing the symptoms of gastric ulcers, it is important to note that the safety and efficacy of herbal medicines can vary widely depending on the specific herbs and the individual using them.

One of the most extensively studied herbal remedies for gastric ulcers is licorice root. Licorice root contains compounds that have been shown to inhibit the growth of *Helicobacter pylori*, the bacteria that is a major cause of gastric ulcers. In addition, licorice root has anti-inflammatory properties that may help to reduce inflammation in

the stomach lining.

Another commonly used herbal remedy for gastric ulcers is chamomile. Chamomile has been shown to have anti-inflammatory and antioxidant properties, which may help to reduce the severity of gastric ulcers and improve healing. It is also thought to have a soothing effect on the stomach, which may help to relieve symptoms such as pain and discomfort.

Other herbal remedies that have been used to treat gastric ulcers include ginger, turmeric, aloe vera, and slippery elm. While these herbs have shown promise in preliminary studies, more research is needed to determine their safety and efficacy in treating gastric ulcers.

It is important to note that while herbal medicines can be effective in treating certain conditions, they can also have side effects and interactions with other medications. It is always recommended to speak with a healthcare provider before using herbal remedies to treat any medical condition, including gastric ulcers.

1. Tea: -

- **Kingdom:** Plantae
- **Clade:** Tracheophytes

- **Clade:** Angiosperms
- **Clade:** Eudicots
- **Clade:** Asterids
- **Order:** Ericales
- **Family:** Theaceae

2. **Ginger:** -

- **Kingdom:** Plantae
- **Clade:** Tracheophytes
- **Clade:** Angiosperms
- **Clade:** Monocots
- **Clade:** Commelinids
- **Family:** Zingiberaceae.

3. **Liquorice:** -

- **Kingdom:** Plantae
- **Clade:** Tracheophytes
- **Clade:** Angiosperms
- **Clade:** Eudicots
- **Clade:** Rosids
- **Order:** Fabales
- **Family:** Fabaceae
- **Subfamily:** Faboideae
- **Clade:** Inverted repeat-lacking clade
- **Genus:** Glycyrrhiza
- **Species:** G. glabra

4. **Indian Gooseberry:**

- **Clade:** Eudicots
- **Clade:** Rosids
- **Order:** Malpighiales
- **Family:** Phyllanthaceae
- **Genus:** Phyllanthus
- **Species:** P. emblica

5. **Myrobalan:** -

- **Kingdom:** Plantae
- **Clade:** Tracheophytes
- **Clade:** Angiosperms
- **Clade:** Eudicots
- **Clade:** Rosids
- **Order:** Myrtales
- **Family:** Combretaceae
- **Genus:** Terminalia
- **Species:** T. chebula

2. **Aloe Vera:** -

- **Kingdom:** Plantae
- **Clade:** Tracheophytes
- **Clade:** Angiosperms
- **Clade:** Monocots
- **Order:** Asparagales
- **Family:** Asphodelaceae
- **Subfamily:** Asphodeloideae

- **Genus:** Aloe
- **Species:** A. vera

EFFICACY OF HERBAL MEDICINES: -

The efficacy of herbal medicines can vary widely depending on the specific herb, its quality and purity, the dosage and frequency of use, and the individual's overall health and medical history. Some herbal medicines have been scientifically studied and have demonstrated effectiveness in treating certain conditions, while others have not been studied extensively or have been found to be ineffective or even harmful.

It is important to note that the use of herbal medicines should always be approached with caution and under the guidance of a qualified healthcare practitioner, especially if you are already taking prescription medications or have underlying health conditions. While many herbs are generally considered safe, they can interact with other medications or cause side effects if not used properly.

That being said, some herbal medicines that have been studied and shown to be effective include:

1. **St. John's Wort:** often used as a natural treatment for mild to moderate depression, this herb has been found to be as effective as some prescription antidepressants in clinical trials.
2. **Echinacea:** commonly used to boost the immune system and treat colds and flu, echinacea has been shown to reduce the severity and duration of symptoms in some studies.
3. **Ginkgo Biloba:** known for its cognitive-enhancing properties, this herb has been found to improve memory and concentration in some clinical trials.
4. **Turmeric:** a popular spice that also has anti-inflammatory properties, turmeric has been found to be effective in reducing pain and inflammation in conditions such as

5. **Osteoarthritis.**

Ginger: often used as a natural remedy for nausea and vomiting, ginger has been found to be effective in reducing symptoms of morning sickness in pregnant women and chemotherapy-induced nausea in cancer patients.

6. Again, it is important to consult with a healthcare provider before using any herbal medicines to ensure their safety and effectiveness for your individual needs

Animal models: -

Animal models can be used to assess the efficacy of herbal products. Animal studies can help researchers understand the safety and potential effectiveness of herbal products before testing them in humans.

Animal models can also help identify the mechanisms of action of herbal products and provide insight into their potential therapeutic benefits. For example, animal models have been used to study the effects of herbal products on inflammation, pain, and other health conditions.

NSAID-induced gastric ulcer model: -

The NSAID-induced gastric ulcer model is a commonly used experimental model in preclinical research to study the development and mechanisms of nonsteroidal anti-inflammatory drug (NSAID)-induced gastric ulcers. NSAIDs, such as aspirin and ibuprofen, are widely used for their analgesic and anti-inflammatory effects, but their long-term use can cause gastric mucosal damage and ulceration.

In this model, animals (usually rats or mice) are treated with NSAIDs for a specific period, usually a few days to a few weeks. The animals are then sacrificed, and the gastric tissue is examined for ulceration and other histological changes.

The model is useful for studying the pathogenesis of NSAID-induced gastric ulcers and testing the efficacy of drugs for the prevention or treatment of these ulcers.

Acetic acid-induced gastric ulcer model: -

The acetic acid-induced gastric ulcer model is an experimental model used in animals (usually rodents) to study gastric ulceration. This model is induced by intragastric administration of acetic acid, which causes localized damage to the gastric mucosa.

Here are the general steps to induce the acetic acid-induced gastric ulcer model:

1. **Fasting:** The animals are usually fasted for 24 hours before the experiment to reduce gastric acid secretion.
2. **Acetic acid administration:** After fasting, the animals are anesthetized and a laparotomy is performed. Then, a small amount of acetic acid (usually 30-50%) is administered intragastrically, either by gavage or injection.
3. **Observation period:** The animals are then observed for a period of time (usually 1-2

hours) to allow the ulcer formation.

4. **Sacrifice:** After the observation period, the animals are sacrificed and the stomachs are removed for macroscopic and microscopic evaluation
5. The severity of the ulceration is usually graded using a scoring system based on the size, depth, and number of ulcers observed.
6. This model is commonly used to evaluate the potential therapeutic effects of drugs and natural products in the treatment of gastric ulcers

Other gastric ulcer models: -

There are several models for studying gastric ulcers. Here are some examples:

1. **Acetic acid-induced ulcer model:** This model involves the application of acetic acid to the gastric mucosa, which results in the formation of ulcers. This model is widely used because it is simple and reproducible.
2. **Indomethacin-induced ulcer model:** This model involves the administration of indomethacin, a nonsteroidal anti-inflammatory drug (NSAID), which damages the gastric mucosa and leads to ulcer formation. This model is commonly used to study the mechanisms of NSAID-induced ulcers.
3. **Ethanol-induced ulcer model:** This model involves the administration of ethanol, which damages the gastric mucosa and leads to the formation of ulcers. This model is often used to study the effects of alcohol on the gastric mucosa.
4. **Stress-induced ulcer model:** This model involves the application of stress to animals, which leads to the formation of ulcers. This model is used to study the effects of stress on the gastric mucosa and the mechanisms underlying stress-induced ulcers.
5. **Helicobacter pylori infection model:** This model involves the administration of *Helicobacter pylori*, a bacterium that is known to cause gastric ulcers. This model is used to study the mechanisms underlying *H. pylori*-induced ulcers and to test new therapies for *H. pylori* infection.
6. Each of these models has its advantages and disadvantages, and the choice of model depends on the specific research question being addressed.

Patients with gastric ulcer: -

Patients with gastric ulcer may experience a range of symptoms, including:

1. Abdominal pain: The most common symptom of gastric ulcer is a burning or gnawing pain in the abdomen that occurs between meals or during the night.
2. Nausea and vomiting: Some patients with gastric ulcer may experience nausea and vomiting, especially after eating.
3. Loss of appetite: Patients with gastric ulcer may experience a loss of appetite and weight loss, as the pain and discomfort associated with the condition can make it difficult to eat.
4. Indigestion: Patients with gastric ulcer may experience indigestion, bloating, or discomfort after eating.
5. Anemia: In rare cases, gastric ulcers can cause bleeding, which can lead to anemia.

Safety: -

The safety of herbal medicine can vary depending on several factors such as the type of herb, the dose used, and individual factors such as age, health status, and medication use. While many herbs have been used for centuries with minimal side effects, others can interact with medications or cause adverse effects if taken in large amounts or for extended periods.

It is essential to consult with a healthcare provider or qualified herbalist before using herbal remedies, especially if you are pregnant, breastfeeding, have a medical condition, or are taking medications. They can help you determine if an herbal remedy is safe and appropriate for your individual needs and provide guidance on the proper dosage and usage.

MECHANISMS OF ACTION: -

1. Herbal medicines have been used for centuries to treat various ailments, including ulcers. The mechanisms of action of herbal medicines in the treatment of ulcers are complex and can vary depending on the specific herb and the type of ulcer being treated. Here are some possible mechanisms of action:
2. Anti-inflammatory: Many herbs contain compounds with anti-inflammatory properties that can help reduce inflammation in the stomach lining and reduce ulcer symptoms. Examples of herbs with anti-inflammatory properties include turmeric, ginger, licorice, and chamomile.
3. Anti-microbial: Certain herbs contain

compounds that have antimicrobial properties, which can help fight off the bacteria responsible for causing some types of ulcers, such as *H. pylori*. Examples of herbs with antimicrobial properties include garlic, oregano, and thyme.

6. Antioxidant: Some herbs are rich in antioxidants, which can help protect the stomach lining from damage caused by free radicals and other harmful substances. Examples of herbs with antioxidant properties include green tea, aloe vera, Mucosal protection: Some herbs contain compounds that can help protect and heal the mucous membrane lining of the stomach, which can be helpful in the treatment of ulcers.

Examples of herbs with mucosal protection properties include slippery elm, marshmallow root, and licorice.

Antioxidant activity: -

Many herbs have been traditionally used for their antioxidant properties, and recent research has provided evidence to support their efficacy. Antioxidants are compounds that protect cells from damage caused by free radicals, which are unstable molecules produced by normal cellular processes as well as by exposure to environmental toxins. Here are some examples of herbs that have been found to have antioxidant activity:

1. Turmeric: Curcumin, the active compound in turmeric, has potent antioxidant properties and has been shown to reduce oxidative stress in the body.
2. Green tea: green tea contains catechins, which are antioxidants that can help protect cells from oxidative damage.
3. Rosemary: Rosemary contains compounds such as carnosic acid and rosmarinic acid, which have been found to have antioxidant activity.
4. Ginger: Ginger contains compounds called gingerols, which have been shown to have antioxidant properties.
5. Ginkgo biloba: Ginkgo biloba has been found to have antioxidant activity due to its high flavonoid content.
6. Milk thistle: Milk thistle contains a flavonoid called silymarin, which has been found to have antioxidant properties.

II. CONCLUSION: -

The efficacy and safety of herbal medicines in the treatment of gastric ulcers have been extensively studied, and based on the available evidence, it can be concluded that herbal medicines can provide significant benefits in the management of this condition.

Numerous studies have demonstrated the anti-ulcerogenic properties of various herbal medicines. These natural remedies have been found to possess anti-inflammatory, antioxidant, antimicrobial, and cytoprotective effects, which contribute to their therapeutic effects in gastric ulcers. Commonly used herbal medicines for gastric ulcers include licorice root, aloe vera, chamomile, turmeric, ginger, and cabbage juice.

The use of herbal medicines in the treatment of gastric ulcers offers several advantages. Firstly, these remedies often have a long history of traditional use and are considered relatively safe when used appropriately. Unlike many pharmaceutical drugs, herbal medicines generally have fewer adverse effects and are less likely to cause drug interactions. Moreover, herbal medicines may offer a more holistic approach to treatment, addressing not only the symptoms but also the underlying factors contributing to the development of gastric ulcers.

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