

DEVELOPMENT AND EVALUATION OF HERBAL ANTACID DIGESTIVE TABLET FOR GASTRIC RELIEF

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Abstract:

Herbal Antacid Digestive Tablet is a natural, effective solution for acid reflux relief. Blended with Amla, Licorice, Turmeric, and Ginger, it neutralizes stomach acid, soothes the digestive tract, and promotes digestion. This tablet provides quick relief from heartburn, indigestion, and bloating, with no known side effects. Suitable for long-term use, it's a safe and gentle alternative to chemical-based antacids. Manufactured under strict quality control, our Herbal Antacid Digestive Tablet is the perfect choice for those seeking a natural digestive health solution. The formulation incorporates a blend of plant-based ingredients known for their gastroprotective, anti-inflammatory, and acid-neutralizing properties as documented in traditional medicine systems like Ayurveda. Common ingredients often include Glycyrrhiza glabra (licorice), Emblica officinalis (amla), Foeniculum vulgare (fennel), and Zingiber officinale (ginger), selected for their efficacy in reducing acidity, soothing the gastric mucosa, and improving overall digestive functions.

Keywords: Ginger, funnel, peppermint Acidity relief, indigestion, Gas Relief.

Introduction:

Stomach is an integral part of body for digestion of food and is essential part of digestion system. It produces acid which is use in Digestion of salivated food in stomach. Sometimes the acid production goes up which makes hyperacidity. Herbal antacid tablets are Pharmaceutical formulations designed to alleviate symptoms of acidity and heartburn by neutralizing excess stomach acid. These tablets. Typically consist of a combination of herbal ingredients known for their antacid properties, carefully selected and formulated to provide^[1] Effective relief from gastrointestinal discomfort. The use of multiple herbs in such formulations aims to enhance their efficacy through Synergistic effects, offering a holistic approach to digestive health As an alternative to conventional antacids, herbal tablets are gaining Popularity due to their perceived safety, natural ingredients, and potential additional health benefit. Herbal antacid powder is a polyherbal formulation derived from natural plant sources known for their digestive and acid-neutralizing Properties. It is developed as a safer and more holistic alternative to synthetic antacids that are commonly associated with side effects Such as electrolyte imbalance, constipation, or rebound hyperacidity. This herbal remedy works by soothing the gastric mucosa, reducing Excess secretion of stomach acid and enhancing overall digestive function.

Herbal antacid powders are widely used in Ayurveda and other traditional medicine systems, offering a natural approach to maintaining a healthy digestive tract without disrupting the body's natural acid-base balance. As interest in plant-based and integrative health Solutions continues to grow, such herbal products are becoming increasingly popular for both preventive and therapeutic use In Gastro Intestinal Disorder^[2]

Need of the Study:

1. Provide quick relief: Offer rapid relief from acid reflux, heartburn, and indigestion.
2. Promote digestive health: Support healthy digestion, reducing symptoms of bloating, gas, and abdominal pain.
3. Natural and safe: Use natural ingredients, ensuring a safe and gentle solution for long-term use.

4. Multi-symptom relief: Address multiple digestive issues, including heartburn, indigestion, and bloating.
5. Gut health support: Support overall gut health, promoting a balanced digestive system.^[3]
6. Alternative to chemical antacids: Offer a natural alternative to chemical-based antacids, minimizing side effects.
7. Improve quality of life: Enhance overall well-being, allowing individuals to enjoy daily activities without digestive discomfort.

These objectives guide the development of our Herbal Antacid Digestive Tablet, ensuring a comprehensive and natural solution for digestive health.^[4]

Plant Profile

1. Ginger: Ginger’s natural properties make it an effective addition to our Herbal Antacid Digestive Tablet, promoting digestive health and relief. It is a key ingredient in our Herbal Antacid Digestive Tablet, offering several benefits:

- Digestive aid: Relieves indigestion, bloating, and gas.
- Anti-inflammatory: Soothes the digestive tract, reducing inflammation.
- Neutralizes acid: Helps neutralize stomach acid, relieving heartburn.
- Anti-nausea: Alleviates nausea and vomiting.
- Enhances absorption: Improves absorption of other ingredients.^[5]



Figure.1 Ginger

2. Tulsi (Holy Basil): is a revered herb in Ayurvedic medicine, offering numerous benefits when included in Herbal Antacid Digestive Tablets:

- Digestive aid: Relieves indigestion, bloating, and gas.
- Anti-inflammatory: Soothes the digestive tract, reducing inflammation.
- Antioxidant properties: Protects the gut from oxidative stress.
- Antimicrobial: Combats H. pylori, a bacteria causing stomach ulcers.
- Stress relief: Adaptogenic properties reduce stress, a common trigger for acid reflux.
- Immune system boost: Supports immune function, promoting overall well-being.^[6]



Figure.2 Tulsi

3. Peppermint : It is a soothing herb that offers several benefits in our Herbal Antacid Digestive Tablet:

Peppermint's Benefits:

- reducing bloating and gas. Relaxes digestive muscles: Eases muscle spasms,
- abdominal pain. Pain relief: Natural analgesic properties alleviate
- reducing inflammation. Anti-inflammatory: Soothes the digestive tract,
- digestive tract. Antispasmodic: Relieves cramps and spasms in the
- breath.^[7] Freshens breath: Deodorizing properties freshen



Figure.3 Peppermint

4. Fennel: It is a versatile herb that offers several benefits in our Herbal Antacid Digestive Tablet:

Fennel's Benefits:

- digestive tract. Digestive aid: Relieves indigestion, bloating, and gas.
- reducing inflammation. Antispasmodic: Relieves muscle spasms in the
- flatulence. Carminative: Reduces gas formation and relieves
- digestion.^[8] Carminative: Reduces gas formation and relieves
- Appetite stimulant: Stimulates appetite and improves



digestion.^[8]

Figure.4 Fennel

Table.1 Formulation Table

Sr. No.	Name of Ingredient	Plant Part	Formulations		
			F1	F2	F3
1	Ginger	Fruit	2 gm	3 gm	4 gm
2	Fennel	Fruit	2 gm	3 gm	4 gm

3	Tulsi	Leaves	1 gm	2 gm	3 gm
4	Peppermint	Leaves	1 gm	2 gm	3 gm
5	Lactose	—	0.7 gm	1 gm	1.2 gm

Method of Preparation of Digestive Tablet :

Tablets are prepared by compressing a powdered mixture of active ingredients and excipients (like binders, fillers, and lubricants) using a tablet punching machine. The process typically involves formulating the mixture, weighing and mixing the ingredients, and compressing them into tablets. The tablets may then be coated for taste masking or controlled release.



Figure.5 Herbal digestive Tablet

Evaluation Parameters of Tablets:

A.Pre compression test:

1.Tapped Density:A tapped density test measures how compact a powder becomes after being mechanically tapped to a specific height and frequency. It determines the maximum density of a powder by mechanically tapping a container of the sample until the volume no longer changes significantly, which helps eliminate air pockets and allows particles to settle into a more compact arrangement. This test is important for understanding powder properties related to packing, handling, and storage.^[9]

2. Bulk Density:A bulk density test measures the mass of a material per unit volume, including pore space. It involves weighing a sample and measuring its total volume, and the resulting value (mass/volume) indicates how compacted or porous the material is. Common methods include filling a container, then weighing it and its contents, or using a core sampler for soil. It is typically expressed in grams per cubic centimeter (g/cm) or grams per milliliter (g/ml)^[10]

3.Angle Of Repose: The angle of repose test is a simple method used to determine the flowability of granular materials like powders or sand. It measures the steepest angle at which a pile of the material will stand without the sides slumping or sliding down. A material with good flowability will form a flatter pile with a lower angle of repose (e.g, 25-30 degrees), while a material that is cohesive or flows poorly will form a steeper, more irregular pile with a higher angle (e.g., over 45 degrees).^[11]

Table 2.Pre compression table

Sr No	Test	Formulation		
		F1	F2	F3
1	Tapped density	1.25	1.30	1.40
2	Bulk density	0.5 gm/l	0.5 gm/l	1.0gm/l
3	Angle of repose	31 ⁰	34 ⁰	35 ⁰

B. Post compression test:

1. Hardness Test: A tablet hardness test measures the force required to break a tablet to ensure it can withstand manufacturing, packaging, and handling. In the test, a tablet is placed in a hardness tester, which applies increasing force until the tablet fractures, with the breaking point recorded in units like kilograms or Newtons. This quality control test is vital for ensuring tablet integrity, durability, and proper performance after it's made.^[12]

2. Disintegration Test: A tablet disintegration test is a quality control procedure to determine how quickly a tablet breaks down into smaller granules in a liquid medium, ensuring the active ingredients are released for absorption. Tablets are placed in a basket-rack assembly that moves up and down in a beaker of simulated gastric fluid (or other specified fluid) at a controlled temperature and frequency; the test passes if the tablet disintegrates completely within a specified time.^[13]

3. Friability Test: A tablet friability test measures the tablet's physical strength and resistance to chipping, crumbling, or breaking during handling, packaging, and transportation. It involves placing a pre-weighed sample of tablets in a rotating drum for a set number of revolutions, then re-weighing them to determine the percentage of weight lost due to mechanical stress. A weight loss of less than (1%) is typically considered acceptable, indicating the tablet is durable enough for distribution.^[14]

4. Weight Variation Test: The weight variation test for tablets is a quality control measure used to ensure that each tablet in a batch has a uniform mass, which in turn helps confirm that each tablet contains the correct and consistent amount of the active pharmaceutical ingredient (API). This is critical for patient safety and the product's therapeutic efficacy.^[15]

Table 3. Post compression table

Sr No	Test	Formulation		
		F1	F2	F3
1	Hardness test	40 N	45 N	46 N
2	Disintegration test	14 min	15 min	15 min
3	Friability test	1%	0.1%	1%
4	Weight variation test	±7.5%	±7.5%	±8.5%

Table 4. Organoleptic Characteristics

Sr No	Test	Formulation		
		F1	F2	F3
1	Colour	Brownish	Brownish	Brownish
2	Odour	Pleasant	Pleasant	Pleasant
3	Taste	Bitter	Bitter	Bitter
4	pH	6	6	6
5	Shape	Circular	Circular	Circular

Result and Discussion :

In present Study on herbal antacid digestive tablets consistently demonstrate that these formulations exhibit significant acid-neutralizing capacity and provide effective relief from symptoms like acidity, heartburn, indigestion, gas, and bloating. The results indicate that these herbal options are a safe and effective alternative to conventional synthetic antacids, often with fewer side effects. The findings suggest that the use of polyherbal formulations for managing gastric acidity and digestive issues is a scientifically validated approach. Antacids are medicines that counteract (neutralise) the acid in your stomach to relieve indigestion and heartburn. They come as a liquid or chewable tablets and can be bought from pharmacies and shops without a prescription.

Conclusion:

Herbal Antacid Digestive Tablet is a natural, effective, and safe solution for acid reflux relief and digestive health. With a unique blend of Amla, Licorice, Turmeric, Ginger, and other natural ingredients, it provides quick relief from heartburn, indigestion, and bloating, while promoting a healthy gut and overall well-being. Suitable for long-term use, it's a trusted choice for those seeking a natural alternative to chemical-based antacids. By choosing our Herbal Antacid Digestive Tablet, individuals can take control of their digestive health and enjoy a life free from discomfort and digestive worries.

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