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Review Article

**FORMULATION AND EVALUATION OF HERBAL CHURN FOR
TREATMENT OF GASTRIC PROBLEMS****Wasim S. Shaikh¹, Manish D. Ahire², Sagar A. Vaidya³, Adesh agale⁴, Ganesh gunjal⁵**^{1,2,4,5} MABD Institute Of Pharmaceutical Education And Research Babhulgaon, Yeola, Nashik³JES SND Institute Of Pharmacy, Babhulgaon, Yeola, Nashik**Abstract:**

Indigestion, bloating, acidity, and constipation are all prevalent digestive issues that affect people all over the world. Traditional systems like Ayurveda and Unani have long employed herbal compositions to safely and effectively treat these illnesses. Ajwain (Carum copticum), Badi Saunf (Foeniculum vulgare), Jeera (Cuminum cyminum), Kalonji (Nigella sativa), and Methi (Trigonella foenum-graecum) are the ingredients of the polyherbal digestive churna that is highlighted in this study. Each component has important medicinal qualities, such as detoxifying, digestive stimulant, antispasmodic, anti-inflammatory, and carminative effects. A straightforward process that involves dry roasting and powdering the ingredients is used to make the formulation. The churna's quality is confirmed by evaluation measures such flow characteristics, powder fineness, and organoleptic features. According to the review, this herbal churna is an affordable, secure, and effective natural treatment for natural remedy for enhancing digestive health and metabolic function.

Keyword - Herbal Churna, Digestive Health, Ajwain, Badi Saunf, Jeera, Kalonji, Methi

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INTRODUCTION:

Digestive System

Mastication and salivary enzymes like amylase start the breakdown of carbohydrates in the mouth cavity, where the digestive process starts. The formulation's ingredients, such as *Foeniculum vulgare* (Saunf) and *Trachyspermum ammi* (Ajwain), activate taste receptors and increase salivary production through their essential oils, priming the gastrointestinal tract and lowering oral gas or burp. Pepsin and hydrochloric acid (HCl) aid in the digestion of proteins once they reach the stomach. Herbs that increase gastric acid secretion and pepsin activity, such as ajwain and cuminum cyminum (jeera), improve protein digestion, support microbial management, and reduce postprandial bloating. While *Nigella sativa* (Kalonji) controls gut motility and relieves gas, *Trigonella foenum-graecum* (Methi) creates a mucilaginous layer that shields the stomach mucosa and aids in lowering hyperacidity.

While bile from the liver helps to emulsify dietary lipids, pancreatic enzymes—amylase, lipase, and protease—further break down macronutrients in the small intestine. Jeera and *Foeniculum vulgare* improve fat digestion and absorption by increasing bile flow and stimulating the release of pancreatic enzymes. Ajwain increases intestinal enzyme activity to provide appropriate food digestion, whereas Kalonji has hepatoprotective qualities that help liver detoxification and enzyme function. Microbial fermentation and water absorption take place in the colon. Methi provides soluble fiber, which helps with diarrhea and constipation by increasing the bulk and consistency of the stool. During fermentation, Saunf keeps gas from building up, and Ajwain and Kalonji's antibacterial qualities support a balanced gut flora.

Additionally, the composition supports each organ in the gastrointestinal system. Jeera and Saunf promote bile formation and flow from the gallbladder, while Kalonji and Methi aid in lipid metabolism and liver detoxification. Ajwain reduces inflammation and preserves the balance of pancreatic enzymes. When taken as a whole, these herbs improve nutrient absorption, boost enzymatic processes, regulate gastrointestinal motility, aid in food digestion, and foster a healthy gut environment. Therefore, from the oral phase to colonic fermentation and disposal, the polyherbal formulation offers complete digestive support, which improves metabolic efficiency, lessens gastrointestinal distress, and promotes better gastrointestinal health.



Fig 1- Digestive System

Gastric problem

Indigestion, bloating, acidity, flatulence, and discomfort in the abdomen are frequent symptoms of a variety of illnesses known as gastric disorders, which affect the stomach and upper digestive tract. These conditions might be organic (such as gastritis, ulcers, and GERD) or functional (such as dyspepsia).



Fig 2- Gastric problem

Common Causes:

- Poor dietary habits
- Stress and lifestyle issues
- *Helicobacter pylori* infection
- Prolonged NSAID use
- Smoking and alcohol

Common Symptoms:

- Epigastric pain
- Heartburn
- Bloating and gas
- Nausea or vomiting
- Loss of appetite

Standard Treatments:

Antacids, PPIs, H2 blockers, and antibiotics are all part of conventional treatment, but prolonged use can have negative effects. As a result, interest in herbal substitutes for longer-term, safer stomach care is rising. Natural gastric formulations benefit from the use of traditional herbs like Ajwain, Saunf, Jeera, Kalonji, and Methi, which have demonstrated efficacy

in lowering inflammation, enhancing digestion, and relieving gas.

Herbal Churna in the Management of Gastric Disorders

A fine powder created by drying and grinding specific plants is referred to as churna in traditional Indian medical systems like Ayurveda and Unani. Herbal churnas are frequently used to treat digestive issues, especially those related to bloating, gas, acidity, and indigestion. These preparations are prized for their polyherbal synergy, quick absorption, and simplicity of use.

Table no 1 : Key Ingredients in Digestive Churna

Herb	Botanical Name	Key Actions
Ajwain	<i>Trachyspermum ammi</i>	Carminative, antispasmodic, antimicrobial
Saunf	<i>Foeniculum vulgare</i>	Coolant, anti-flatulent, appetite stimulant
Jeera	<i>Cuminum cyminum</i>	Digestive stimulant, antioxidant
Kalonji	<i>Nigella sativa</i>	Anti-inflammatory, hepatoprotective
Methi	<i>Trigonella foenum-graecum</i>	Antacid, carminative, blood sugar regulator

Mechanism of Action

These herbs work synergistically to:

- Stimulate digestive enzymes and bile secretion
- Relieve intestinal spasms and flatulence
- Soothe the gastric mucosa and reduce acidity
- Regulate gut motility
- Support the gut microbiota and reduce inflammation

Therapeutic Uses in Gastric Disorders

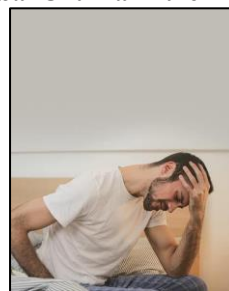
Herbal churnas are traditionally prescribed for:

- Dyspepsia (indigestion)
- Hyperacidity and GERD
- Bloating and flatulence
- Mild constipation
- Post-meal heaviness or loss of appetite

Advantages Over Conventional Medicine

- Fewer side effects
- Long-term safety
- Cost-effective
- Useful as both preventive and curative therapy
- Addresses multiple gastric symptoms in a single formulation

Fig 3- Herbal Churna in the Management of



Gastric Disorders

Ajwain (Carom Seeds)



Fig.4-Ajwain (Carom Seeds)

Synonyms: Carom seeds, Bishop's weed

Biological Source: Ajwain consists of the dried ripe seeds of the plant *Trachyspermum ammi* (Linn.) Sprague, belonging to the family Apiaceae.

Table 1- Taxonomical Classification:

Category	Details
Kingdom	Plantae
Subkingdom	Tracheobionta (Vascular plants)
Class	Magnoliopsida (Dicotyledons)
Order	Apiales
Family	Apiaceae (Umbelliferae)
Genus	<i>Trachyspermum</i>
Species	<i>T. ammi</i> (Linn.) Sprague

Phytochemical Constituents:

- **Thymol** (primary active compound)
- p-Cymene
- γ-Terpinene

- α -Pinene
- Flavonoids
- Tannins
- Essential oils (2.5–5%)

Traditional/Medicinal Uses:

- Used as a digestive aid in Ayurveda and Unani systems
- Relieves flatulence, indigestion, and colic
- Acts as a carminative and expectorant
- Used in bronchitis, asthma, and cough
- Applied externally for **arthritis and joint pain**
- Mixed with salt and hot water to relieve **stomach ache**

Pharmacological Activities:**Table -2 Pharmacological activities of herbal churna**

Activity	Details
Carminative	Relieves gas and bloating by relaxing intestinal muscles
Antimicrobial	Effective against bacteria and fungi (due to thymol)
Antispasmodic	Reduces intestinal and stomach cramps
Antioxidant	Neutralizes free radicals, protects tissues
Anti-inflammatory	Reduces internal inflammation
Hepatoprotective	Supports liver function and bile flow
Anthelmintic	Helps expel intestinal worms
Analgesic	Provides mild pain relief

Fennel Seed**Fig 5- Badi Saunf (Fennel Seeds)****Synonyms:** Fannel, Sweet Fennel

Biological Source: Badi Saunf consists of the dried ripe fruits of the plant *Foeniculum vulgare* Mill., belonging to the family Apiaceae.

Taxonomical Classification:**Table No 3 -Taxonomical Classification *F. vulgare* Mill.**

Category	Details
Kingdom	Plantae
Class	Magnoliopsida (Dicotyledons)
Order	Apiales
Family	Apiaceae (Umbelliferae)
Genus	<i>Foeniculum</i>
Species	<i>F. vulgare</i> Mill.

Phytochemical Constituents:

- Anethole (primary component)
- Fenchone
- Estragole
- Limonene
- Flavonoids
- Coumarins
- Essential oil (2–6%)

Traditional/Medicinal Uses:

- Used as a digestive and mouth freshener
- Relieves flatulence, indigestion, acidity
- Acts as a coolant and improves appetite
- Used in infant colic (as gripe water)
- Beneficial in menstrual disorders and lactation

Pharmacological Activities:**Table No 4 -Pharmacological Activities of *F. vulgare* Mill**

Activity	Details
Carminative	Relieves bloating and intestinal gas

Activity	Details
Digestive stimulant	Enhances secretion of gastric enzymes
Antispasmodic	Reduces intestinal cramps
Antioxidant	Protects against oxidative stress
Antimicrobial	Effective against bacteria and fungi
Estrogenic	Supports hormone balance in females
Galactagogue	Promotes lactation in nursing mothers

- Alkaloids
- Protein and dietary fiber

Traditional/Medicinal Uses:

- Used as a digestive aid and flavoring agent
- Treats indigestion, bloating, diarrhea, and nausea
- Acts as a carminative (relieves gas)
- Useful in respiratory disorders like cough and bronchitis

Pharmacological Activities:

Table No 6 -Pharmacological Activities of cumin seeds

Activity	Details
Carminative	Reduces gas and bloating
Antioxidant	Prevents cellular oxidative damage
Digestive stimulant	Increases enzyme secretion for digestion
Antimicrobial	Active against foodborne pathogens
Hepatoprotective	Protects liver function
Antidiabetic	Helps regulate blood sugar
Anti-inflammatory	Relieves minor gastric and joint inflammation

Jeera (Cumin Seeds)



Fig 6-Jeera (Cumin Seeds)

Synonyms: Cumin seed

Biological Source: Jeera consists of the dried ripe seeds (fruits) of the plant *Cuminum cyminum* Linn., which belongs to the family Apiaceae.

Taxonomical Classification:

Table No 5:Taxonomical Classification of cumin seeds

Category	Details
Kingdom	Plantae
Class	Magnoliopsida (Dicotyledons)
Order	Apiales
Family	Apiaceae (Umbelliferae)
Genus	<i>Cuminum</i>
Species	<i>C. cyminum</i> Linn.

Phytochemical Constituents:

- Cuminaldehyde (major compound)
- Terpenes: α - and β -pinene, γ -terpinene
- Flavonoids
- Tannins
- Essential oils (1–5%)

Kalonji (Nigella Seeds)



Fig -7 Kalonji (Nigella Seeds)

Synonyms: Black cumin, Nigella seeds, Black seeds

Biological Source: Kalonji consists of the dried ripe seeds of the plant *Nigella sativa* Linn., belonging to the family Ranunculaceae

Taxonomical Classification:

Table No-7 Taxonomical Classification of *N. sativa* Linn.

Category	Details
Kingdom	Plantae
Class	Magnoliopsida (Dicotyledons)
Order	Ranunculales
Family	Ranunculaceae
Genus	<i>Nigella</i>
Species	<i>N. sativa</i> Linn.

Phytochemical Constituents:

- Thymoquinone (major bioactive compound)
- Nigellidine
- Nigellicine
- α -Hederin
- Saponins
- Alkaloids
- Fixed oils and essential oils (up to 1.5%)
- Flavonoids, tannins

Traditional/Medicinal Uses:

- Used in Ayurveda, Unani, and Siddha for over 2000 years
- Treats indigestion, acidity, bloating, and intestinal worms
- Improves immunity and metabolism
- Traditionally used in asthma, cough, joint pain, and skin disorders

Pharmacological Activities:**Table No-8 Pharmacological Activities of *N.sativa***

Activity	Details
Antioxidant	Protects tissues from oxidative stress
Anti-inflammatory	Reduces inflammation in GI tract and joints
Antidiabetic	Helps regulate blood glucose
Antimicrobial	Effective against bacteria, viruses, fungi
Hepatoprotective	Protects liver and supports detox
Analgesic	Provides natural pain relief
Immunomodulatory	Enhances immune response
Gastroprotective	Protects stomach lining and reduces ulcers

Methi (Fenugreek Seeds)**Fig 8- Methi (Fenugreek Seeds)****Synonyms:** Fenugreek

Biological Source: Methi consists of the dried ripe seeds of the plant *Trigonella foenum-graecum* Linn., belonging to the family Fabaceae.

Taxonomical Classification:**Table No-8 Taxonomical Classification of *T. foenum-graecum* Linn.**

Category	Details
Kingdom	Plantae
Class	Magnoliopsida (Dicotyledons)
Order	Fabales
Family	Fabaceae (Leguminosae)
Genus	<i>Trigonella</i>
Species	<i>T. foenum-graecum</i> Linn.

Phytochemical Constituents:

- Saponins (diosgenin)
- Alkaloids (trigonelline)
- Flavonoids
- Mucilage and dietary fiber
- Proteins and amino acids
- Fixed oils
- Vitamins (especially B complex)

Traditional/Medicinal Uses:

- Traditionally used as an appetite stimulant and digestive aid
- Effective in bloating, constipation, gastritis, and indigestion
- Commonly used for blood sugar regulation in diabetes
- Promotes lactation in nursing mothers
- Used to manage inflammation, arthritis, and joint pain

Pharmacological Activities:**Table No-9 :Pharmacological Activities of *T. foenum-graecum* Linn**

Activity	Details
Digestive tonic	Stimulates digestive enzymes and bowel movement
Hypoglycemic	Reduces blood sugar levels
Hypocholesterolemic	Lowers LDL and total cholesterol
Laxative	Helps relieve mild constipation
Anti-inflammatory	Reduces GI and joint inflammation
Antioxidant	Scavenges free radicals
Galactagogue	Promotes breast milk secretion
Hepatoprotective	Supports liver detoxification

Formula of herbal churna**Table no :10 :Formula of herbal churna**

Sr.no	Ingredients	Quantity in mg
1.	<i>Trachyspermum ammi</i> (Linn.)	333
2.	<i>F. vulgare</i> Mill.	333
3.	<i>N. sativa</i> Linn	334
4.	<i>T. foenum-graecum</i> Linn	335

Procedure of Herbal Churna-

Dry Roast Each Ingredient Separately
 ↓
 Allow All Ingredients to Cool Completely
 ↓
 Grind into a Fine Powder
 ↓
 Store in an Airtight Glass Jar
 ↓
 Churna Ready for use

**Fig no 9 :Herbal churna**

Table No 11: Evaluation Parameters for Herbal Churna

Organoleptic Evaluation	Colour, odour, taste, and appearance (observed manually)
Powder Fineness	Pass through sieve no. 60 or 80 (depending on formulation requirement)
Moisture Content (%LOD)	Determined using hot air oven or moisture balance
Bulk Density	Measures powder packing property
Tapped Density	Powder settled after tapping in measuring cylinder
Angle of Repose	Flow property of the powder (fixed funnel method)
Ash Value (Total Ash)	Measures total inorganic content (using muffle furnace)
Acid Insoluble Ash	Detects presence of siliceous matter like sand
Extractive Values	Water-soluble and alcohol-soluble extractives (indicate presence of active compounds)
Microbial Load	Total viable bacterial and fungal count (optional for standardization)

Uses –

- Improves digestion by stimulating digestive enzymes.
- Relieves gas and reduces abdominal bloating.
- Controls acidity and soothes indigestion.
- Boosts metabolism and supports fat digestion.
- Acts as a mild laxative, relieving constipation.
- Detoxifies the body by supporting liver function.
- Regulates blood sugar and reduces sugar cravings.
- Improves appetite and enhances taste perception.
- Aids in weight management when used regularly.
- Safe for long-term use as it's made from natural herbs.

CONCLUSION:

The herbal digestive churna formulated using traditional Ayurvedic ingredients—Ajwain, Badi Saunf, Jeera, Kalonji, and Methi—offers a safe, effective, and natural remedy for common gastrointestinal ailments such as indigestion, bloating, acidity, and constipation. Each ingredient contributes unique pharmacological properties like carminative, digestive stimulant, anti-inflammatory, and detoxifying actions. This polyherbal formulation not only promotes digestive wellness but also supports metabolism and overall gut health. Given its low cost, minimal side effects, and easy availability, this churna can serve as a valuable alternative or complementary therapy in modern digestive care.

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