



# Herbal medications for GIT

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# Herbal medication for gastrointestinal problems

## CONSTIPATION

### A. General information

1. **Definition.** Constipation is the difficult or infrequent passage of stool. Normal stool frequency ranges from two to three times daily to two to three times per week. Patients may experience abdominal bloating, headaches, or a sense of rectal fullness from incomplete evacuation of feces.

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- **B. Treatment:**
- **1. Nonpharmacological:**
- a. Increase exercise to increase and maintain bowel tone .
- b. Bowel training to increase regularity.
- {{Bowel training programs generally take these three basic principles into account:
- Improve consistency of stool.
- Establish a regular time for elimination.
- Stimulate emptying on a routine basis.}}
- c. Increase intake of fluids and fibers.

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- **2. Pharmacological:**

- Therapeutic agents are classified according to their mechanism of action.
- Laxatives should not be taken if nausea, vomiting, or abdominal pain is present.

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- **Bulk-forming laxatives:**

- These medications are natural or synthetic polysaccharide derivatives that absorb water to soften the stool and increase bulk, which stimulates peristalsis .
- Bulk-forming laxative should not be taken if patients have an obstructing bowel lesion, intestinal strictures (narrowing), or Crohn's disease {**a type of inflammatory bowel disease**}, because they can make this situation worse and possibly result in bowel perforation.

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- **1. Natural bulk – forming laxatives:**
- a- Psyllium ( e.g., Metamucil).
  
- **2. Synthetic bulk – forming laxatives:**
- a. Methylcellulose .
- b. Polycarbophil.

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- **Saline laxatives:**

- Include sodium and magnesium salts.
- ❖ Patients with hypertension or congestive heart failure should not receive saline laxatives on a prolonged basis due to fluid retention from sodium absorption.

- ❖ **Products include:**

- a. Magnesium citrate (Citrate of Magnesia)
- b. Magnesium hydroxide ( Phillips Milk of magnesia)
- c. Magnesium sulfate (Epsom salt)
- d. Sodium phosphate (fleet phosphor-Soda).

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### ❖ **Osmotic Laxatives:**

- **a. Glycerin:**

- Is available in rectal products in suppository or liquid form (e.g., Fleet BabyLax).
- Rectal burning may occur with glycerin products .

- **b. Lactulose:** (e.g. Chronulac)

- Is available only by prescription.
- Is used to decrease blood ammonia levels in hepatic encephalopathy.

- **c. Sorbitol:**

- A non-absorbable sugar.
- Is similar in efficacy to lactulose.
- It can be administered orally (70% solution) or rectally (25% solution).

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### **Practitioners should question the patient about the following:**

- a. Normal stool frequency.
- b. Duration of the constipation.
- c. Frequency of constipation episodes.
- d. Exercise routine.
- e. Amount of dietary fiber consumed.
- f. Presence of other symptoms.
- g. Medications used currently.
- h. Medications used to relieve constipation and their effectiveness.

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## Stimulant laxatives:

- These medications work in the small and large intestine to stimulate bowel motility and increase the secretion of fluids into the bowel.
- All stimulant laxatives can cause abdominal cramping.
- The oral preparations usually have an onset of action within **6-10** hours.
- Rectal preparations usually have an onset of action within **30-60** minutes.

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## • 1. Anthraquinone laxatives:

- Include Senna, Cascara sagrada.
- a. Senna (e.g., Senokot),
- b. Cascara sagrada.

## • 2) Bisacodyl

- (e.g., Dulcolax®).



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- **Lubricant laxative**

- Mineral oil.
- Mineral oil works on the colon to increase water retention in the stool to soften the stool.
- It has an onset of action of **6-8** hours.

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### **Warnings:**

- **a.** Mineral oil can **decrease absorption of fat – soluble vitamins** ( i.e., vitamins A,D,E,K), so it should not be used on a chronic basis.
- **b.** Elderly, young, debilitated and dysphagic (**with difficulty in swallowing**) patients are at greatest risk of lipid **pneumonitis {inflammation of lung tissue}** from mineral oil aspiration.
- **c.** Emollients (e.g., docusate) may increase the systemic absorption of mineral oil, which can lead to **hepatotoxicity** .

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## Pregnant and geriatric patients:

- Pregnant patients should use bulk-forming agents or stool softeners.
- Geriatric patients tend to be at risk for constipation due to insufficient dietary (fiber) and fluid ingestion.
- Geriatric patients should not use stimulant laxatives on a chronic basis, and patients with renal impairment should not use magnesium products.

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## Use of enemas:

➤ Enemas are useful for:

1. Evacuation of the bowel before surgery.
2. Child birth.
3. For the treatment of acute constipation that has not responded to other medications (e.g. bisacodyl suppositories).

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- Though all enemas cause abdominal cramping, some may have more serious adverse effects than others.
- **Soap enemas** can cause much rectal irritation and have been reported to cause anaphylaxis {is a serious allergic reaction that is rapid in onset and may cause death} and rectal gangrene {necrosis caused by a critically insufficient blood supply}
- The popular **sodium phosphate enemas** (e.g. Fleet) are **very effective** but have resulted in hyperphosphatemia, hypocalcemia (leads to tetany: **spasms of the hands and feet**) hypokalemia, metabolic acidosis, and cardiac death usually due to conduction abnormalities in very small (young) children.
- This has mainly occurred in children less than 2 years.

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## ➤ **5. Laxative abuse:**

### **What is laxative abuse?**

- Laxative abuse occurs when a person attempts to get rid of unwanted calories, lose weight, “feel thin,” or “feel empty” through the repeated, frequent use of laxatives.
- Often, laxatives are **misused** following eating binges (parties), when the individual mistakenly believes that the laxatives will work to rush food and calories through the gut and bowels before they can be absorbed. But that doesn’t really happen.
- Unfortunately, laxative abuse is serious and dangerous – often resulting in a variety of health complications and sometimes causing life-threatening conditions.

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# Diarrhea

❖ Is an abnormal increase in the frequency and looseness of stools.

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## A. Classification:

- a. **Acute diarrhea:** (lasts less than 2 weeks).

➤ **Due to**

**1) Infection** by:

- Bacteria.
- Viruses.
- Protozoa.

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❖ **Viruses:** (e.g. rotavirus and Norwalk virus

{also known as **winter vomiting virus**, is a virus named after Norwalk, Ohio, in the United States, where an outbreak of acute viral gastroenteritis occurred among children at Bronson Elementary School in November 1968})

❖ **Bacteria:**

- **i) Toxigenic bacteria**, e.g. E. coli , S. aureus.
- **ii) Invasive bacteria** . E.coli, Shigella, Salmonella.

❖ **Protozoa:** G. lamblia, E. histolytica.

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- **2) Diet–induced diarrhea:** Diarrhea induced by foods results from food allergies, high. fiber diets , fatty or spicy foods.
- **3) Drug–induced diarrhea:**

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## Patient evaluation

- Pharmacists who are consulted by patients should ask the patient for the following information before recommending a therapy:
  - Age of the patient .
  - Onset and duration of the diarrhea.
  - Description of stool (e.g., frequency, volume, blood, pus, watery).
  - Other symptoms ( e.g., abdominal cramping, fever, nausea, vomiting, weight loss ).
  - Medications recently started or medications used to relieve the diarrhea.
  - Recent travel (where and how long ago).
  - Medical history of GIT disorders.

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## Referral to physicians

- **Referrals to a physician should be made by the pharmacist who encounters a patient with diarrhea that meets the following criteria:**
  - Younger than 3 years of age or older than 60 years ago (with medical problems).
  - Bloody stools .
  - High fever (greater than 101° F or 38 ° C).
  - Dehydration or weight loss greater than 5% of total body weight.
  - **Signs of dehydration:** dry mouth, sunken eyes, crying without tears, dry skin that is not elastic like normal skin.
  - Duration of diarrhea longer than 5 days .
  - Vomiting.

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## Treatment

- 1. Non-pharmacological:
- a. Food / breast feeding:
- Recent information shows that children should remain on their normal diet or breast feeding .

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- b. Fluids:
- The most important part of treating acute diarrhea is the replacement of lost fluids.
- Fluids to be avoided include hypertonic fruit juices and drinks (e.g., apple juice, powdered drink mixes, gelatin water ) or carbonated beverages.

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- **Starch:**

- Starch is used for rehydration purposes and is derived from:
  - 1-Rice (*Oryza sativa*).
  - 2- Maize (*Zea maize*).
  - 3- potato (*Solanum tuberosum*).
- Is only beneficial for non-bacterial diarrhea.

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## Natural anti-diarrheal agents

- **Tannins:**

- All plants containing tannins are used for diarrhea.
- They are astringent.
- Examples:
  - 1.Pomegranate bark.
  - 2.Tea leaves (*Thea sinensis*).
  - 3.Coffee beans.

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## 2. Pharmacological:

- Activated attapulgite (an adsorbent), calcium polycarbophil, and loperamide.
- Antiperistaltic drugs.

## 3) Prescription agents:

This class includes:

- The opiate-related agent **diphenoxylate**.
- **Atropine** (e.g., Lomotil ®).

## 4) Non-prescription agents:

### a. Adsorbents:

- 1) Activated attapulgite. (e.g., Kaopectate).

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### b. Miscellaneous agents :

- 1) Bismuth subsalicylate . (e.g., Pepto- Bismol®).  
Bismuth salt work as adsorbent.

- 2) **Lactobacillus** (Bacid, Lactinex) products are intended to replace the normal bacterial flora that is lost during the administration of oral antibiotics.

- 3) Anti-infectives, where for example **antibiotics** are used to prevent traveler's diarrhea.

- 4) Anticholinergic (e.g., atropine, hyoscyamine). They decrease bowel motility.

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- **Antibacterials:**

- Ciprofloxacin.
- Doxycycline.
- Metronidazole.
- Norfloxacin.
- Ofloxacin.
- Quinacrine (antiprotozoal).
- Trimethoprim / Sulfamethoxazole DS.
- Vancomycin.

❖ These products should not be used in patients with narrow-angle glaucoma.

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## **Inflammatory GI conditions: gastritis and ulcers**

❖ **Inflammation of the gastric mucosa, or gastritis:** is an acute inflammatory condition of the superficial gastric mucosa.

❖ It is usually treated by:

**1. Antacids** e.g. (magnesium and aluminium salts).

**2. Emollients** e.g. (alginate, mucilages)

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## GI inflammation

### Alginate:

- Alginic acid is a polysaccharide found in brown algae (*Laminaria* and *Ascophyllum nodosum*)
- The sea-weeds are dried and treated with acid to remove ions to convert the alginate into insoluble form.
- Then, they are treated with alkali.
- {{Alginate Salt of sodium is soluble n water, while, salts of calcium and magnesium are not.}}
- [[Pretreating algae first with dilute hydrochloric acid in order to remove any soluble mineral salts, mannit and impurities; then the algin is extracted by using a solution of sodium carbonate resulting in a viscous extract; the extract is filtered, and finally the algin is precipitated by treating it with hydrochloric acid. ]]
- Alginate with water forms a viscous gum. For this reason, it can protect the coating (lining) of stomach and esophagus.

## GI inflammation

### Chamomile:

- The flower heads of *Matricaria chamomilla* (German chamomilla) **Asteraceae**.
- The flower is rich in v. oils which include **1. bisabolol**.
- Also it contains **2. chamazulene** a terpenoid compound.
- Flavonoids like **3. apigenin**.
- All the above constituents are important for the pharmacological activity.
- It has an anti-inflammatory, spasmolytic and antibacterial effect.

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## GI inflammation

### Liquorice:

- ❖ *Glycyrrhiza glabra* (Fabaceae)
- ❖ The peeled drug has higher quality than root with bark (unpeeled).
- ❖ The main active ingredients:
  - Glycyrrhizin.
  - Triterpenes.
  - Flavonoids and polysaccharides which contribute to the activity.

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## Dyspepsia and biliousness

- **[[Bilious:** having or causing a sick feeling in the stomach : feeling or causing nausea**]].**
- They are closely related to the eating habits and very common (in ability to digest food, heart burn, nausea, pain).
- Compounds which stimulate bile production are largely used but there is a lack of evidence [of the efficiency].

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## Dyspepsia

### ❖ 1-*Cynara scolymus* L.(Artichoke خرشوف)

- It contains sesquiterpens and flavonoids and **cynarin**.
- **Antihepatotoxic** effect is reported with **cholagogue** activity [[**promoting the flow of bile**]].
- Daily intake of 1500 mg of leaves extract can improve:
  1. Flatulence and Bloating الانتفاخ.
  2. Constipation.
  3. Vomiting.
  4. lipid profiles.

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## Dyspepsia and biliousness

### • 2-*Gentiana*: الكوشاد the root of *Gentiana lutea* L.

- It is a digestive stimulant.
- Taken after a large meal.
- It contains: gentiopicroside, a terpenoid compound: **secoiridoid** with a bitter value 12000 and **amarogentin** with bitter value 58000000 in minute quantity.
- The extracts stimulate gastric secretion and suppress induced liver damage in mice.



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## Dyspepsia and biliousness

### 3-Wormwood شیح ابن سینا

#### (*Artemisia absinthium*):

\* Is used as a tea.

\* It contains v. oils which contain  $\beta$ - thujone and sesquiterpene lactone absinthin.

\* Is a bitter stomachic.

It is considered as **bitter tonic** if taken in a small amount as tea.

\* Absinth (other name) is harmful if taken in large quantities due to **thujone**, as it can cause **epileptic fits** and **psychiatric disturbances**.

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## Nausea and vomiting

### ● **Travel sickness or motion sickness:**

● It is most common when traveling and may be accompanied by nausea and vomiting, dizziness, sweating and vertigo.

● Prophylactic treatment includes taking **antihistamines** (mainly phenothiazine) or the alkaloid **hyoscyamine**.

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## Treatment

### 1. Ginger (*Zingiber officinale*) rhizome:

- It contains essential oils 1-3%, whereas the main constituent is **zingiberene** and **β- bisabolene**.
- The pungent taste is produced by a mixture of phenolic compounds (gingerol, gingerdiones).
- **The effect includes:**
  1. Carminative.
  2. Anti-emetic.
  3. Spasmolytic.
  4. Antiflatulent.
  5. Antitussive.
  6. Anti-platelet aggregation.
  7. Hepatoprotective.
  8. hypolepidaemic.
  9. Antiulcer.
  10. Antioxidant.

### 2. Hyoscine (Scopolamine):

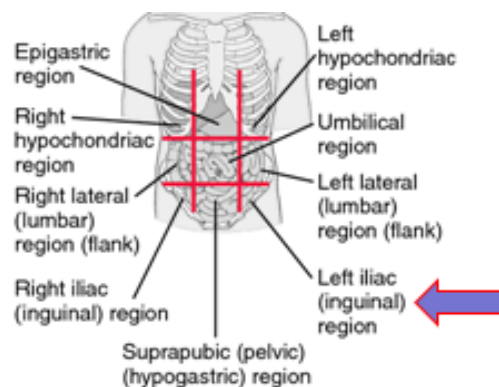
- This alkaloid is isolated from *Datura* or *Scopolia* species, and from *Hyoscyamus niger*.
- It is available as tablets or patches.
- It is a popular remedy for
  1. **motion sickness** (400µg).
  2. **Preoperative** before administration of halothane.

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# Irritable bowel syndrome

- It is characterized by pain in the left iliac fossa, diarrhea and / or constipation.
- **[[is a common disorder that affects the large intestine (colon). Irritable bowel syndrome commonly causes cramping, abdominal pain, bloating, gas, diarrhea and constipation]].**
- Symptoms are usually relieved to some extent by the use of bulk laxatives with or without carminatives.
- **Natural remedies include:**
  1. Peppermint oil or leaves.
  2. Some tropane alkaloids(e.g. hyoscine).

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2- Other **carminative** herbs like celery, cumin, fennel and caraway are well known for their effect which is **due to their essential oil and flavonoid**, although the exact mechanism is unknown.

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## Liver disease

- Liver damage, cirrhosis and poisoning should only be treated under medical supervision.
- There is ,however, a useful phytomedicine derived from the milk thistle

(*Silybum marianum* الخرفيش)

- It is available in the form of an extract known as **silymarin**.



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## Treatment

**1. Andrographis:** it is widely used in many Asian systems of medicine to treat jaundice and liver disorders.

- There are few clinical studies to support these uses, although numerous in vitro experiments have shown it has liver protective effects against a variety of hepatotoxicity.
- It should be given with caution when given with antithrombotic drugs.



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# Treatment

**2-Berberine:** is an alkaloid obtained from different plant species

1. Blood root:

عرق الدم (*Sanguinaria canadensis* L.)

2. Goldenseal

(*Hydrastis canadensis*)

- Berberine has an **antibacterial** and **amoebicide** properties and is used to treat **dysentery** and **liver disease**.
- Care should be taken when given with **anticancer** drugs and **cyclosporine** = immunosuppressant (interaction).

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# Treatment

**3. Milk Thistle** = *Silybum marianum*.

- The seeds yield an flavonolignan fraction known as **silymarin**. [[natural phenols composed of a part flavonoid and a part lignan]]
- It is used extensively in Europe for liver disease and jaundice.
- Animal experiments show that it is effective for mushroom *Amanita phalloides* poisoning, which causes fatal hemorrhagic necrosis of the liver.
- 420 mg daily to treat hepatitis B virus.
- It is **Hypolipidemic** and lower fat deposits in liver.<sup>46</sup>



## Treatment

### 4. **Schisandra:** (Mangolian vine):

The berries of this plant which is a contains lignan constituent.

The liver-protecting effect has been studied on animals, but clinical evidence is still lacking.



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## Treatment

### 5. **Turmeric:** (*Curcuma domestica*): الكركم

- The rhizome is used in Asian medicine for liver disorders and inflammatory conditions.
- The active constituents are called **curcuminoids**.
- They are useful for:
  1. Hypercholesterolemia.
  2. Antispasmodic.
  3. Antibacterial.
  4. Hypoglycemic.
  5. Anti-protozoa
- Daily dose of 2 gm is used.

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## Case study

### **Ginger to be used in motion sickness:**

- A female patient in her mid twenties asks the pharmacist to use ginger for her motion sickness as she is traveling next day instead of taking dramamine tablets (dimenhydrinate).
- As she always does that (i.e. taking dramamine tablets) when she feels drowsy.

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## Case study

### **Ginger for motion sickness:**

- Ginger has been used as a treatment for motion sickness for centuries.
- It is said to have been first used by the ancient Chinese.
- Although it doesn't work for everyone, a lot of people find it very effective indeed.

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## Case study

### Peppermint and indigestion:

- A patient complains of an upset stomach and gas came to the pharmacist for advice if peppermint is good for these complains and if it can be indicated as a treatment.

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## Case study

- Peppermint is generally safe for human consumption.
- It has a **spasmolytic** effect on smooth muscles and can be used for irritable colon and abdominal pain.
- It has anti-inflammatory effect and antiulcer effect.
- In small doses, peppermint is safe and effective as a digestive aid.
- **Caution:** menthol is not good for babies as a chest rub.

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