Complementary and Alternative medicine

PHG 323 (*Phytotherapy*)

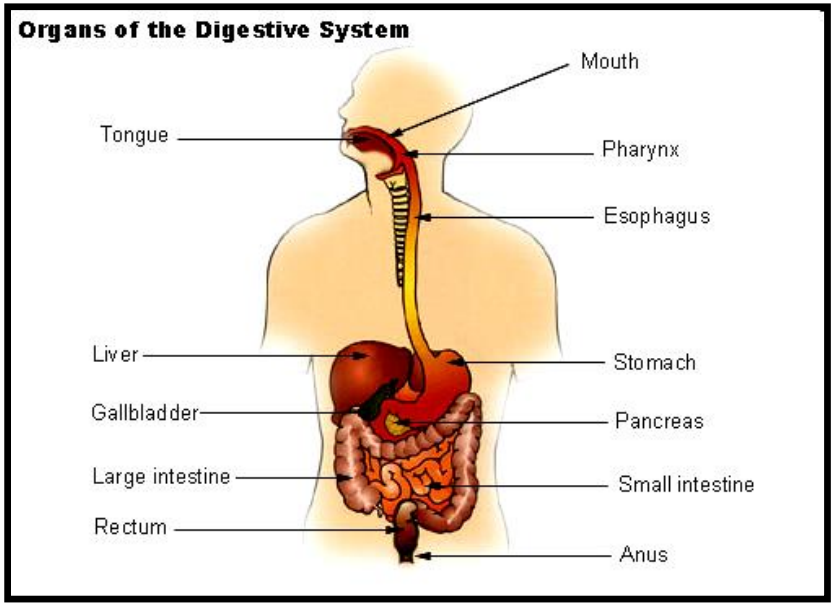
Part 5

Department of Pharmacognosy – College of Pharmacy - KSU

Phytotherapy (cont.)

2) Gastro-Intestinal Disorders

Among the GIT disorders that could be treated by phytotherapy:



I) **Stomatitis** التهاب الفم

Gingivitis التهاب اللثة

Glossitis التهاب اللسان

II) **Stomach** and **Intestinal Disorders**

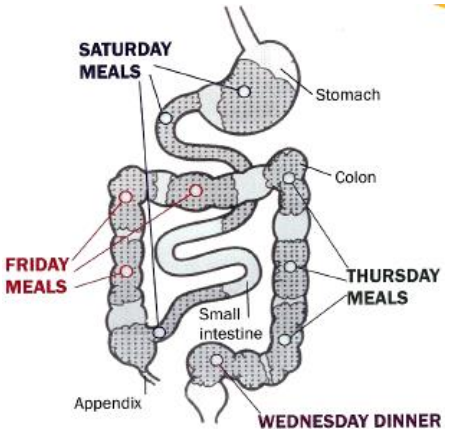
III) **Liver** and **Biliary Tract** **Disorders** اضطرابات القناة الصفراوية

II. Stomach and Intestinal Disorders

1) **Functional dyspepsia** سوء الهضم
2) **Flatulence** الانتفاخ
3) **Gastritis and Peptic ulcers** التهاب المعدة / قرحة المعدة والإثنى عشر
4) **Constipation** الإمساك
5) **Diarrhea** الإسهال
6) **Irritable Bowel Syndrome (IBS)** القولون العصبي
7) **Hemorrhoids** البواسير
8) **Intestinal worms** الديدان المعوية

4. Constipation:

- It is the occurrence of straining at the time of a bowel movement, with expulsion of "less than usual“ stool of a hard consistency.



- It occurs due to many reasons e.g.:
  - Poor dietary habits (low fiber content)
  - Over use of laxatives for many years

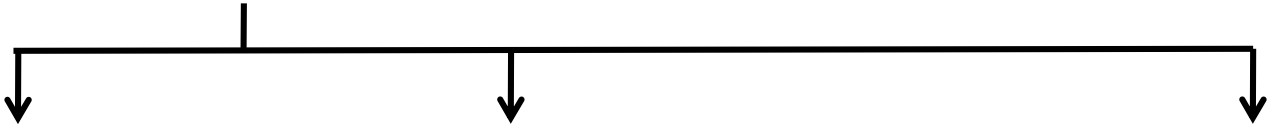
Phytotherapy of constipation can be approached as following:

- ❑ Increase stool bulk with bulking herbs such as Psyllium
- ❑ Improve G.I.T. lubrication e.g. Linseed (oil & mucilage contents).
- ❑ Use of stimulant laxative herbs e.g. Senna.

Laxative herbs:

- They are herbal medicines which are used in case of constipation to induce and facilitate defecation through:
  - Improving the abnormal motility pattern
  - And/or reducing fluid absorption from the intestine which promotes the elimination of soft stool

- Laxative herbs include:



Bulk-forming laxatives

e.g. Bran and Psyllium

Stimulant laxatives
(= purgatives)

e.g. Anthraquinones of Senna, Cascara, Frangula and Rhubarb)

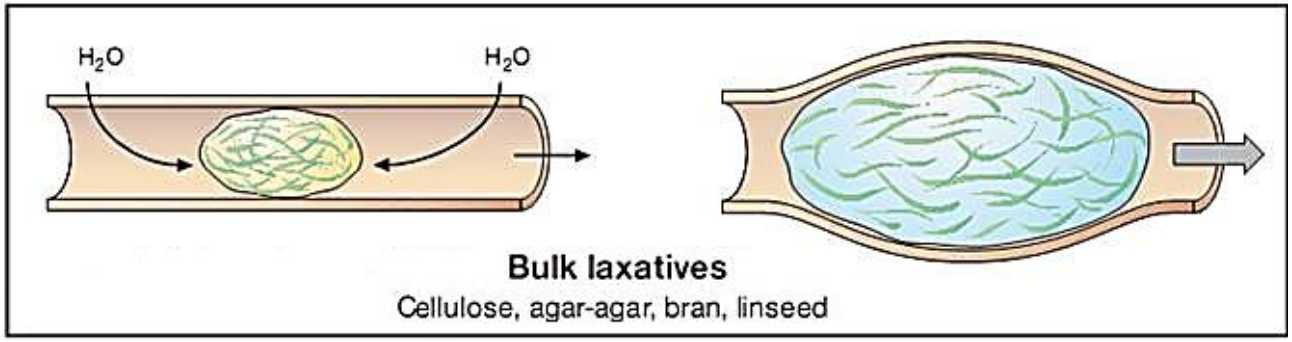
Other herbal laxatives

Sugar containing herbs

e.g. Tamarind and Figs, Grapes and Raisins

1) Bulk-forming laxatives:

- They increase the mass of stool, its water content and the rate of colonic transit.
- Their cellulose/hemicellulose/mucilage contents are resistant to human digestive enzymes → pass unchanged into the colon. In the colon → retain water → stimulate peristalsis receptors in the intestinal wall → increased motility.



- They are used in case of chronic constipation and spastic-type constipation associated with irritable bowel syndrome

- **Examples:**

a) **Psyllium seeds (see also under phytotherapy of hyperlipidemia and Atherosclerosis)**

- Its **mucilage** content **swell** giving **bulk** and **lubrication**).

b) **Bran (alone or with diet): contains high cellulose content.**

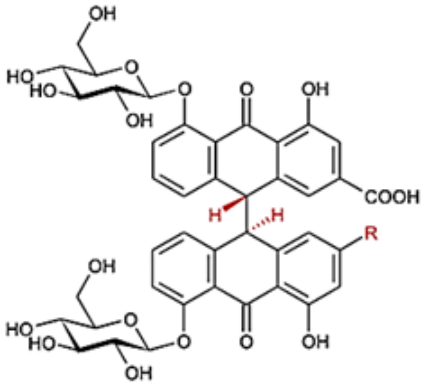
2) stimulant laxatives (Anthraquinone containing herbal drugs):

Common (Latin) names	Part used	Key comp.	Dose/d
Senna (***Cassia spp.***)	Leaves or fruits	▪ Dianthrone glycosides (Sennosides A – D) ▪ Free anthraquinones (rhein & aloe-emodin)	20-60 mg sennosides
Rhubarb (***Rheum palmatum* – *R. officinale***)	Rhizomes & Roots	▪ Dianthrone glycosides ▪ Free anthraquinones (rhein – aloe-emodin – chrysophanol) ▪ Tannins	1-2 g
Other examples: Cascara Brak – Frangula bark – Dried leaves' juice of Aloe			

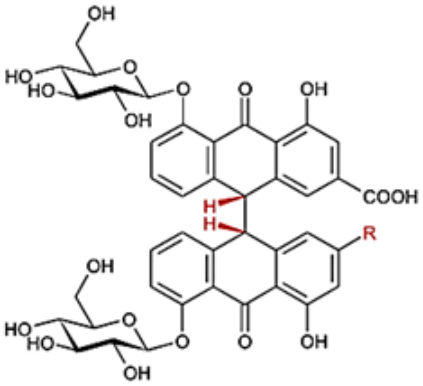
Senna leaves

Senna pods

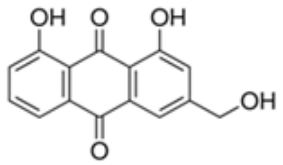
Rhubarb



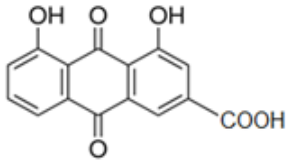
Sennoside A: R = COOH
Sennoside C: R = CH_2OH



Sennoside B: R = COOH
Sennoside D: R = CH_2OH

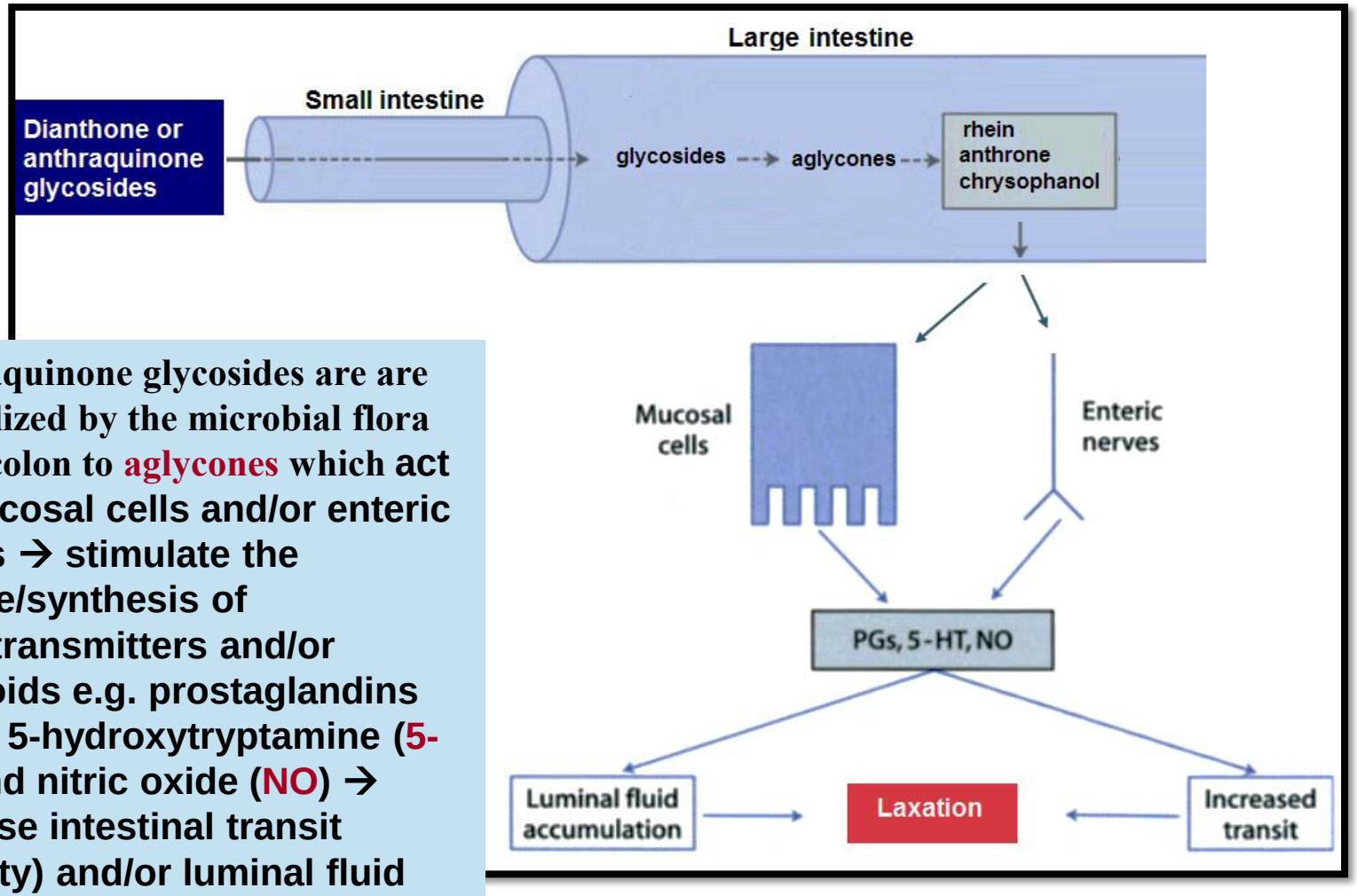


Aloe-emodin



Rhein

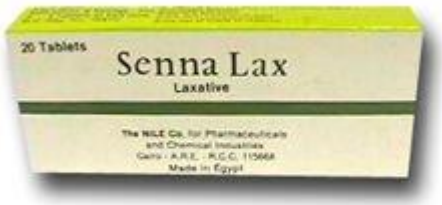
Mode of action of anthraquinones



Anthraquinone glycosides are are catabolized by the microbial flora in the colon to aglycones which act on mucosal cells and/or enteric nerves → stimulate the release/synthesis of neurotransmitters and/or autacoids e.g. prostaglandins (PGs), 5-hydroxytryptamine (5-HT) and nitric oxide (NO) → increase intestinal transit (motility) and/or luminal fluid accumulation → laxative effect

a) Senna

- They are used in treatment of acute occasional constipation, also, are used before endoscopy of the GIT.
- Senna fruits (pods) cause less gripping effect than leaves.



b) Rhubarb

N.B. *Rheum rhaponticum* is not used (toxic)

- Uses of official rhubarb:

1) In small doses (less than 0.3 g):

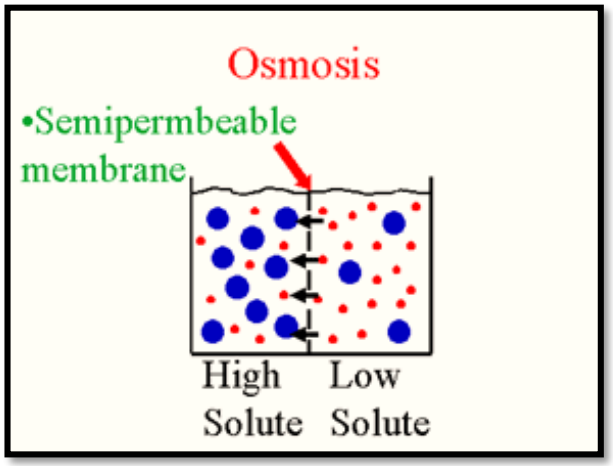
- stops diarrhea (intestinal astringent due to tannin content)

2) In large doses (more than 1.0 mg):

- Laxative to purgative followed by astringent effect

3) Other laxative herbs and fruits:

- They have **mild laxative** action due to their **organic acid** (**citrate** and **tartarate**) and **sugar contents.**

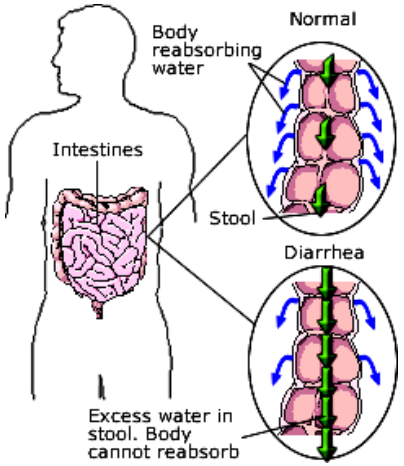


Example: Tamarind pulp:

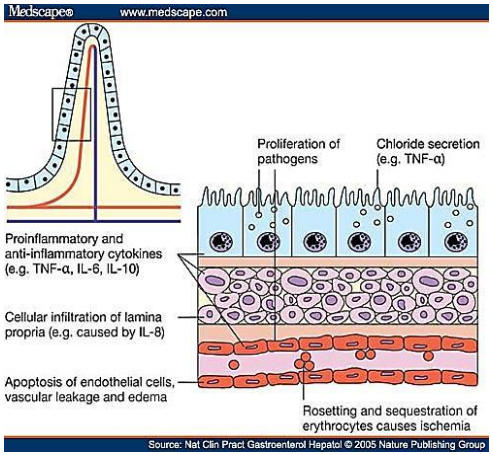
- Pulp of **fruits** of ***Tamarindus indica***
- **Constituents:**
  - **~20% organic acids (free or K^+ salts)**
  - **Mucilaginous substance (20 - 30%)**
  - **Sugar**
- It is used as **jam** or **syrup** for **children** and **adults** for treatment of **chronic constipation**

5. Diarrhea:

- It occurs when defection is:
  - Repeated 2-6 times in 24 hour
  - Stool weight exceeds 200 g of which water content is more than 70%.

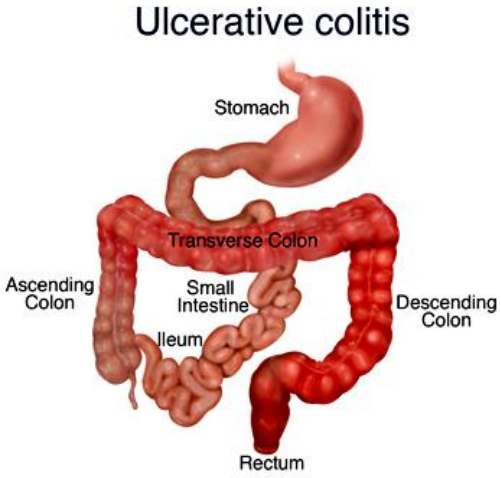


- Diarrhea may be acute or chronic.
  - Acute diarrhea lasts for 3-4 days and may be due to:
    - Intestinal infections by pathogenic bacteria which release toxins → increase intestinal secretion OR penetrate the intestinal epithelium → reduce absorption.



- Swallowing toxic substances
- Eating non tolerable foods (milk, eggs, strawberries, shellfish)
  → stimulate the release of secretions by the intestine lining

- **Chronic diarrhea** can persists **longer than four weeks** and may be due to:
  - **Infections**
  - **Irritable bowel syndrome**
  - **Medications**
  - It may be a **symptom** of **chronic illness** such as **ulcerative colitis:**



  - A disease that is characterized by **inflammation** and **micro-ulcers** in the **superficial layers** of the large intestine
  - It affects the **lining** of the **large intestine** (colon) and rectum

Phytotherapy of Diarrhea

- Herbs with high tannin content can be used as they have:

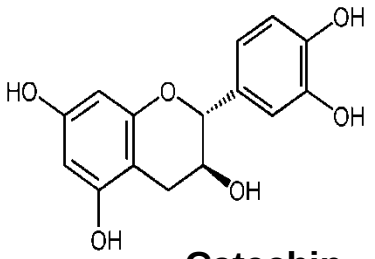
  - Local astringent effect.

  - antibacterial activity against enteric pathogens (as tannins are phenolic in nature) → useful in treatment of infectious diarrhea.

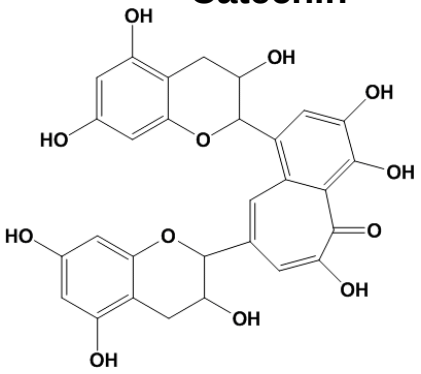
N.B.

- Over dose of tannins must be avoided in highly inflamed or ulcerated gastro-intestinal tract (irritant in high doses).
- Chronic intake is dangerous as they inhibit digestive enzymes.
- Tannins chelate (complex) metal ions → inhibit absorption of useful metals e.g. Iron → anemia

- **Examples:**
  - **Tea (green – oolong – black – white) prepared leaves of *Camellia sinensis***
    - **Constituents:**
      - **Tannins (catechin type) 5-20%**
      - **Alkaloids (Caffeine, theophylline and thebromine)**
      - **Volatile oil**



Catechin



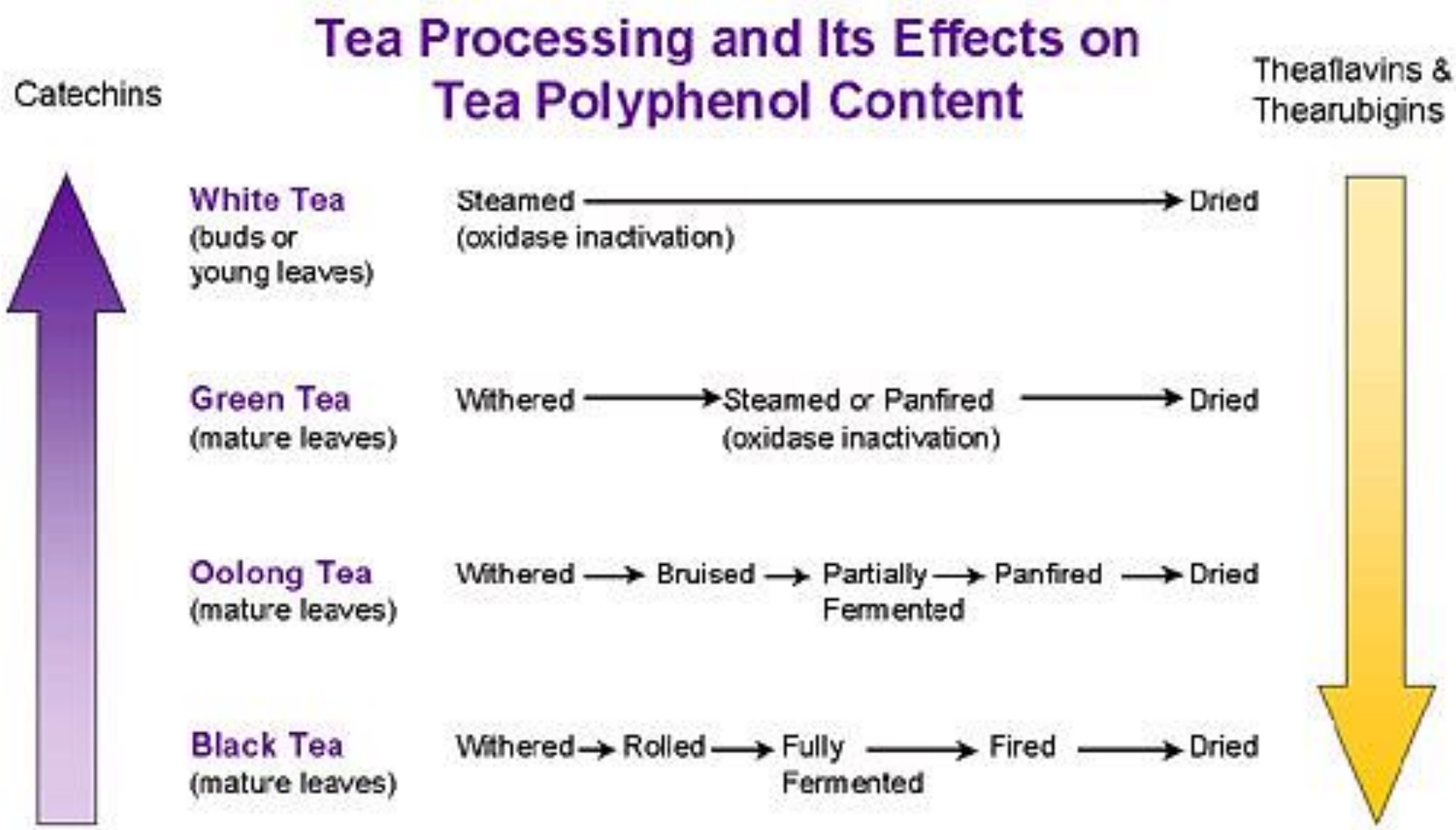
Theaflavin

Green tea

Oolong tea

Balck tea

White tea



- ✓ **The name "white tea" is derived from the fine silvery-white hairs on unopened buds of the tea plant.**

N.B.:

- For diarrhea accompanied with spasm:

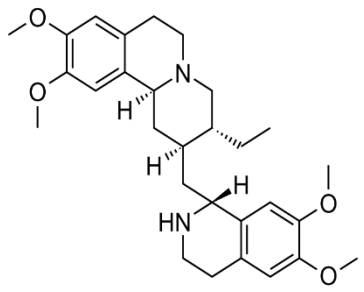
  carminative or spasmolytic drugs e.g. peppermint leaves or chamomile may be used in addition to the antidiarrheal herbs.

- A combination with anti-protozoal agents can be used for treatment of diarrhea accompanied with protozaol infections (e.g. amoebic dysentery)

Amoebic dysentery:

- is an inflammatory disorder caused primarily by the *Entamoeba histolytica* and results in severe diarrhea containing mucus and/or blood and accompanied with fever, abdominal pain
- is It is transmitted through contaminated food and water.

Alkaloids has strong anti-protozoal effect:



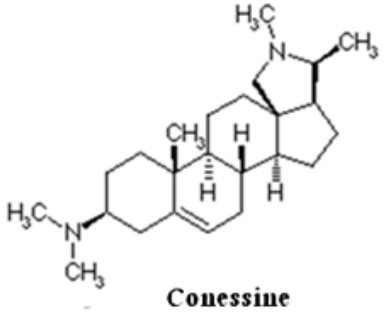
Emetine

a) Emetine:

- It is effective in treatment of both hepatic and intestinal amoebiasis.
- It inhibits protein synthesis which is probably responsible for its anti-amoebic action.
- Emetine is cardiotoxic. Dehydroemetine, a semiynthetic product, was found to be less toxic, as it was eliminated from the body more rapidly than emetine.

b) Conessine:

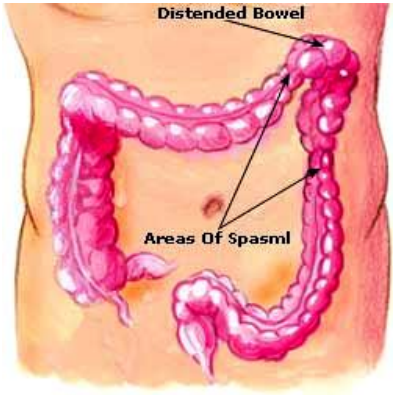
It is a steroidal alkaloid isolated from the bark of an Indian plant *Wrightia antidysenterica* (conessi).



Conessine

6. Irritable Bowel Syndrome (IBS) or Spastic Colon

- It is a disturbed intestinal motility which may occur by stress or emotional difficulties.



- It is manifested by:
  - Bloating and Abdominal pain
  - Constipation or/and diarrhea
  - Dyspeptic symptoms (nausea, anorexia, anxiety)
- Since the etiology is unknown, a symptomatic treatment is carried out.

- Symptomatic treatment of IBS:

- Treatment of constipation by high fiber diet, bulking agents, etc.

-Treatment of diarrhea using anti-diarrheal agents, etc.

-Treatment of flatulence using carminatives, etc.

Peppermint oil can be used (*see under treatment of flatulence*):

- **It has antispasmodic property:**

  → smooth muscles relaxant → reduction of abdominal pains and symptoms

- **The oil contains mainly menthol, a monocyclic terpene alcohol. Menthol has Ca^{++} channel blocking properties → inhibits the excitability of enteric nerves.**

- **Dosage form:**

  - As enteric coated capsules, two capsules per day.