

# CHEMOTAXONOMY



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**Advance Pharmacognosy**



Boraginaceae

family

- The plants of this family are often **rough** and **hairy**, usually with simple, alternate leaves.
- **Scorpioid or helicoid inflorescence.**
- The flowers are bisexual and mostly regular. They have 5 separate sepals and 5 united petals.
- There are 5 stamens; these are attached to the corolla tube, alternate with the petals.



Most members of this family have **hairy leaves**. The **coarse character of the hairs is due to cystoliths of silicon dioxide and calcium carbonate**. These hairs can induce an **adverse skin reaction, including itching and rash in** some individuals, particularly among people who handle the plants regularly, such as gardeners. **In some species, anthocyanins cause the flowers to change color from red to blue with age**. This may be a signal to pollinators that a **flower is old and depleted of pollen and nectar**.



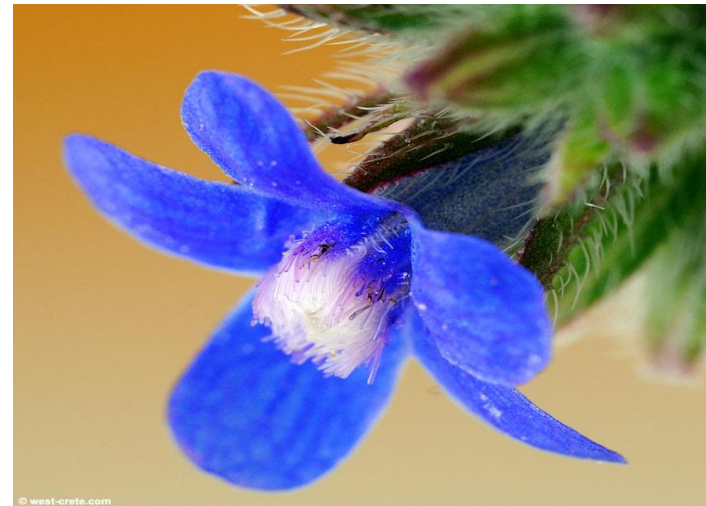
# *Borago officinalis*



- Common name borage, tailwort and starflower.
- Branched annual with coarsely hairy, ovate leaves, bright blue flowers 2cm across over a long period in summer.
- The plant, but not the oil obtained from the seeds, contains small amounts of **pyrrolizidine** alkaloids **that can cause liver damage and liver cancer.**
- These alkaloids are present in too small a quantity to be harmful unless you make borage a major part of your diet, though people with liver problems would be wise to avoid using the leaves or flowers of this plant



# *Anchusa italica*



- Common name: Bugloss, Large Blue alkanet.
- Height: 30-80 cm.
- Stem erect, branched, hispid with straight hairs, base with small tuber.
- Leaves oblong, lanceolate and entire. Lower leaves attached to petiole and upper leaves sessile.
- Flowers rose or blue, Corolla 10-15 mm diameter.



In Basrah there are 6 genera

1- *Arnebia*

*A. decumbens, A. liearifolia, A. tinctoria*

2- *Gastrocotyle hispida*

3- *Heliotropium*

*H. bracciferum, H. digynum*

4- *Lappula spinocarpos*

5- *Lithosermum apulum*

6- *Moltkiopsis ciliata*



## *Anchusa italica* contained

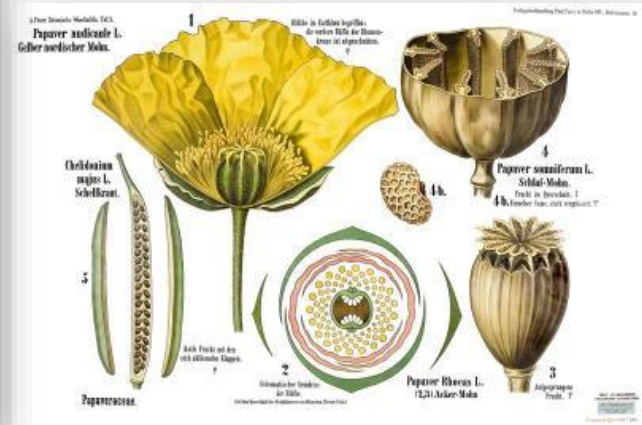
- Alkaloids,
- Tannins,
- Oil,
- Triterpenes
- Polyphenols.

# FAMILY PAPAVERACEA



# Poppy family

Annual, biennial or perennial herbs with **white or colored latex**.  
The **fruit is a spherical or linear capsule**. In *Papaver* the seeds are **dispersed from holes at the top of the capsule when the plant is shaken by the wind**.





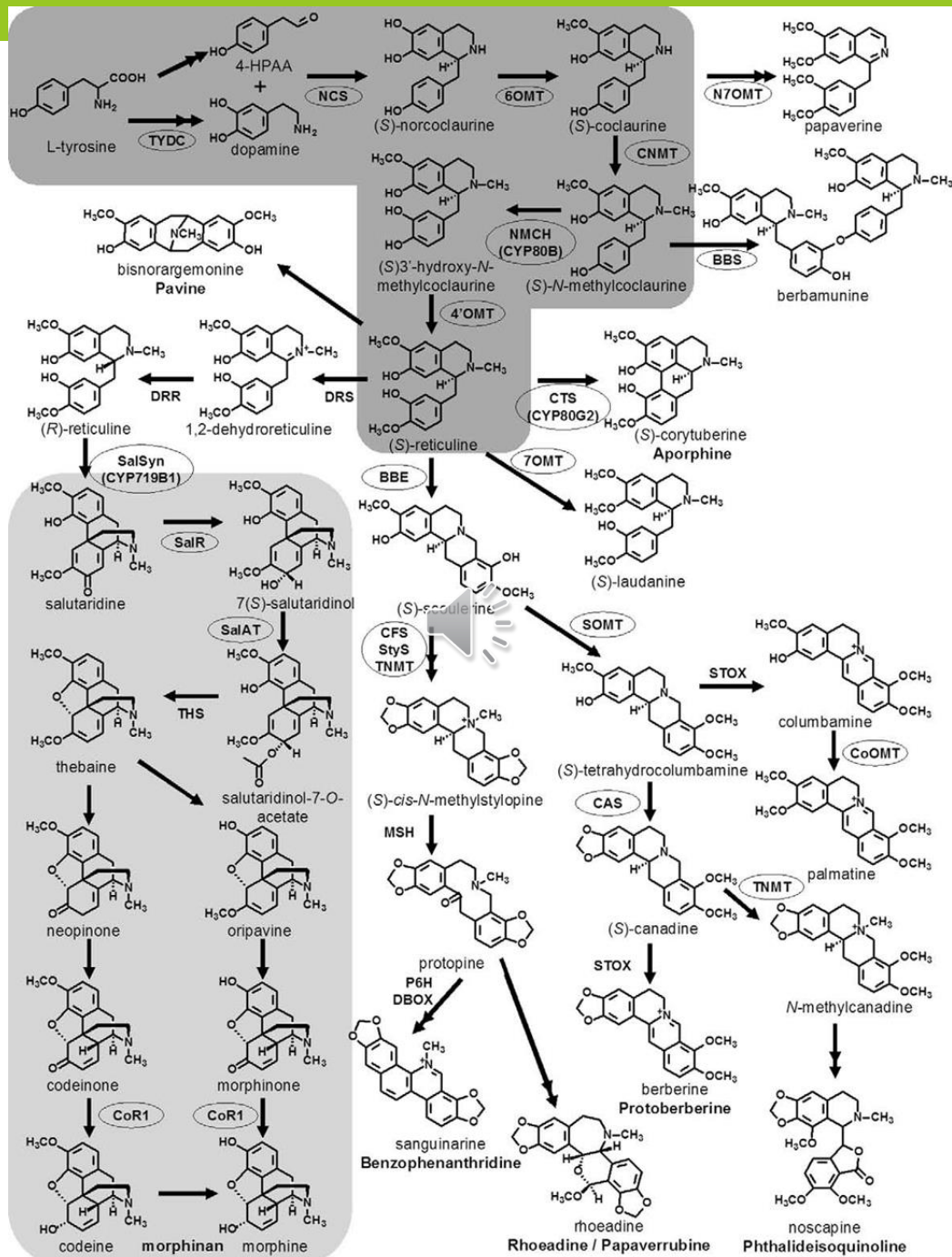
*Papaver rhoeas*



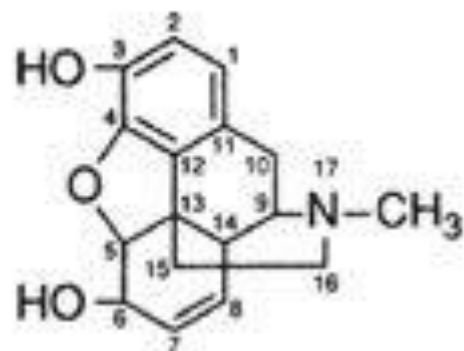
***Papaver somniferum***

The main difference that we should notice between *P. rhose* and *P. somniferum* is **cauline leaves**, in *P. somniferum* is **amplexicaul** and **glabrous** while in *P. rhose* **not amplexicaul** and **densely hairy**.

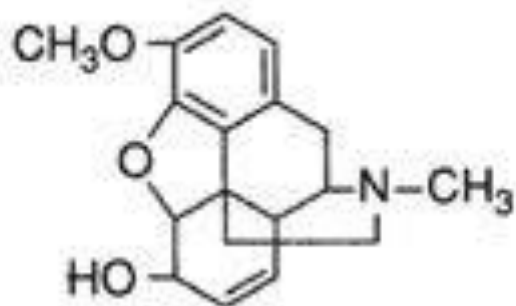




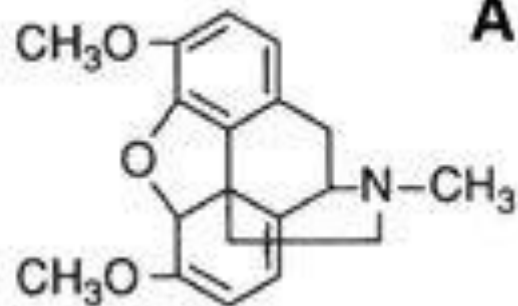




Morphine

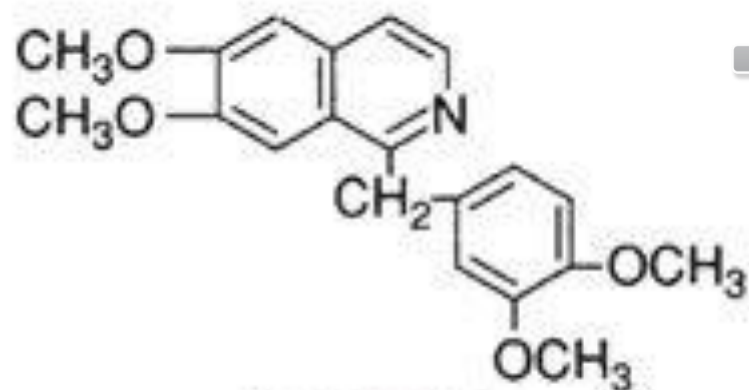


Codeine

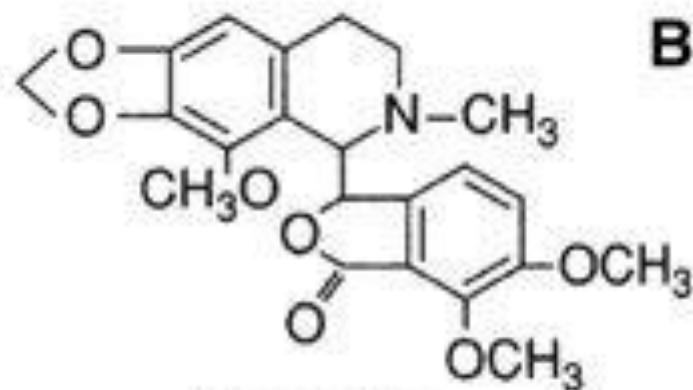


Thebaine

**A**



Papaverine



Noscapine

**B**

**FIGURE 7-1** Chemical structures of opium alkaloids. Phenanthrene **(A)** and benzylisoquinoline **(B)** alkaloids.

# Fabaceae Family

## Leguminosae



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Vegetable hummingbird  
*Sebania grandiflora*



Shirish  
*Albizia lebbek*



Cancer bush  
*Sutherlandia frutescens*



Cow vetch  
*Vicia cracca*



Kowhai  
*Sophora microphylla*



Babul  
*Vachellia nilotica*



Jequirity  
*Abrus precatorius*



Pigeon pea  
*Cajanus cajan*

# Characteristics of the Family Fabaceae:

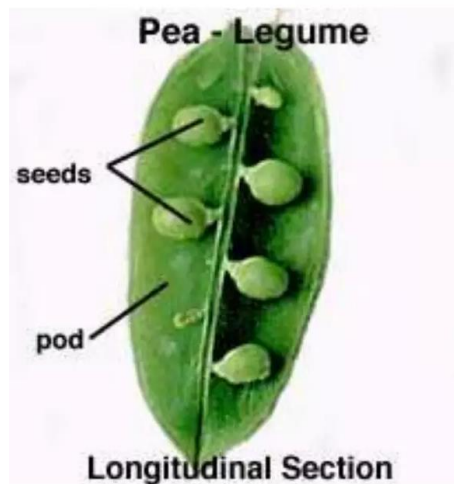
- The Fabaceae is the **third largest plant family** in the world, as counted by its total number of species (behind only the **Orchidaceae** and **Composite/Sunflower** family).
- Trees, shrubs or herbs
- Fruit is a **legume** or loment.
- Leaves alternate or sometimes opposite or whorled, usually compound (variously bipinnate, pinnate or palmate) or simple.
- Inflorescences racemose, Flowers usually zygomorphic bisexual.
- The ability to symbiotically fix nitrogen



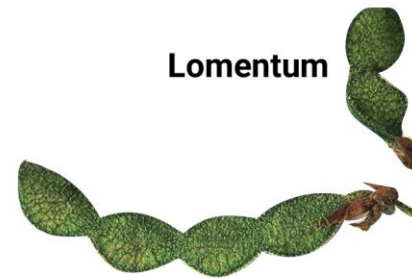
A **legume** is a type of fruit that is **dry at maturity and is derived from a single carpel**. When mature, the **fruit opens or splits along two lines of dehiscence**. We may eat some edible legume fruits **before they fully mature** (green beans, sweet peas, sugar snap peas, etc.), and a few members of this family have a **specialized type of legume fruit called a loment**, which is simply a legume that has **its fruit constricted between its seeds**.



*Cassia senna*



Lomentum of Acacia



*Tamarindus indica*

# Leaves characters

compound leaves , leaflets



Odd - Pinnately compound leaves



Even - Pinnately compound leaves



Bi - Pinnately compound leaves



Tri - Pinnately compound leaves



Palmately compound leaves

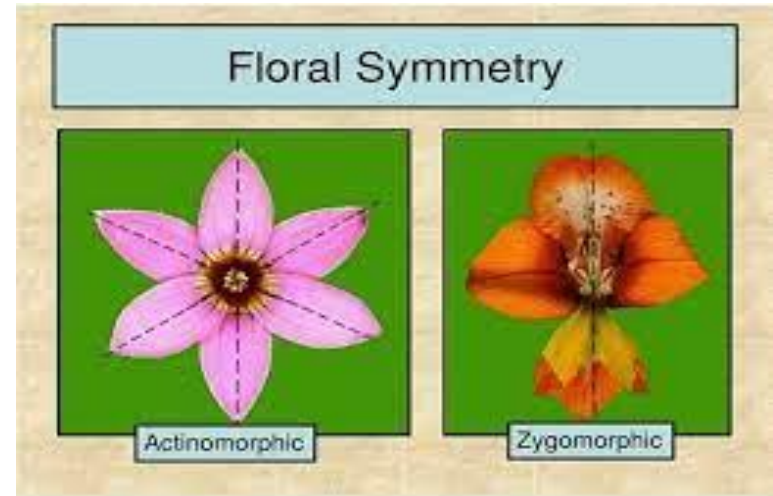
# Flowers

**Inflorescences racemose**



*Cassia fistula*


**Zygomorphic**



# *Cassia senna*

- Senna is an FDA-approved nonprescription laxative. It is used to treat constipation and also to clear the bowel before diagnostic tests such as colonoscopy.
- Senna is also used for irritable bowel syndrome (IBS), hemorrhoids, and weight loss.
- Senna fruit seems to be gentler than senna leaf. This has led the American Herbal Products Association (AHPA) to warn against long-term use of senna leaf, but not senna fruit.



A vibrant red maple leaf is positioned diagonally across the frame, resting on a piece of aged, light-brown paper. The paper has faint, illegible Spanish text printed on it. The text is in a serif font and appears to be a snippet of a larger article or document. The overall composition is warm and evocative, suggesting a message of good luck or encouragement.

**Good Luck  
in your Exams**

... este ...  
... el padre ...  
... tarde; murmuró el goberna ... or con ...  
... asiado tarde? replicó la ...  
... mos salvarte ...  
... rondie ...