Jaborandi Leaf

Origin

- It is the dried leaflets of *Pilocarpus jaborandi* or *Pilocarpus microphyllus*, Family Rutaceae.

G. Sources

- South America, West India, Brazil, and Central America.

Active Constituents

- The leaves contain **Imidazole non volatile liquid alkaloids** mainly **pilocarpine**, isopilocarpine, pilosine and isopilosine.

Uses

-Pilocarpine salts (nitrate) possess cholinergic actions mainly **miotic** action. They cause contraction of the eye pupil. This action antagonists the action of atropine.

-It is used also in the treatment of **glaucoma**, where it

- induces salivation and perspiration.

- It is a powerful and rapid **diaphoretic** and also used in renal diseases to eliminate both water and urea.

Tea leaf

Origin

- It is the dried prepared leaves of *Thea sinensis*, Family Theaceae.

G. Sources

- It is cultivated in India, Sri-Lanka, China and Ceylon.

Collection and cultivation

1- Black Tea

- For the best tea, the bud and the first two leaves are removed
- from each shoot.

- The leaves rolled between two flat surfaces, and then fermented by laying them on slabs of glass and maintaining a temperature of 20- 27°C.

- The colour of the leaves changes from green to yellow due to oxidase enzyme which converts the tannin into an insoluble phlobaphene, after that drying at temperature about 65°C forming the black tea.

2- Green Tea

- The green tea was formed by subjected the leaves to a process of roasting in pans by direct fire and continually moving, cooled, rolled and allow to ferment. The roasting destroys the enzymes and the tannin is not oxidized and leaves retain green colour.

Active Constituents

-The plant contains alkaloids belong to Purine base or (Xanthine base), mainly caffeine, theobromine and theophylline.

- It contains 10-24% tannin mainly catechol tannins and also v.o.

Uses

- **Caffeine** has a marked stimulant action on the nervous system and heart, so used mainly as CNS stimulant.

- **Theobromine** is used as diuretic and smooth muscle relaxant.

- **Theophylline** is used for prevent or relief of the bronchial asthma in addition to its diuretic effect.

- Used as astringent due to the presence of tannin.

Chemical tests

- Xanthine base alkaloids not like the other alkaloids, **not give precipitate** with mayer's reagent.

- **Murexide Test**

- It is a specific test for this group of alkaloids

- Evaporating the test solution to dryness, little of the alkaloid, mixed with HCl and a very small amount of potassium chlorate, and exposing the residue to ammonia vapour. A **purple colour** is produced which is destroyed on the addition of a fixed alkali.

Coca Leaf

Origin

- It is the dried leaves of *Erythroxylum coca* (Boilvian coca) and *Erythroxylum truxillense* (Peruvian coca), Family Erythroxylaceae.

G. Sources

- The plants are shrubs or small trees which are indigenous to South America mainly Peru, Bolivia, Colombia and Indonesia.

Active Constituents

- The plant contains three basic alkaloids of **ecgonine** group, which are **cocaine**, cinnamyl cocaine and truxilline in addition to the **liquid volatile alkaloid hygrine**.

Preparation of cocaine

- Cocaine can be separated from Peruvian coca by digesting the leaves with lime or $NaCO_3$, extraction with petroleum ether, then the alkaloid is extracted by dil. HCl, concentrate, crystals of cocaine HCl is formed.

Uses

- **Cocaine** is a very toxic narcotic with addictive properties. Although it's CNS stimulating effect, it is not used clinically for this purpose.

- It is used externally as local anesthetic.

- It is used also in many ophthalmic preparations.

Senna Leaf

Sennamekki

Origin

- It is the dried leaflets of *Cassia acutifloia,* known as Alexandria or Khartoum Senna and of *Cassia Angustifolia*, known as Indian Senna, Family Fabiacaea (Leguminosae).

G. Sources

It is native in northern and north-eastern Africa and is cultivated in the valley of the Nile. Imports of the drug come mainly from India and Sudan.

Macroscopical characters

- Colour: Pale grayish-green in colour.
- Odour: slight but characteristic odour.
- Taste: unpleasant bitterish and unpleasant.
- Paripinnate compound leaf.
- Petiole: petiolate
- Lamina: Lanceolate to ovate-lanceolate in shape.
- Phyllotaxis: opposite
- Base: asymmetric.
- Margin: entire.
- Apex: acute.
- Surface: very slightly hairy.
- Midrib: the veins being distinct on the lower surface,
- Venation: Pinnate reticulate.

Microscopical characters

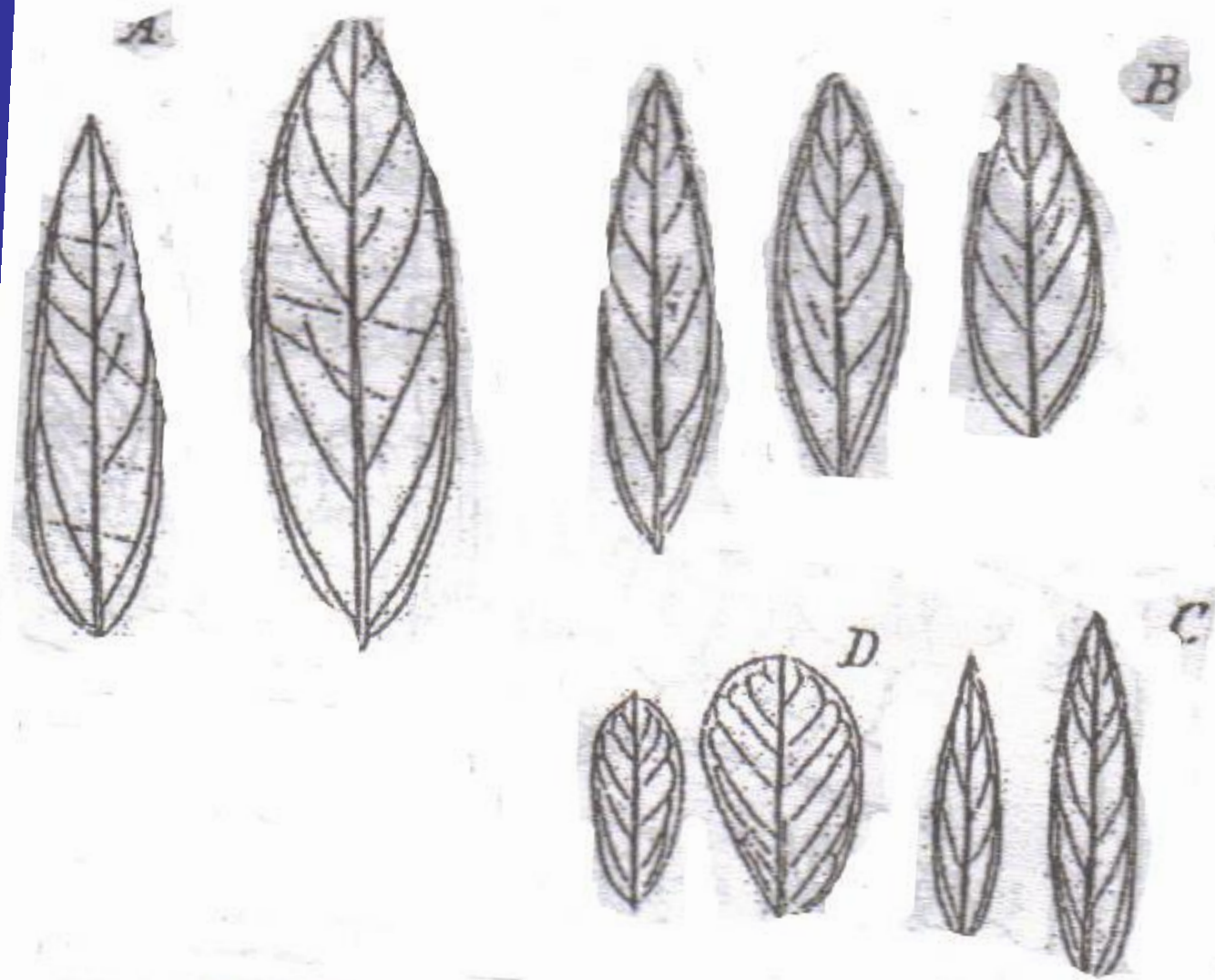
- Senna leaflets have an isobilateral structure.

- The epidermal cells have straight walls, and many contain mucilage.

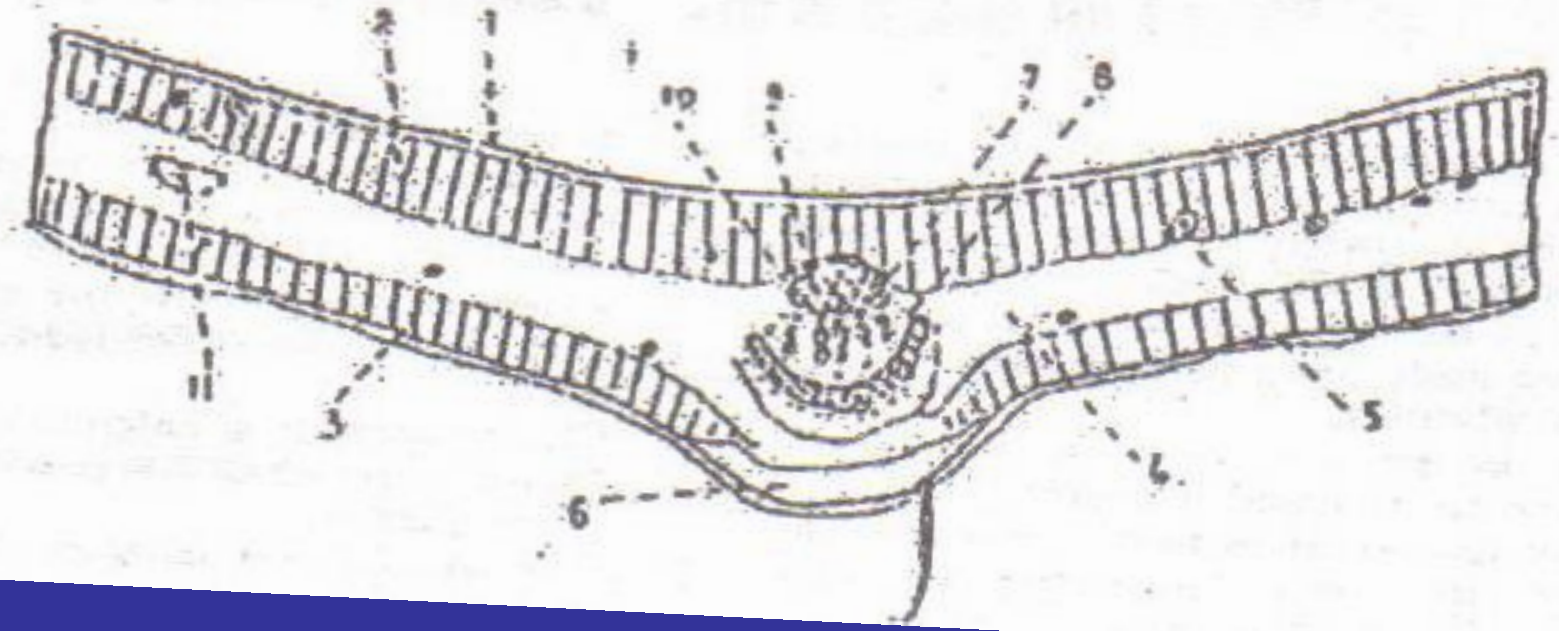
- The stomata have two cells with their long axes parallel to the osteol (paracytic stomata).

- Both surfaces bear scattered, unicellular non-lignified warty hairs up to 260 microns long.

- The midrib bundle and larger veins are almost surrounded by a zone of lignified pericyclic fibers and a sheath of parenchymatous cells contains prisms of calcium oxalate.



A, leaflets of *Cassia angustifolia*, Indian senna, showing bale-marks. *B*, leaflets of *C. acutifolia*, Alexandrian senna. *C*, leaflets of *C. angustifolia*, Arabian senna. *D*, leaflets of *C. obovata*, slog senna.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Active Constituents

- The most important constituents of Senna leaflets are anthraquinone glycosides (combined anthraquinone) and also free anthraquinone.

- Mainly, Sennoside A, B, C, and D which are different stereo-isomers of dianthrone glycoside of rhein

- It contains also small amounts of anthraquinone glycosides especially aloe-emodin and rhein-8-glycosides which exert a powerful synergistic effect on the activity of sennoside.

- 10% mucilage; flavonoids especially kaempferol derivatives

Uses

- Senna leaf is one of the most frequently employed plant laxatives or purgative and belongs to the group of stimulant and irritant laxatives.

- It is used in acute constipation and in all cases in which defecation with a soft stool is required e.g. with hemorrhoids, after anal- rectal operations.

- Sennosides are first hydrolysed by the intestinal bacteria and then reduced to the anthrone stage which stimulates the muscular coat of the intestine produce purgation.

Chemical tests

Borntrager's test

A- Test for free anthraquinone

- Boil the powder with water, then filter and cool the filtrate.
- To the filtrate add an equal volume of ether and shake.
- To the ethereal layer add an equal volume of dilute ammonia solution.
- The aqueous layer becomes pale rose-red, pink or violet.

B- Test for combined anthraquinone

- Boil the powder with alcoholic KOH then filter and cool the filtrate.
- The filtrate is rendered acidic with HCl and extracted with ether.
- To the ethereal layer add an equal volume of dilute ammonia solution.
- The aqueous layer becomes rose-red colour.