

Pharmacognosy
3rd Class, 1st Semester

ANTHRAQUINONE GLYCOSIDES



Lab.3

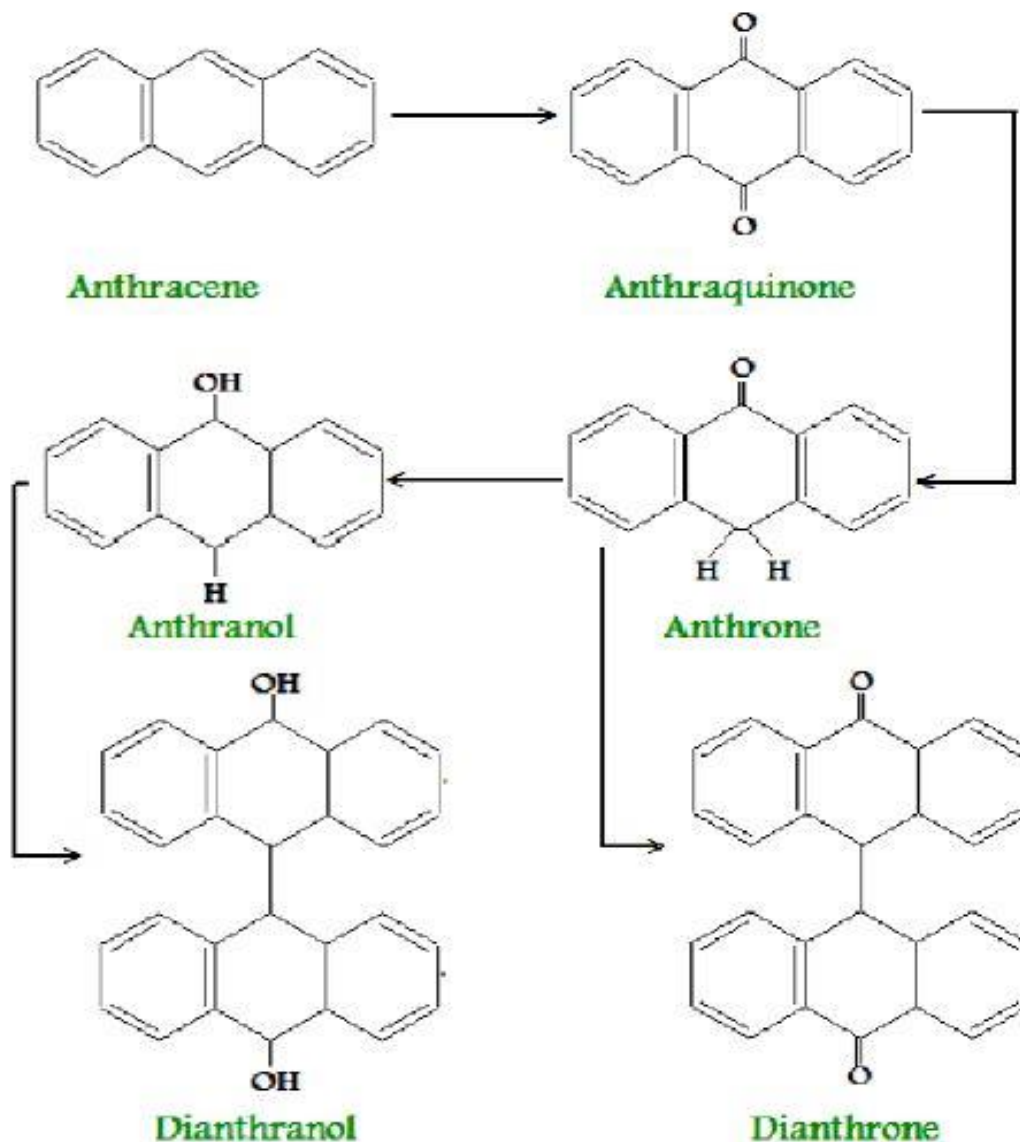
Anthraquinone glycosides are anthracene derivatives most of them contain anthraquinone skeleton.

Chemistry:

Chemically these are related to anthracene.

Derivatives:

- Anthranols
- Anthrones
- Oxanthrones



- ❖ Glycosides of anthranols, dianthrone, and oxanthrone have significant therapeutic action.
- ❖ The glycosides, upon hydrolysis, yield aglycones that are di-, tri-, or tetrahydroxyanthraquinones or modifications of these compounds.

Mechanism of action

- ❖ They are employed as stimulant cathartics which exert their action by increasing the tone of the smooth muscle in the wall of the colon and stimulate the secretion of water and electrolytes into the large intestine (bulk laxatives).

- **Medicinal plants that contain Anthraquinone glycoside :**

- | | | |
|------------|---|--|
| 1-Senna | } | Drug of choice |
| 2-Cascara | | |
| 3-Frangula | | |
| 4- Aloe | } | not recommended due to their irritating action.
Aloe use in the treatment of minor burns |
| 5-Rhubarb | | |

Senna

Botanical Origin:

Cassia angustifolia

Cassia acutifolia

Family:

Febaceae

Part used:

Dried leaflets

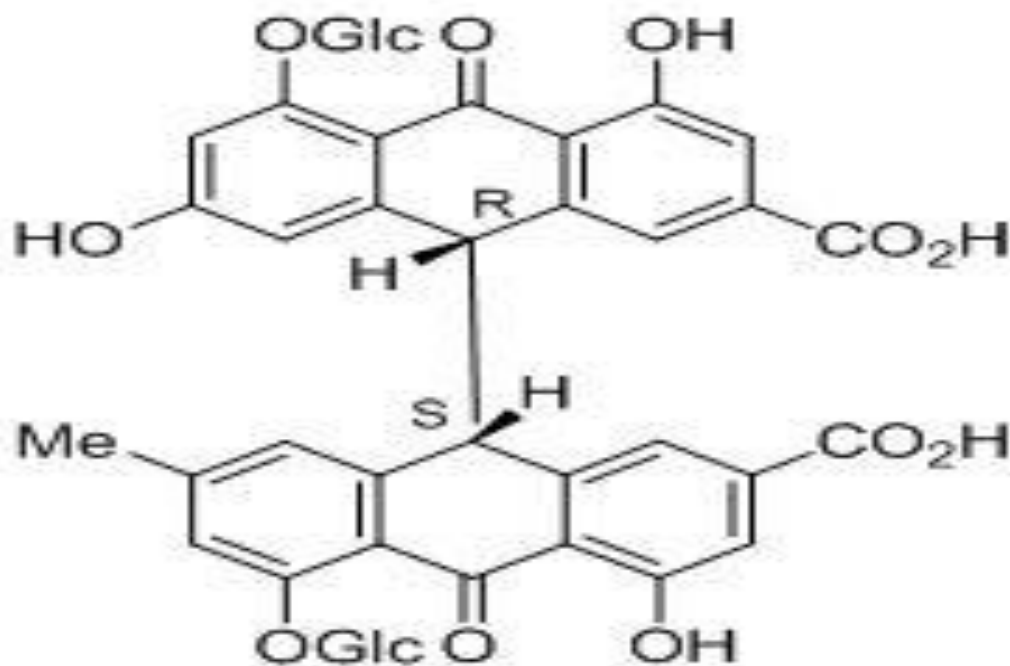


Cassia acutifolia



Cassia angustifolia

Sennoside :anthraquinone glycoside of senna plant in which the aglycone part is dimer of anthrone (dianthrone) .



Sennoside B, R,S configuration

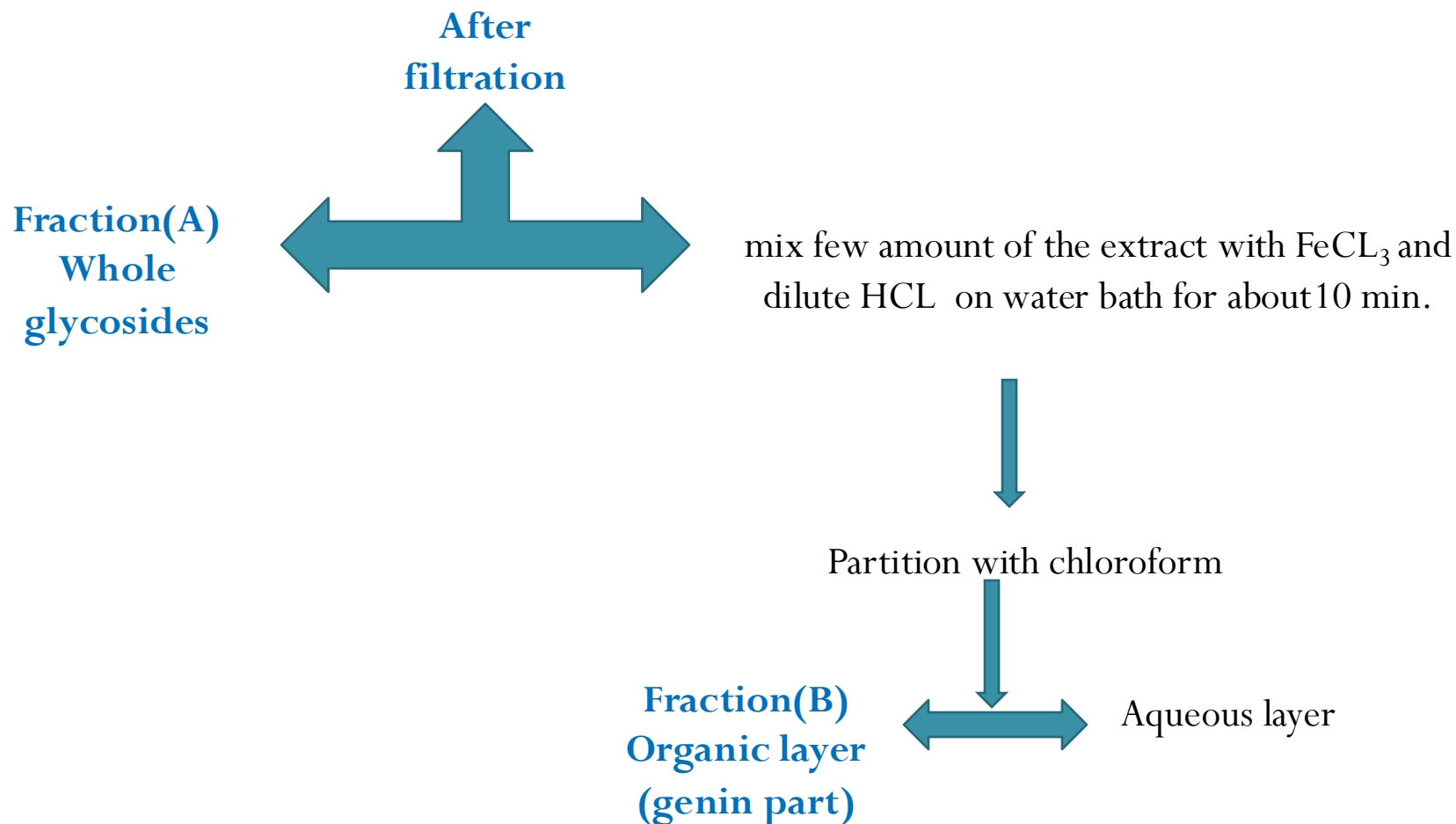
Sennoside A, R,R configuration

Market formulation



Extraction OF Anthraquinone glycosides (Senna)

Macerate the powdered plant material with 70% ethanol



Discussion

- ❖ The chloroform layer will contain the free aglycone (fraction B) , while (fraction A) will contain the glycoside as a whole.
- ❖ The use of ferric chloride and HCL and reflux is to break the C-C bond in the dimer, which is very strong bond so need strong conditions.

The Identification of Anthraquinone Glycosides By Chromatography:

Identification of Anthraquinone Glycosides By Chromatography:

- By the use of thin layer chromatography (T.L.C)
- ☐ The stationary phase = Silica gel G.
- ☐ The mobile phase = n-propanol: Ethyl acetate: Water (60:30:30).
- ☐ The standard compound = Sennoside.
- ☐ The spray reagent = Alcoholic KOH 5%w/v.

Borntragers test for anthroquinone

- Hydrolysis the glycoside with acid and heating to form free aglycone and sugar parts
- mix with chloroform in separatory funnel to take free aglycone (free anthraquinone)
- Then in test tube mix 5ml of chloroform layer with aqueous KOH or dilute ammonia to form two immiscible layers
- A pink to red color produced in the alkaline layer** indicate the presence of free anthraquinone





THANK YOU