Pharmacognosy practice

[Lab.3] Anthraquinone Glycosides

Anthraquinone and related glycosides, are stimulant cathartics, and exert their action by increasing the tone of the smooth muscle in the wall of colon and stimulate the secretion of water and electrolytes into the large intestine.

After the oral administration, the anthraquinone glycosides are hydrolyzed in the colon by the action of enzymes of the micro flora, to the pharmacologically active free ***aglycones*** which usually produce their effect in ***8 -12 hrs***. After administration, these agents are indicated for constipation in patient who do not respond to milder drugs and for bowel evacuation before investigational procedure or surgery.

Stimulant laxative are habit forming so the long-term use may result in laxative dependence and loss of normal bowel function. The glycosides of *anthranols* and *anthrones* elicit a more drastic reaction than do corresponding anthraquinone glycosides and cause discomforting and gripping action.

The drugs mostly used are ***cascara***,***frangula***,***hypericum*** and ***Senna.***

Aloe and ***Rhubarb*** are not recommended due to their irritating actions which increase the chance for gripping effect.

The anthraquinone hydrolyzed to give ***aglycone*** which are ***di***, ***tri***, or ***tetra – hydroxyanthraquinone*** .Also there are ***antherone, dianthrones and oxanthrones***.

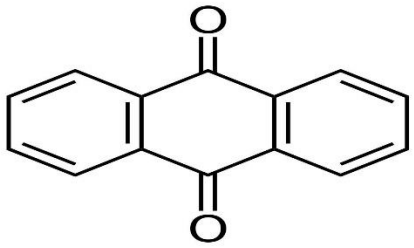

Fig (1): Chemical Structure of Anthraquinone

Isolation and Identification of the Anthraquinone Glycosides:

1. Extraction:

Aim: To isolate the anthraquinone glycosides.

Reagents:

- *Conc.HCl acid.*
- *Chloroform.*
- *60% w/v ferric chloride solution.*

Procedure:

Method of extraction:Decoction.

Plant used: Senna **Cassiaa cutifolia**, **Cassia angustifolia**

Family: Leguminosaea.

Part used: Dry leaves.

Senna

Place ***0.5 gm*** of powdered dry leaves of Senna in ***50 ml*** of ***water***

↓ *Boiling (**15 min**$_s$)*

Cool & filter

↓

Place the filtrate in separatory funnel and extract by shaking with

[***10 ml*** of ***Chloroform***] two times

Upper layer	Combine lower layer
(***Aqueous layer***)	(***Chloroform layer***
Devided into two portions	[Free aglycone (dianthrone)]
	Fraction B

(Whole Glycosides)	Other part of the aq. Layer
	↓

Fraction A **Reflux (20min$_s$)**

[Put in reagent bottle] Add

1) ***3.5 ml*** of ***Ferric Chloride sol.(60 %w/v***).
2) ***2ml*** of ***Conc. HCl acid***.

↓ Cool

Place in a separatory funnel and extracted with

[***10 ml*** of ***Chloroform***] tow times

Aqueous layer	Chloroform layer
Glycone part	***Aglycone part (monoanthrone)***

Fraction C

Results:

Fraction A : Contain the whole glycosides.

Fraction B : Contain the aglycone (dianthrone) .

Fraction C: Contain the aglycone part (monoanthrone).