Practical Pharmacognosy

3rd. Stage

1st semester

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Lab.3

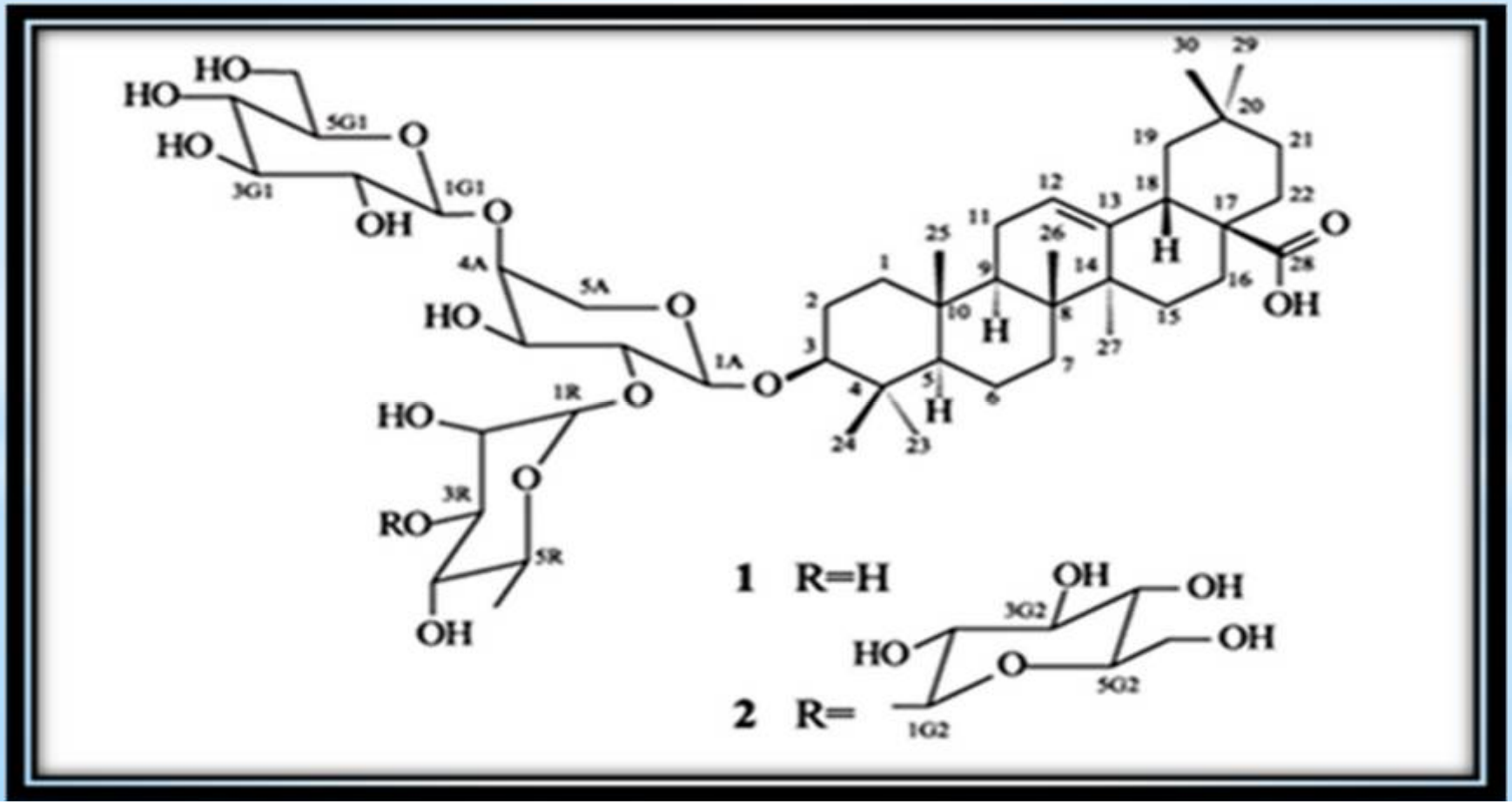
Saponin Glycosides

- This group of glycoside is **widely distributed** in higher plants.
- Saponin glycosides form **colloidal solution** in water that foam upon **shaking**,
- This is due to a **decrease in the surface tension action** done by saponin glycosides, as a result of the **hydrophobic/ hydrophilic characteristics** of the saponin, and due to this property the saponins are used in the manufacturing of beer, and soap.

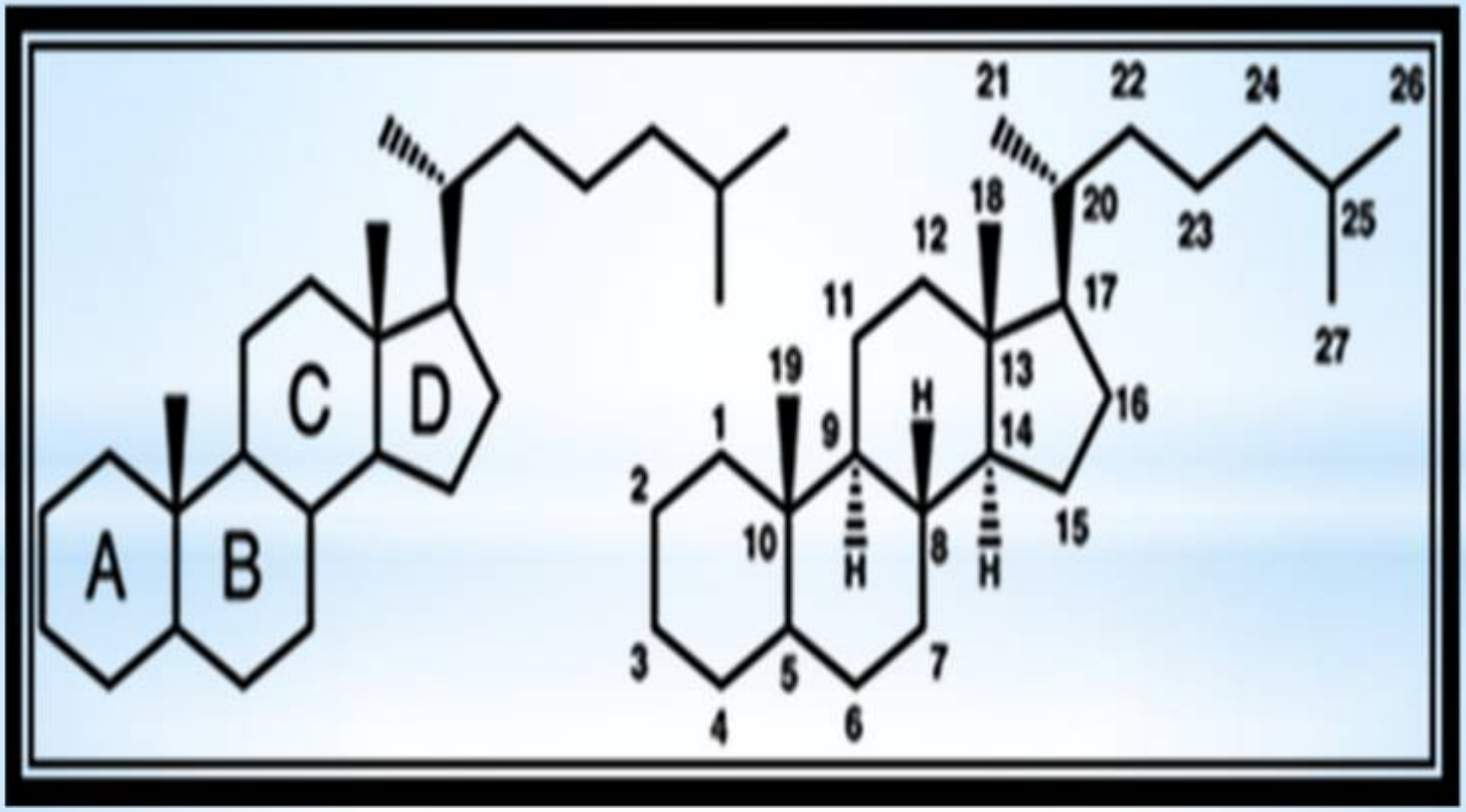
- Saponins have **a bitter, acrid taste**, and drugs containing them are usually sternutatory and otherwise **irritating the mucus membrane**.
- They **destroy red blood corpuscles** by hemolysis and are toxic especially to cold blooded animals therefore many saponins are used as fish poisons.
- The more poisonous saponin is often called ***sapotoxin***, many are toxic to insects and mollusks, and some are used to control schistosomiasis snails.
- Saponin upon **hydrolysis** yield **an aglycone** known as ***sapogenin***, which are crystallized upon acetylation, therefore this process is used for **purification.**

According to the structure of the aglycone, two kinds of saponin are recognized:

1. Pentacyclictriterpenoid saponins (acidic, and the C-atom is C30)



2. Steroidal saponins (neutral C- atom is C27).



***Isolation &Identification of the Saponin Glycosides*:**

Procedure:

Method of extraction: Decoction.

Plant used: Saponaria officinalis family Caryophyllaceae.

Part used: Dry root.

Saponaria officinalis

Add *0.1 gm* of Saponaria root in coarse powder to *20 ml* distilled water in a beaker and boil gently for *2-3 minutes*.

↓

Filter hot and allow cooling

↓

Dilute *5ml* of the filtrate with water and shake vigorously.

↓

add to the filtrate *5ml* of *dilute H_2SO_4 acid* and boil gently for *3-5 mins* .

↓

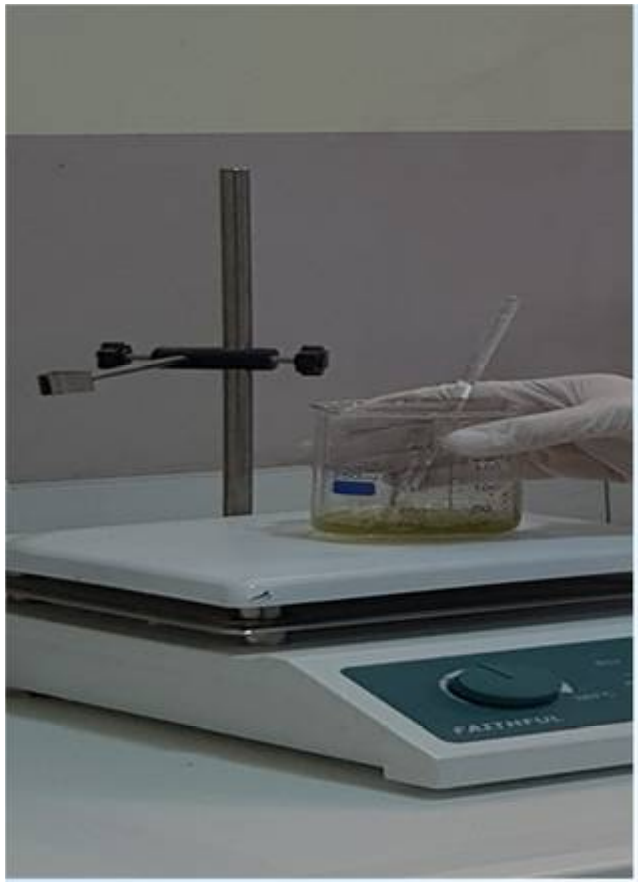
Filter

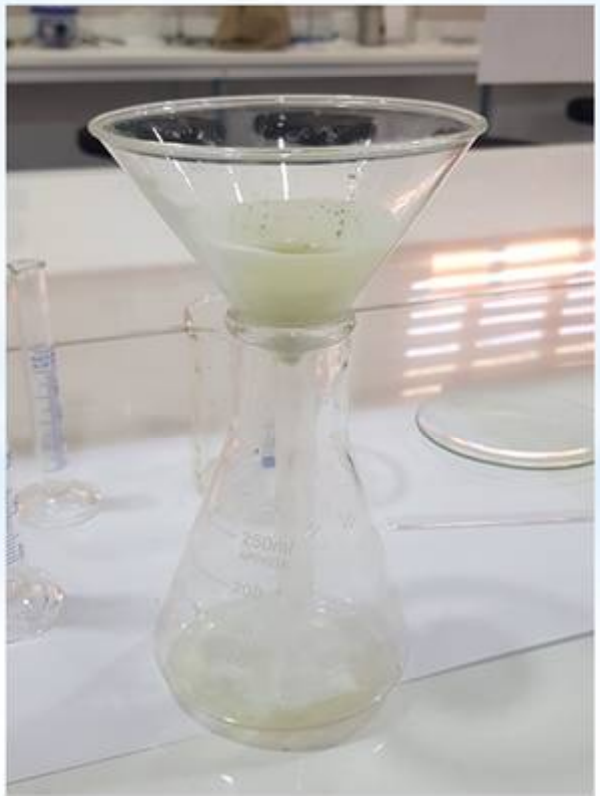
← Supernatant is **glycone**

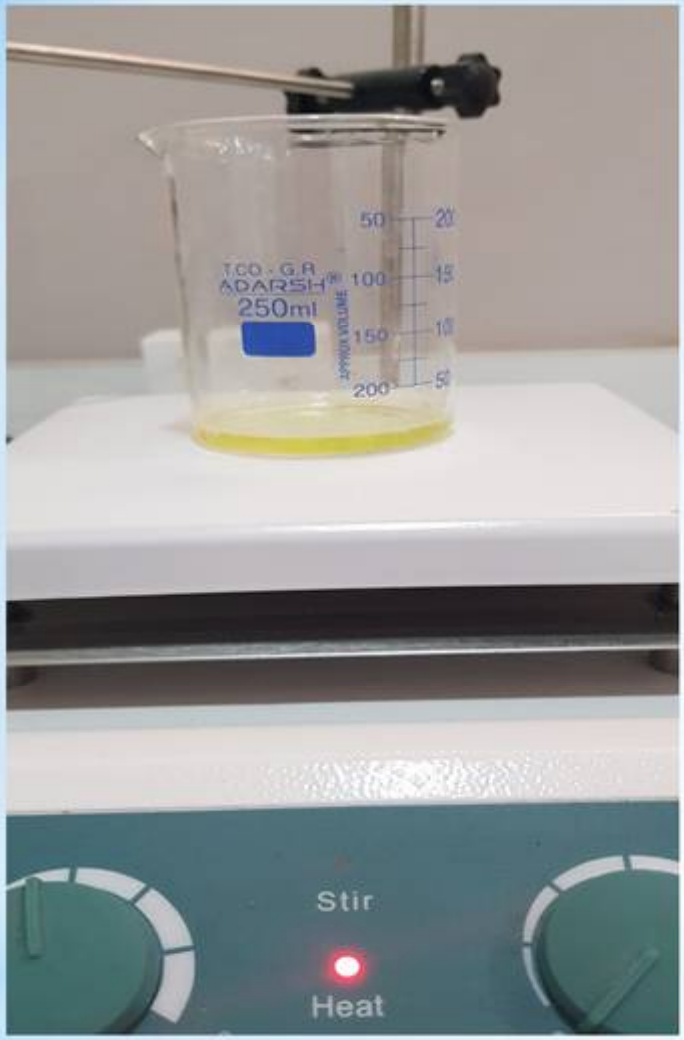
→ Precipitate is **aglycone**

***The aglycones are obtained by acid hydrolysis and are insoluble in water but are soluble in 90% alcohol**.

Procedure






TCO - G.R
ADARSH
250ml
Stir
Heat


Precipitate
Aglycone
Filtrate
Glycone

The Chemical Tests

THE FEHLING TEST:

Aim: Identity test (specific) for Saponin glycosides.

Equipment & Reagents:

-Test tube.

-NaOH.

-Fehling Reagent.

-litmus paper.

Procedure:

-Make the filtrate alkaline with NaOH.

-Add 1 ml of Fehling Reagent to 3 ml of the solution.

-heat for 10mins on boiling water bath.

Results:

Brick- red precipitation in the solution

The result of Fehling's test

Thank you