

**Practical work n°3****Filtration****1- Introduction**

During the extraction of plant materials using different solvents, the resulting mixtures contain both liquid extracts and solid plant residues. In order to obtain clear extracts suitable for further analysis, the solid residues must be separated from the liquid phase.

**2-Objective of the practical work**

- Separate an insoluble solid from a liquid by the filtration technique.

**3. Principle**

Filtration is a physical separation technique used to separate a solid from a liquid when the solid is insoluble in the liquid. The mixture to be filtered is poured through a porous medium (filter paper) placed in a funnel. The liquid passes through the filter and is collected as the filtrate, while the solid particles are retained on the filter paper as the residue.

**3- Materials and chemicals**

- Filter funnel
- Filter paper
- Beaker (250 mL)
- Analytical balance
- Spatula
- Watch glass
- Hot plate with magnetic stirrer
- Magnetic stir bar
- Mortar
- Plant Powder
- Distilled water
- Methanol
- Ethanol

**4- Experimental procedure****4-1- Preparation of the mixtures to be filtered (maceration)**

- Grind the medicinal plant using a mortar and pestle to obtain a fine powder.
- Weigh 10 g of powdered medicinal plant.
- Place the powder in three separate beakers.

-Add 150 mL of water to the first beaker, 150 mL of methanol to the second, and 150 mL of ethanol to the third.

- Place the beaker on a hot plate with a magnetic stirrer and stir each mixture for 5–10 minutes at moderate speed with gentle heating for aqueous extract.

#### **4-2-Filtration**

-Place a funnel fitted with filter paper over a clean conical flask.

-Pour the plant mixture slowly into the funnel.

-Collect the filtrate (aqueous plant extract) in the flask.

#### **Questions**

1-Draw a recapitulative figure illustrating the steps of the practical work, showing preparation of plant macerates with water, methanol, and ethanol and filtration through filter paper.

2- What is the role of filtration in the preparation of plant extracts?.

3- Identify the filtrate and the residue obtained after filtration in this experiment.

4- How does the nature of the solvent (water, methanol, ethanol) affect the appearance of the filtrate?.

5-Why is gentle heating applied only to the aqueous extract during maceration?.