Pn°1. Osmotic pressure

1. Introduction

Plant cells can only grow if the cell wall is subjected to pressure or tension. It depends on the turgor pressure, which is a function of the difference between the internal and external water potentials, which depend on the difference between the internal and external osmotic pressures. Osmosis is a phenomenon of diffusion of matter that occurs when water molecules (solvent) cross a semi-permeable membrane separating two liquids with different concentrations of dissolved products. The difference in concentration causes a difference in osmotic pressure, which causes the solvent to move across the membrane.

2. Objective

Determination of the *osmotic pressure* using the limit plasmolysis method.

3. Materials

- Onion bulb ;
- Watch glasses (11 units) ;
- Sucrose solution M (1 mol/L) (i.e. 342 g/L or 34.2%);
- Distilled water ;
- Two pipettes (Vol = 5 ml) ;
- Blades and slides ;
- Fine tweezers and scalpel ;
- Light microscope.

4. Methodology

- Preparation of 11 labelled test tubes for the sucrose solutions (differents concentrations) ;
- Preparation of 11 watch glasses and put in, a few millilitres of each solution ;
- Label the watch glasses, indicating the different concentrations ;
- Using forceps, remove a fragment of the inner epidermis of an onion;
- Place the parts of the onion epidermis in the watch glasses during 14 to 20 min.

N° watch glass	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Volume of the sucrose solution (mL)	0	0,5	1	1,5	2	2,5	3	3,5	4	4,5	5
Volume of distilled water (mL)	5	4,5	4	3,5	3	2,5	2	1,5	1	0,5	0
Molar concentration (mol/L)	0	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1

5. Requested work

Determination of the *osmotic pressure* of the vacuolar liquid, basing on the results observed (under microscope).