

A solution having higher osmotic pressure than the other, known as hypertonic solution

Eg :- $> 0.9\%$ NaCl is hypertonic with human blood.

A solution having lower osmotic pressure than the other, known as hypotonic solution

Eg :- $< 0.9\%$ NaCl is hypotonic with human blood.

When hypotonic and hypertonic solutions are separated by SPM, the solvent molecule will be passed from hypotonic solution to hypertonic solution.

Note :- If two solutions are isotonic

$$\pi_1 = \pi_2$$

$$\frac{n_1}{V} RT = \frac{n_2}{V} RT$$

$$n_1 = n_2$$

$$\frac{W_1}{M_1} = \frac{W_2}{M_2}$$

Note :- The concentration should be taken after adding diluting with 0.9% NaCl solution always. It is because

to make the injected solution as isotonic with human blood, in order to avoid the possible shrinking or swelling of blood cells.

Advantages of osmotic pressure method over other method especially for biomolecules are as follows :-

1 Osmotic pressure (π) is measured at room temperature (So it is particularly useful for biomolecules as they are not stable at higher temperature)

2 Even for a very dilute solution, osmotic pressure (π) value is considerable but not of the colligative properties are negligibly small (So it is particularly useful for biomolecules as they are polymers have poor solubility)

3 Most most convenient is used in osmotic pressure method. by molarity term is used in rest of the methods.

Reverse Osmosis :-

The passage of solvent molecules from higher concentration to lower concentration or solution to solvent side when they are separated by SPM and applied pressure greater than osmotic pressure on the solution side known as reverse osmosis.