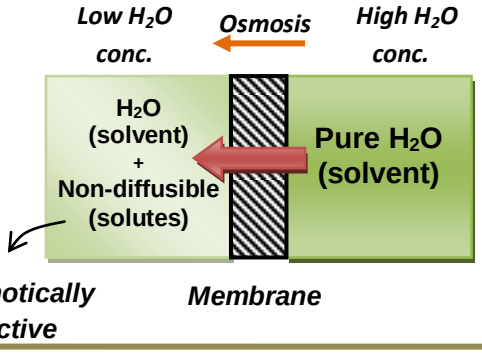
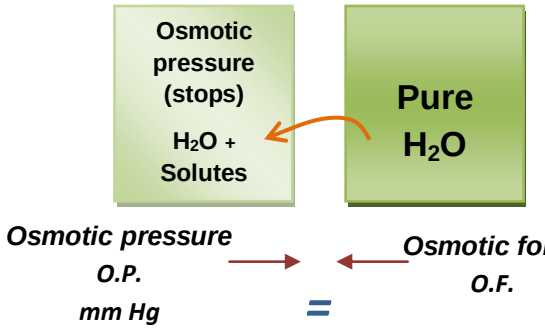
(1) Osmosis



(2) Osmotic Pressure



(3) Mole

M.W. in grams

Mole

- **Unionized (undissociated) substances**
  - *(same) No. of molecules*
  - *e.g. glucose - urea*
- **Ionized (dissociated) substances**
  - *(larger) No. of molecules*
  - *e.g.* NaCl → *2 molecules (ions)* → Na^+, Cl^-
  - $CaCl_2$ → *3 molecules (ions)* → Ca^{++}, $2Cl^-$

Osmosis is measured in Osmole(s) =

$$\frac{\text{Mole}}{\text{(No. of ions/molecule)}}$$ So

(4) Osmole

= *1000 milliosmoles*

Mole of undissociated substance (Glucose) = Osmole

Mole of dissociated (ionized) substance e.g.:

($NaCl$) = 2 Osmoles
($CaCl_2$) = 3 Osmoles

(5) Osmolar Conc. Osmolarity

More used clinically
Easier

No. of Osmoles per (1) Liter H_2O

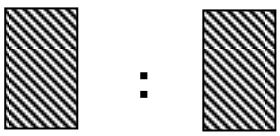
(6) Osmolal Conc. Osmolality

More accurate

No. of Osmoles per (1) Kilogram H_2O

(1) L. nearly = (1) Kg of H_2O
So Osmolarity = Osmolality

(7) Tonicity



(Osmolality) Solution : Plasma

Solutions

- *Isotonic* — The same osmalality as
- *Hypertonic* — Higher osmalality than
- *Hypotonic* — Lower osmalality than

Plasma