## Ionic product of Water :-

The product of Concentration of H and OH ion in water at a particular temperature is known as Ionic product of Wates

$$pK_w = pH + pOH$$

$$pK_w - pH = pOH$$

$$pK_w - pH = pK_b + \log \frac{\text{Conjugate acid}}{\text{base}}$$

$$pK_w - pH = -\log \frac{\text{Conjugate acid}}{\text{base}}$$

## measurement of tonicity :-

tonicity : measurement of osmotic pres...

(1) Haemolytic method :

The effect of various Solutions of the drug is observed on the appearence of RBC Suspended in the Solutions. This is Quantitative method based on fact that Hypotonic Solutions Liberates oxyhemoglobin

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By such means the vant hoff factar (i) can be determined and the value obtained and is compared with from Cryoscopic, osmotic co-efficient, activity co-efficient

vant hoff factar I is the Ratio between actual Concentration of particles produced when the Substan ce is dissolved and the Concentration Calculation from its mass

(2) The second approach to measure tonicity is based on any method the determine Colligative property

eg: freezing point of blood and lacrimal fluids (0.52°C)

The temperature corresponds to freezing point of 0.9% nacl which is considered to be isotonic with blood and lacrimal fluids.

**Calculation tonicity using liso values**

The solution of Electrolyte, the freezing point

$K_f$ = freezing point depression constant

A new factor L = IKF is introduced to over come the difficulty

The "L" value obtained from the freezing point depression of a sclution of a giren ionic solution

The Liso value fd 0.9% NaCl (0.154 M) which has freezing point 0.52°c and isotonic with body fluid

| Type | Liso | Example |
|---|---|---|
| non Electrolytes | 1.9 | Sucrose, urea |
| Weak Electrolyte | | boric acid, phenobarbital |
| uni-univalent Electrolyte | | Nac, coccaine, HCl |
| uni-divalent Electrolyte | | Sodium Sulphate, $Na_2SO_4$ |
| | | $ZnCl_2$ |