

PHARMACEUTIC-I (BP103T)

UNIT: 2

CLASS: 4

TOPIC: Adjustment of Isotonicity

Isotonic solutions are which have same osmotic pressure or equal solute concentrations. 0.9% sodium chloride solution is considered to pass the same osmotic pressure and hence it is a standard solution which is isotonic with blood plasma. Any concentration above this (0.9%) is considered as hypertonic and below this (0.9%) is considered as hypotonic.

ADJUSTMENT OF ISOTONICITY:

Freezing point method/ Cryoscopic method

$$\%w/v \text{ of adjusting substance needed} = \frac{0.52-a}{b}$$

a = Freezing point of the unadjusted solution

b = Freezing point of a 1% w/v solution of a adjusting substance

Example

How will you prepare 1% solution of boric acid, iso osmotic with blood plasma. [Hint: The freezing point of 1%w/v solution of boric acid is 0.288°C The freezing point of 1%w/v solution of sodium chloride is 0.576°C]

Percentage of w/v of sodium chloride required = 0.402% w/v

1gm of boric acid is needed for 0.402gm of NaCl to become isotonic.

2 MARKS QUESTIONS

1. How you can adjust isotonicity.

5 MARKS QUESTIONS

1. What are the different methods for adjusting isotonicity. How will you prepare 1% solution of boric acid iso osmotic with blood?