

Millimolar calculations

The strength of active ingredient within a pharmaceutical preparation can be expressed as the number of millimoles per unit volume or mass of product. The mole is the unit of amount of substance and there are 1000 millimoles in a mole. To calculate the number of millimoles of an ingredient in a medicinal product, you will firstly need to know the molecular weight of the ingredient.

The number of moles of ingredient is the mass of ingredient divided by the molecular mass:

$$\text{Number of moles} = \frac{\text{Mass in grams}}{\text{Molecular mass}}$$

For example, the molecular weight quoted for Sodium Chloride BP is 58.44.

Therefore a molar solution of Sodium Chloride BP would contain 58.44 g of Sodium Chloride BP in a litre.

Example 2.9

Prepare 100 ml of Sodium Chloride BP solution containing 1.5 mmol per ml.

1 ml contains 1.5 mmol

100 ml contains 150 mmol

1 mole (1000 mmol) of Sodium Chloride BP weighs 58.44 g

1 mmol of Sodium Chloride BP weighs $\frac{58.44 \text{ g}}{1000}$

150 mmol of Sodium Chloride BP weighs $\frac{58.44 \text{ g} \times 150 \text{ g}}{1000}$
 $= 8.766 \text{ g (weigh 8.77 g)}$

Questions

29. The molecular weight of Sodium Chloride BP is 58.44. How many grams of Sodium Chloride BP would be needed to prepare 1 litre of a molar solution?

- 0.2922 g
- 0.5844 g
- 5.844 g
- 29.22 g
- 58.44 g

30. The molecular weight of Sodium Bicarbonate BP is 84. How many grams of Sodium Bicarbonate BP would be required to produce 150 ml of 0.5 mmol/ml solution?

- 0.63 g
- 0.84 g
- 6.3 g
- 8.4 g
- 63 g