Self-assessment

Basic strength calculations

The simplest way to express the strength of a solution is to specify the amount of solute to be dissolved in a stated amount of solvent.

If the solute is a solid dissolved in a liquid, the strength of the solution may often be expressed as mg/ml, mg/100 ml, g/100 ml, mg/l or g/l. Similarly, if the solute is a liquid, the strength could be expressed as ml/10 ml, ml/100 ml or ml/l.

Example 2.5

You are asked to prepare a 100 ml solution containing Sodium Chloride BP 9 mg/ml.

Sodium Chloride BP	9 mg	90 mg	900 mg
Potable water	to 1 ml	to 10 ml	to 100 ml

Therefore the amount required would be 900 mg (= 0.9 g).

Similarly, the request could be to prepare 100 ml of a solution containing Sodium Chloride BP 0.009 g/ml.

Sodium Chloride BP	0.009 g	0.09 g	0.9 g
Potable water	to 1 ml	to 10 ml	to 100 ml

Therefore the amount required would be 0.9 g (= 900 mg).

Questions

1. How much solid would be required in order to produce 500 ml of a 15 mg/10 ml solution?

a. 75 mg
b. 150 mg
c. 750 mg
d. 1500 mg
e. 7500 mg

2. If 30 mg of an ingredient was dissolved in 1.5 ml of solvent, what would be the strength of the resulting solution expressed as mg/ml?

a. 3 mg/ml
b. 15 mg/ml
c. 20 mg/ml
d. 30 mg/ml
e. 200 mg/ml

3. A patient requires a dose of 1 mg of atropine sulphate. Ampoules containing 600 micrograms/ml are available. If a 2 ml syringe graduated to 0.1 ml is available, which of the following provides the nearest dose?

a. 1.5 ml
b. 1.6 ml
c. 1.7 ml
d. 1.8 ml
e. 1.9 ml