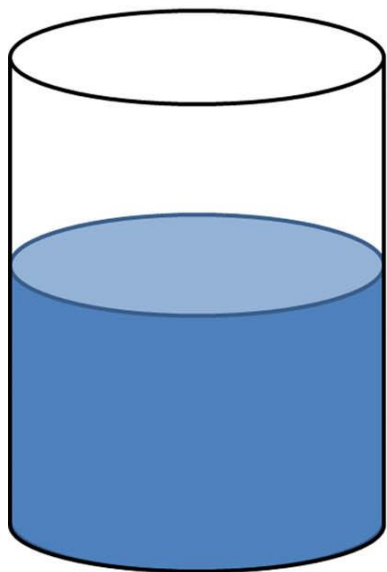# Simple Solution

By

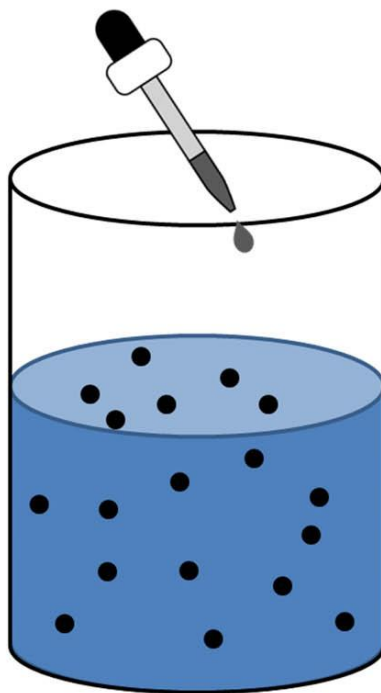**Lecturer Nora Zawar Yousif**
assist.lecturer Zahraa Ammer

Solutions

- are liquid pharmaceutical preparations. Which contain **one** or **more** _soluble_ chemical substance dissolved in **one** or **more** suitable solvent and produce **single-phase system.**
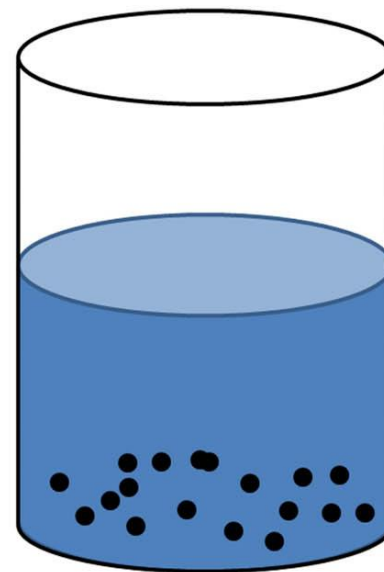
Solution Suspension Precipitation

solvent

solute
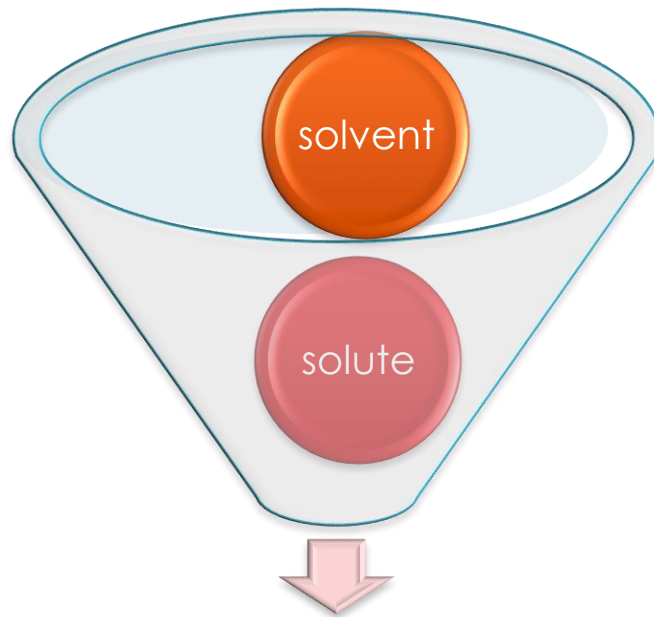
Simple solution

We have two types of solution:

Aqueous solution

- (solvent is water)

Non-aqueous solution

- solvent other than water

How to Mix a Standard Solution

Wash bottle

Volume marker (calibration mark)

Weighed amount of solute
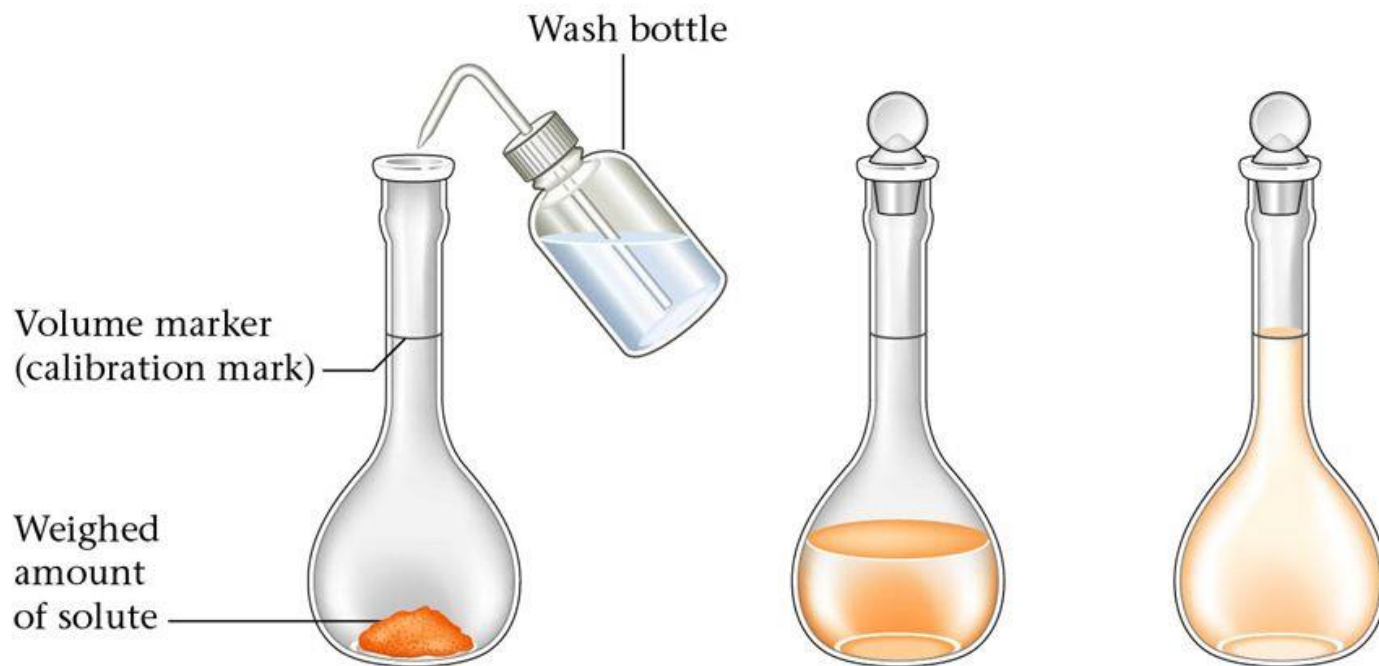
General procedure of preparation of simple solution

1
- **Weigh the solid ingredient and put it in a beaker**.

2
- **Subtract the volume of liquid ingredient (in the formula) from ¾ of the final volume of the prescription.**

3
- **Dissolve the solid ingredients in the remaining amount of the vehicle.**

4
- **Add the liquid ingredient.**

5
- **Convert the content of the beaker into the measuring cylinder and complete the volume up to the required amount by the addition of the vehicle.**

6
- **Transfer the content of the measuring cylinder to a wide mouth bottle and put the suitable label.**

Examples

Rx

    Glucose   5mg

    D.W.   q.s   20ml

Rx

NaCl	0.9 gm
Amaranth solution	2 ml
D.W. q.s	100ml
Mitt.	50 ml

Percent:

- Means by hundred or in a hundred. It may be expressed as a ratio, represented as a common or decimal fraction.
- The ratio usually changes to decimal by dividing the number by 100. Example : 30% = 30/100 =0.3

Percentage

- means rate per hundred so 50% and percentage of 50 are equivalent expressions.
- **There are three types of percentage:**
- **Weight/Weight**: it expresses the number of grams of the active ingredient in 100 gram of solution.
- **Weight/Volume**: it expresses the number of grams of active ingredient in 100 milliliter of solution.
- **Volume/Volume**: it expresses the number of milliliter of active ingredient in 100ml of solution.

<u>Examples</u>

- Rx

  Glucose   10%

  NaCl   3%

  Kcl   2%

  D.W.   q.s.   30ml

Calculation

$$\frac{10gm}{x} = \frac{100ml}{30ml} \Big\} x = 3 \; gm \; of \; glucose$$

$$\frac{3 \; gm}{x} = \frac{100ml}{30ml} \Big\} x = 0.9gm \; of \; NaCl$$

$$\frac{2gm}{x} = \frac{100ml}{30ml} \Big\} x = 0.6 \; gm \; of \; kcl$$

30 x ¾ =22.5 ml of D.W.

Procedure

- Weigh 3gm of glucose and 0.9gm of NaCl and 0.6 of KCl by using balance then put it in a beaker.
- Dissolve the active ingredient in 22.5ml of D.W.
- Convert the content of the beaker into a measuring cylinder and complete the volume to 30ml by D.W.
- Transfer the content of the measuring cylinder into wide mouth bottle and put a suitable label.

How many grams of glucose required to prepare 200ml of 10% solution?

$$\frac{100ml}{200ml} = \frac{10gm}{x} \Big\} \ x = 20 \ gm \ of \ Glucose$$

In certain preparation 40ml of glycerin was used to prepare 250ml solution. What is the % v/v of glycerin in this solution?

$$\frac{250ml}{100\%} = \frac{40ml}{x} \Big\} \ x = 16\%$$

How many grams of glycerin should be used to prepare 250g of 5% w/w solution

- $\dfrac{5gm}{x} = \dfrac{100gm}{250gm} \} \, x = 12.5gm$

Any question ?????????