

Pharmaceutical Calculations

Weights & Measures: •

There are two systems of weights and measures: –

The Imperial System

The Imperial System: It is an old system of weights and measures. ♣ Measurements of weights in imperial system Weight is a measure of the gravitational force acting ♣ on a body and is directly proportional to its mass. The imperial systems are of two types: ♣

(a) Avoirdupoissystem

(b) Apothecariessystem –

The Metric System

(a) Avoirdupoissystem In this system pound (lb) is taken as the standard of ♣ weight (mass).

(b) 1 pound avoirdupois (lb) = 16 oz avoirdupois oz is pronounced as ounce

(c) 1 pound avoirdupois (lb) = 7000 grains (gr)

The Metric System: • ‘Kilogram’ is taken as the standard weight (mass).

1 kilogram (kg) = 1000 grams (g)

Kilo = 1000 Greek word

1 hectogram (hg) = 100 grams (g)

) Hecto = 100 Greek word 1 dekagram (dg) = 10 grams (g)

Deka = 10 Greek word 1 gram (g) 1 gram (g) 1 decigram (dgc) 1/10 gram (g)

Deci = 1/10 Latin word 1 centigram (cg) 1/100 gram (g)

Centi = 1/100 Latin word 1 milligram (mg) 1/1000 gram (g)

) Milli = 1/1000 Latin word g) 10⁻⁶ gram (g)

Micro = 10⁻⁶.μ1 microgram

(1 nanogram (ng) 10⁻⁹ gram (g) Nano = 10⁻⁹

Measurement of volume •

‘Litre’ is taken as the standard of volume.

1 liter (L, lit) 1000ml l) 1/1000 ml μ l 1 microliter Conversion Table:

Domestic measures Metric System Imperial system

1 drop 0.06m

l 1 minim 1 teaspoonful 5 ml

1 fluid drachms 1 desert spoonful

8 ml 2 fluid drachms

1 tablespoonful 15 ml

4 fluid drchms 1 wine-glassful 60 ml

2 fluid ounces 1 teacupful 120 ml

4 fluid ounces 1 tumblerful

240 ml 8 fluid ounce

Weight Measure Conversion Table:

1 kilogram = 2.2 pounds (lb)

1 ounce apoth. = 30 g

1 pound avoir. = 450 g

1 grain = 65 mg

Percentage Solutions: •

The concentration of a substance can be expressed in the following three types of percentages:

- Weight in volume (w/v): Required to express concentration of a solid in liquid.
- Weight in weight (w/w): Required to express concentration of a solid in solid mixture.
- Weight in volume (w/v)♣ In this case the general formula for 1%(w/v) is:

♣ Solute 1part by weight Solvent upto 100 parts by volume

The formula is actually:

Solute 1 g Solvent upto 100 mlVolume in volume (v/v): Required to express concentration of a liquid in another liquid.

Calculation

