Dispensing Percentage Prescriptions.

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Read at a meeting of the Edinburgh Chemists' Assistants' Association:

Precentage prescriptions may be roughly divided into two classes (1) those in which n parts are added to 100 parts, and (2) those in which n parts are contained in 100 parts. The following are examples of the first class:

I.

℞ Emp. plumbi ..
Paraffin. mell...aa 3i. { = 960 grs.
Acid. salicylic . 2 % { = 19.2 " }

II.

℞ Magnes. carb. pond..3i. { = 480 grs.
Cretæ præparat ...3i. { = 480 "
Thymol.... .....1 % { = 9.6 "
Acid. carbolic....1 % { = 9.6 " }
Fiat pulv.

In dispensing this the thymol should be mixed with the carbonate of magnesia, and the carbolic acid with the chalk, and then all mixed together thoroughly.

III.

℞ Camphor .....
Chloral..... aa 3i. { = 120 grs.
Veratriæ ..... 1 % { = 1.2 " }

In the foregoing examples the apothecaries' ounce and drachm are indicated, and the percentages are accordingly calculated upon their values, but in the following the basis of calculation is different, the imperial ounce being used.

IV.

Cret. præcip 1 oz. { = 437.5 grs.
Camphor..... 10 % { = 43.75 " }

So far, no difficulty has occurred, but when a prescription like the next one is presented, a doubt arises as to how the percentage is to be calculated.

V.

℞ Mucilag. amyli. 3 iv. { = 1,920 minims, or
adde 1,750 gr. meas.
Tinct. opii..... 2 % { = 38.4 minims.
Plumbi acet. 1 % { = 17.5 grs. }

Where there is no special knowledge of the prescriber's intention, and in the absence of any generally understood rule, the better plan appears to be to follow Pharmacopœial precedent — weigh solids, measure liquids, and calculate parts by weight in like parts by measure.

The first example of the second class is a logically true percentage preparation and presents no difficulty.

VI.

℞ Acid salicylic.....2 per cent.
Resorcin.....5 per cent.
Adipis.....ad. 3 i.

Here the proportions are 2, 5, and 93, equivalent to 9.6, 24, and 446.4 grains respectively in the ounce of 480 grains.

In the next set of examples, which contains solids and liquids combined, the same difficulty presents itself as in the last example of the first class, and for several reasons it is expedient to follow the procedure indicated.

VII.

℞ Sol. hydrarg. bichlor. ... .3 vi.
1 in 500.
(437.5 × 6) ÷ 500 = 5.25; the number of grains of hydrarg. bichlor. required.

VIII.

℞ Menthol .....2 per cent.
Ol. eucalypti.....3 i.
Spt. vini. rect.....ad. 3 iss.
As 1½ fluid ounces equal 656.25 grains measure, the quantity of menthol is 13.125 grains.

IX.

℞ Glycerin acid. borie.....3 ii.
12 per cent.

$$875 \times \frac{12}{100} = 105 \text{ grs. borie acid}$$

X.

Make 3 i. application tannic acid and glycerine
10 per cent.

$$437.5 \times \frac{10}{100} = 43.75 \text{ grs. tannic acid.}$$

XI.

℞ Ammon. chlor .....q. s.
Aq .....3 ii.
Sig. A teaspoonful added to half a pint of water = 1 in 800.

Here we have first to ascertain the quantity of ammon. chlor. in a teaspoonful of the solution, and from that the amount required for the two ounces $(437.5 \times 10) \div 800 = 5.46875$, the number of grains of ammon. chlor. in the teaspoonful, which multiplied by 16 gives 89.5 grs. as the total amount required.

In making carbolic acid preparations the difficulty arises in using crystallized acid as to whether it should be weighed or melted and measured. The better way seems to be to weigh it and make up to the required measure with the required solvent. The resulting product will be practically identical in strength with one made from the official liquefied acid by measure.

XII.

Make 2 ounces of a 10 per cent. sol. carbolic acid in equal parts of water and glycerine.

This can be made by using 87.5 grains of crystallised or 96 minims of liquefied acid, and making up to 2 fluid ounces with a mixture of equal volumes of water and glycerine. In like manner the following may be dispensed:

XIII.

℞ Let. carbolic, 1 in 40. mitte 3 vi.
$(437.5 \times 6) \div 40 = 65.625$ grains crystallised acid. $(480 \times 6) \div 40 = 72$ minims liquefied acid.

But crystallized acid alone should be used for the next one.

XIV.

℞ Ol. carbolic .....3 iii. 10 p. c.

For this 131.25 grains of acid are required, together with sufficient oil, to make up the measure of 3 fluid ounces.

Another way of ordering the class of preparations now being considered is to prescribe a definite weight of solid in a definite volume of liquid:

XV.

Make 3 i. sol. atrop. 1/50 gr. in every 10 minims.

XVI.

℞ Sol. atrop. sulph.
etmorph. acet. 3 iv.. { 1/50, 1/10 gr. in
5 minims.

This is the preferable way, and one where there can be no dubiety as to what is meant. As much cannot be said for the following, where, owing to the quantities ordered and the purposes for which they may be required, the doubt may arise whether the percentage should be calculated on grain measures or minims.

XVII.

Hab. sol. atropin. sulph..... 3 ii.
½ per cent.

XVIII.

℞ Sol. morph. acet .....3 v.
4 per cent.

XIX.

Make 3 i. sol. cocain. hydrochlor.
7½ per cent.

The safer way would seem to be to make these according to the general rule already referred to, and calculate on grain measures, unless the prescription bears internal evidence that the prescriber intends a definite amount of active ingredient to be administered, as by hypodermic injection, then the percentage should be calculated on minims.

In the following it is difficult to make out what the prescriber's intention is.

XX.

℞ Acid borie .....gr. 40.
Glycerin .....3 vi.
Acid. salicyl .....½ per cent.

The simplest way seems to be to measure the glycerin, and on the combined weight of it and the boric acid calculate the required amount of salicylic acid.

In view of the importance of this subject to dispensers and students, as well as to the public, it would be well if some general rule for dispensing percentage prescriptions could be agreed upon, so as to ensure uniformity; but better still it would be if practitioners in prescribing were to take care to leave nothing indefinite.

In the discussion of this paper there was a general consensus of opinion that the difficulty in correctly dispensing such prescriptions arose chiefly in the case of solutions. There was a general agreement that in all probability the prescriber intended the solution to contain a given number of grains by weight in 100 minims. This was indicated by the fact that occasionally prescriptions directed say 1 50th of a grain of atropine sulphate in 10 minims of water, and also by the fact that hypodermic syringes are graduated in minims.—*British and Colonial Druggist.*

Salumine.

Under this name, the firm of Riedel & Co., introduce the salicylate of aluminium which is recommended for inflammation of the mucous membrane of the nose and throat. It is insoluble in water and alcohol, but is soluble in alkalis. It forms a neutral double salt with ammonia which is soluble in water and glycerin, and is pretty stable in concentrated solution, whilst the dried salt soon becomes insoluble. To the double salt with ammonia dissolved in water or glycerin, the name *soluble salumine* is given.—*Mfg. Chemist.*