# A GENERAL NOTE ON ESSENTIAL OILS

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ESSENTIAL oils have been prepared from ancient times but only more recently have they been isolated in their natural freshness. The three main methods by which this is done are distillation, expression, and extraction.

*Steam distillation* is the method most widely used and practically all types of essential oils manufactured in Ceylon are obtained by this method, which consists of the following four stages :—

Preparation of the oil containing material
Distillation
Cooling and condensation of vapours
Purification of the crude oil.

The proper preparation of the raw material is one of the most important requirements for the distillation. The raw material must be comminuted before distillation. Herbs, leaves and fresh roots are cut, barks and dry roots and fruits are ground, woods rasped and seeds crushed. Insufficient or unsuitable comminution raises the cost and decreases the yield of oil. In the case of most grasses a period of wilting *away from direct sunlight* results in the oil being liberated more easily on distillation.

Distillation is effected either (*a*) by direct heating by steam which is passed into the material either dry or suspended in water or (*b*) by indirect heating of the material in water by steam under pressure, which is made to pass through a coiled tube within the still. In certain cases the distillation is carried out with saturated steam under pressure or superheated steam. In a few cases the distillation is carried out under reduced pressure. Most oils require rapid distillation.

The vapours are made to pass through a tin-lined copper coil which is water cooled.

The oils should be rectified by redistillation but unfortunately this is never done in Ceylon.

Since steam distillation of oils depends on the physical fact that the boiling point of a mixture of two immiscible liquids (water and oil) is lower than that of the more volatile liquid (water) it would be clear that those substances that exert an appreciable vapour pressure at the boiling point of water naturally tend to be distilled. Consequently steam distilled oils do not always have the exact odour of the plant from which they are distilled, as the higher boiling odorous constituents remain to a greater or less extent undistilled.

*Expression.*—Oils contained in the fruit peels of oranges, limes and other citrus fruits can be obtained by hand or machine pressing. The highest grade oils are obtained by pressing the rinds against an ecuelle or a sponge which absorbs the oil. Machine pressed oils are not quite as good as hand pressed oils as the use of water causes solution losses. Expressed oils usually contain a certain amount of non-volatile matter.

*Extraction.*—The more delicate floral perfumes are extracted both by volatile and non-volatile solvents. Usually a non-volatile solvent, like refined lard, is used repeatedly until a high concentration of aroma is obtained and from the mixture the essential oil is extracted by alcohol to obtain the perfumes known as " ottos ".

Essential oils occur in many different parts of the plant. In some cases they are widespread as in the pine—confers, while in others they may be confined to one particular part of the plant, *e.g.*, the flower in the case of roses. The yield as a rule is small, as low as 02% for jasmine flowers, but is exceptionally high for cloves and nutmegs 8–15%. Essential oils are principally used as flavouring agents in foods and beverages, as disinfectants and in medicine and to much less extent as cosmetics and for perfumery purposes.

Finally it has to be mentioned that many essential oils undergo deterioration on prolonged keeping chiefly due to oxidation. To minimise this, essential oils should be stored in vessels of dark glass, or enamel or tin lined or aluminium containers, which should be kept covered.