

NUTMEG OIL

- Nutmeg oil is colorless or light yellow and smells and tastes of nutmeg. It contains numerous components of interest to the oleochemical industry. The essential oil Using the mortar and pestle, crush the nutmegs to release their aroma.
- Place 1/2 cup of the crushed nutmegs in the Mason jar.
- Pour 1/2 cup of carrier oil over the crushed nutmeg until completely submerged.
- Seal the Mason jar and shake the mixture.



consists of approximately 90% terpene hydrocarbons. Prominent components are sabinene, α -pinene, β -pinene and limonene. A major oxygen-containing component is terpinen-4-ol. The oil also contains small amounts of various phenolic compounds and aromatic ethers, e.g. myristicin, elemicin, safrole and methyl eugenol. The phenolic fraction is considered main contributor to the characteristic nutmeg odor.

Procedure

The principal constituents of the spices nutmeg and mace are steam volatile oil (essential oil), fixed (fatty) oil, proteins, cellulose, pentosans, starch, resin and mineral elements.

1. Fixed oil

There are two general methods by which the fixed oil of nutmeg is extracted. In one method, sound, ground nutmeg is subjected to intense hydraulic pressure and heat (heated plates in the presence of steam) while, in the other the

ground nutmeg is extracted by refluxing with a solvent like diethyl ether. Both processes will result in the crude fixed oil containing significant quantities of essential oil in the average of 10-12%. Prior steam distillation will lead to a significant reduction of essential oil in the prepared fixed oil.

The extracted or expressed fixed oil is a semi-solid aromatic (smell and taste of nutmeg), orange coloured fat, known as concrete, expressed oil or nutmeg butter which melts at 4S-51°C and has a density of 0.990 -0.995. It is completely soluble in hot alcohol, but sparingly so in cold. However, it is freely soluble in ether and chloroform.

The major component of the fixed oil is Trimyristin and Power and Salways (1908) gave the following components and their relative abundance for the analysis of a fixed oil for which there was not prior distillation to remove essential oil from the nutmeg raw material:

If essential oil is previously extracted, then the relative abundance of trimyristin in the fixed oil will increase.

2. Essential oil

The essential oil is usually obtained by steam distillation of dried kernels. It is a colourless or yellow liquid with the characteristic odour and taste of nutmeg. The oil is insoluble in water but soluble in alcohol and has a density at 25°C of 0.859 - 0.924, refractive index at 20°C, 1.470 - 1.488 and optical rotation at 20°C of +10° to +45°. This oil keeps best in the cool in tightly closed containers protected from light.

Extensive analyses have been carried out on the volatile oil of nutmeg and these have provided the major classes of compounds constituting the oil as: monoterpene hydrocarbons, 61% - 88%; oxygenated monoterpenes (simple and others) ie. monoterpene alcohols, monoterpene esters; aromatic ethers;

sesquiterpenes, aromatic monoterpenes, alkenes, organic acids and some miscellaneous.

It must be noted that the composition of distilled volatile oil is not identical to the natural oil in the kernel or oleoresin extract. Thus about 30 - 55% of the kernel consist of oil and 45 - 60% of solid matter. The essential or volatile oil accounts for 5 - 15% of the nutmeg kernel while the fixed oil accounts for 24 - 40% of the nutmeg kernel. Fixed oils are virtually absent from mace and volatile oil accounts for 4 - 17% of the composition of mace. There is always in the distilled volatile oil a higher percentage of monoterpenes, especially a and b-pinene and sabinene since there is incomplete distillation of the oxygenated components which possess higher boiling points.

We recommend a maximum dilution of 0.8% for topical applications. Add Nutmeg to a carrier oil and rub in clockwise circles on the abdomen. Add a couple drops to an ounce of milk or teaspoon of carrier oil, then add that mixture to a ½ cup of Epsom salts in a warm bath to help soothe away aches.



MACE OIL

Mace essential oil is obtained by the steam distillation of dried aril of *Myristica fragrans*. The oil is a pale yellow to reddish yellow liquid, with a sweet, spicy and slightly woody undertone. The oil is mainly used for flavouring preparations, especially in soft drink formulations. The main components are pinenes, Sabinene, Terpeneol and Myristicin. Nutmeg fruit, deeply warm spicy notes shrouded in mystery which adds a layer to natural perfumery



and provides topical relief of aches and pains. Preparation is like that of nutmeg oil.



PRICE DETAILS OF NUTMEG OIL AND MACE OIL

The average annual production of nutmeg is around 2,500 tonnes and is mainly produced in Kerala. Price of shelled nutmeg is now in a range of Rs 180 -200 which was Rs 120-135 year ago. Nutmeg without shell now attracts a price of Rs 360-380 a kg. By analyzing this we can understand the huge difference between raw nutmeg and mace with the value added products such as nutmeg oil and mace oil.