Mentha

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Mentha

- Mentha species : cultivated over the world.
- Grows wild in Europe, cultivated in Japan, England, France, Italy, USA, Bulgaria,USSR.
- In India, cultivated near Jammu and in Tarai region of Uttar Pradesh.
- temperature in between 15 to 25°C, altitude of 250 to 400 m
- Done by vegetative propagation method by using suckers
- Distance maintained b/w 2 rows is approx 50 to 60 cm.

Preparation of Mentha Oil

- Plants dried to 1/4th of their weight.
- Direct drying under sun- loss of volatile oil
- No Fermentation – during drying, affects quality & quantity
- Air-dried material charged into galvanised iron or mild-steel still. Still designed- has false perforated bottom.
- Steam under pressure, generated with the help of boiler, passed through the drug.
- Takes about 3 to 4 hrs for distillation.
- More than 80% of oil is distilled off during the first ½ of distillation.

Preparation of Mentha Oil

- Distilln. should be completed carefully, as menthol of medicinal and commercial importance comes in latter part of distillation.
- Condenser- either Al or SS & be coiled, to ↑se area of condensation.
- Distillate i.e. mentha oil- collected in separating can
- Mentha oil- insoluble in water & lighter than water, so keeps it floating in a separating can.
- Oil is decanted & filtered
- Average oil content of the herb is found to be 0.5 to 1% (v/w) approx.
- About 100 kg of the oil per hectare of the crop/year - satisfactory -commercial purposes.

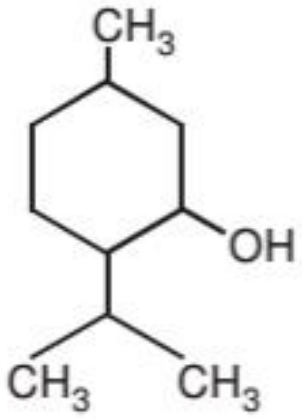
Morphology & Chemical Constituents (CC)

- Color - Colorless to yellow. Odor - Characteristic & pleasant Taste - Pungent followed by cooling sensation.
- Solubility: Soluble in 70 % alcohol, ether and chloroform & insoluble in water.
- Chemical Constituents : Peppermint oil contains- chiefly l - menthol 70% in free & in form of esters, depends on variety (like American, Japanese, Indian).
- American peppermint oil: contains 80% menthol, Japanese oil 70 - 90 %
- Other important constituents are menthone, menthofuran, jasmone, menthyl isovalerate, menthyl acetate & other terpene derivatives.

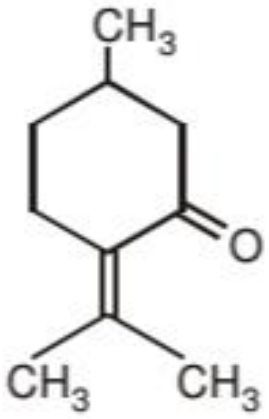
CC

- Other terpenes include l-limonene, isopulegone, cineole, pinene, camphene, etc.
- Jasmone and esters -responsible for pleasant flavor,
- Menthofuran causes resinification & acquires dirty smell
- Mentha oil obtained- steam distillation -Mentha arvensis var-piperascens (Japanese Mint),
- Commercially cultivated in U.P., Himachal Pradesh, Punjab, Haryana, Jammu and Kashmir and Central India.
- Contains about 80% l- menthol.
- Also cultivated in Japan, Brazil and California.
- Yield of oil is upto 1.2% v/w, as compared to 0.8 per cent v/w M. piperita.

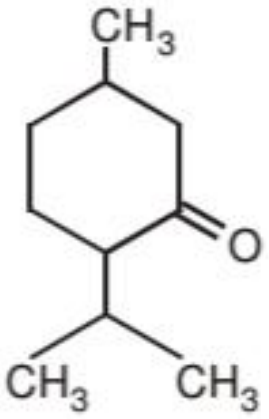
CC



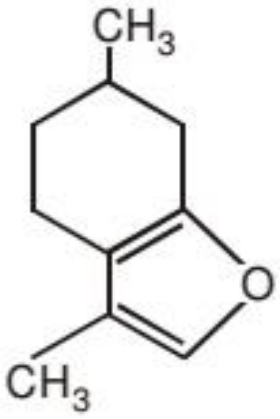
Menthol



Pulegone



Menthone



Menthofuran

Chemical Test: Few drops of peppermint oil +5 ml nitric acid solution (1 ml nitric acid to 300 ml of glacial acetic acid), heat on water bath. Within 5 min. liquid develops – blue color, on further heating deepens & shows copper colored fluorescence & then gets golden yellow.

USES

- Used as carminative, stimulant, & flavouring agent.
- Has mild antiseptic prop. used in toothpaste, tooth powders, shaving creams, & different pharmaceutical dosage forms.
- Also consumed in the preparation of chewing gums, candies, jellies, perfumes and essences.
- Menthol is mfg in India by S. H. Kelkar and Co., Bhavna Chemicals, Procter and Gamble Ltd. & several others.
- India produces about 500 tonnes of menthol annually.
- Both mentha oil and menthol have calcium channel blocking activity causing spasmolytic and smooth muscle relaxant effects, and hence useful in irritable bowel syndrome.

USES

- Show better pharmacokinetic profile- with enteric coated capsules for release in large intestine.
- Muscle relaxant activity- reduce spasm during endoscopy of colon. Emulsified oil injected through biopsy channel of the endoscope.
- Digestant activity by stimulating bile flow. Supported by flavonoid pigments of leaf.
- Azulene from the leaf - anti-inflammatory and anti-ulcer in activity.
- Nasal decogestant effect, menthol is considered by U.S.F.D.A. as generally regarded as safe (GRAS).
- Used for inhalation in steam, topical products and lozenges for antitussive effects.