

# Volatile Oils (Essential oils)

- These oils are different from fatty oils as they evaporate and volatilize
- They possess a pleasant taste and strong aromatic oils
- They are classified into two main groups
  - 1- Hydrocarbon terpenes
  - 2- The oxygenated and sulphured oils

# Importance of these oils

- These oils have antiseptic and antibacterial values
- These oils play vital role as oxygen donors in oxidation-reduction reactions
- These oils are potential sources of energy
- These oils are affecting transpiration and other physiological processes

# Extraction of volatile oils

- 1- Water distillation: A steam of water vapor can evaporate the oil and both pass to be condensed using a condenser. The oil is aggregated on the surface of cooling . Then the oil is separated by filtration
- 2- Pressing: Any type of pressed can extract the present oil

- 3- Chemical solvents: These are two types of solvents:
  - **Non volatile solvents** (fats and lipids): Those solvents absorb volatile oils and give aromatic lipid solvents at room temperature. As glass flats are covered with the solvent while the tissues containing the volatile oils are spread over and left for some days
  - **Tissue maceration**: the hot solvent is added which can absorb the volatile oils. The resultant is treated with ethanol to form oil extract
  - **Volatile solvents**: using Soxhlet apparatus. The solvents are volatile such as petroleum ether. The extraction results in an essence ( the concentrated volatile oil in volatile solvent). Then, volatile solvent can be evaporated leaving the volatile oil

# Uses of volatile oils

- Perfume and cosmetic manufacture
- Kitchen , drinks,
- Sweet manufacture
- Antibacterial and disinfectants
- Medicine as tooth past
- Pesticides
- Chewing and tobacco

# Perfume oils

- Volatile oils used in the manufacture of perfumes
- **Otto of roses**: consists of the rose water left after distillation
- **Geranium**: extracted from *Pelargonium* sp. leaves yield an essential oils after distillation
- **Cassie or Acacia**: flowers of *Acacia farnesiana* yield this essential oil
- **Neroli**: extracted from orange blossoms, this oil is distilled from the flowers of the bitter orange and *Citrus aurantium*
- **Bergamot**: is extracted from the rind of the bergamot ( *Citrus aurantium* )

- **Orris**: extracted from rhizomes of *Iris pallida* and *Iris Florentina* and allied species. The rhizomes are peeled and dried in the sun and the odor is gradually developed
- **Lavender**: extracted from *Lavandula officinalis*
- **Violet**: extracted from *Viola odorata*
- **Jasmine**: extracted from *Jasminum officinarium var. grandiflorum*
- **Carnation**: extracted from *Dianthus caryophyllus*
- **Rosemary**: extracted from *Rosmarinus officinalis* leaves

- **Camphor**: extracted from *Eucalyptus globulus* , obtained by distillation of the wood of Eucalyptus tree
- **Cedarwood oil**



# Fatty oils and waxes

- They don't evaporate or volatile
- They can't be distilled without being decomposed
- They contain Glycerin in combination with a fatty acid
- They are liquid at room temperature and usually contain oleic acid
- And solid when they contain palmitic or stearic acid

# Classification of fatty oils

- Drying oils
- Semidrying oils
- Non-drying oils
- Fats and tallows

# Drying oils

- Linseed oil: Flax seed , extracted from *Linum usitatissimum*. The oil is extracted by pressure with heat or by the use of solvents. Linseed oil varied from yellow to brownish and has an acrid taste
- Soybean oil: the oil is extracted from Soyabean by expression with hydraulic or expeller presses or by solvents

# Semi-drying oil

- **Cotton seed oil:** cotton seeds are cleaned and freed from impurities then heated and exposed to hydraulic pressure or expeller presses
- **Corn oil:** extracted from the embryo of maize kernels
- **Sesame oil:** extracted from *Sesamum indicum*
- **Sunflower oil:** extracted from *Helianthus annuus*
- **Rape and Colza oils:** extracted from *Brassica rapa* and *B. napus*

# Non-drying oils

- **Olive oil:** extracted from *Olea europaea*
- **Peanut oil:** extracted from *Arachis hypogaea*
- **Castor oil:** extracted from seeds of *Ricinus communis*

# Vegetables fats

- **Coconut oil:** extracted from seeds of *Cocos nucifera*
- **Palm oil:** extracted from the seeds of *Elaeis guineensis*
- **Cocoa butter:** extracted from the beans of the cocoa or *Theobroma cacao*
- **Nutmeg Butter:** extracted from seeds of *Myristica fragrans*

# Waxes

- Occur in the epidermis of fruits and leaves
- They serve to prevent water loss through transpiration
  
- Examples
- **Carnauba wax:** extracted from the wax palm *Copernicia cerifera*
- **Candelilla wax:** extracted from *Euphorbia antisyphilitica*
- **Jojoba wax:** from *Simmondsia chinensis*