

Monoterpenes contd

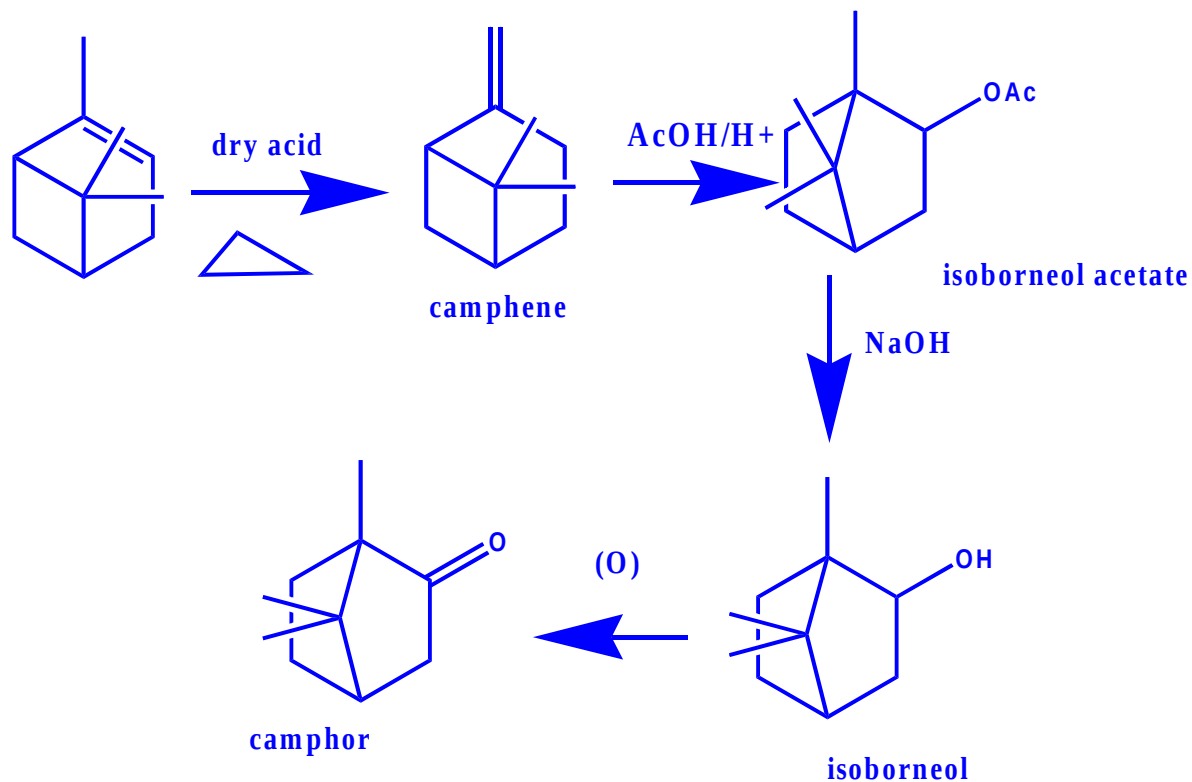
- Monoterpenes are found in essential oils as complex mixtures of upto 50-60 different compounds.
- These combinations are responsible for the scents and the therapeutic application of various oils.
- The composition of essential oils may vary according to season, growing conditions, even time of day.
- Essential oils are characterized using GC/MS technique because of the complexity of the mixtures.

Anise oil, clove oil, Ocotea

- Anise seed produces fragrant oil with aromatic compounds, anisaldehyde being the major component.
- Eugenol is the main constituent of clove oil and is used as a pain reliever. Methyl eugenol is a pheromone which acts as an attractant of male mango flies.
- Safrole is found in *Ocotea cymbarum* and other plants in small amounts where it acts as a natural pesticide. Its oxidation yields piperonal.
- It is a precursor in the synthesis of piperonyl butoxide which is an insecticide synergist.

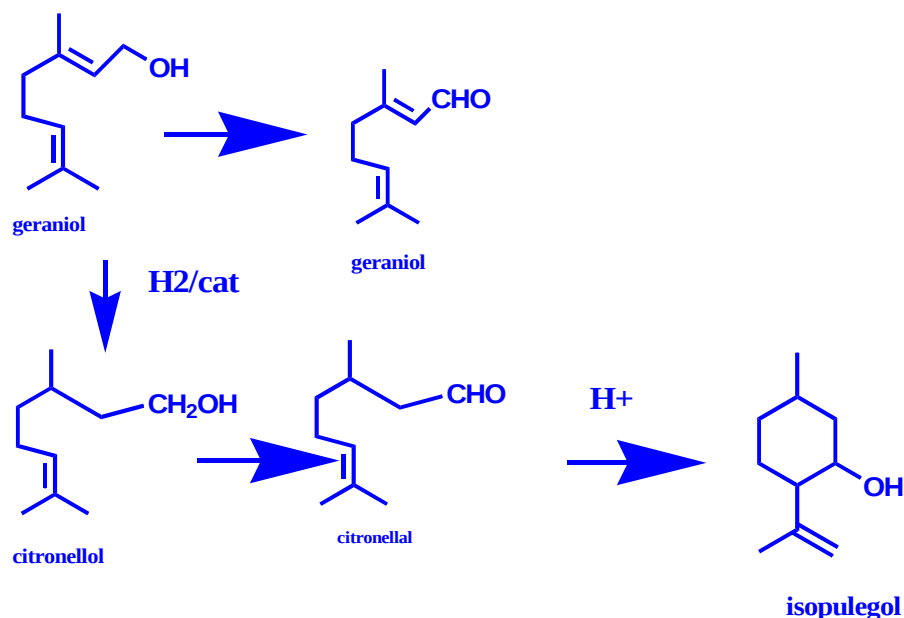
Reactions contd.

- Primary components of turpentine are easily converted to camphene, myrcene, citral and geranial



Geraniol simple reactions

- Geraniol or nerol are hydrogenated to citronellal a common fragrance in household cleaning formulations



Pharmacological uses of monoterpenes

- They can cross the blood brain barrier- due to their lipophilicity and small size.
- Limonene and other hydrocarbons in citrus oils have anti-cancer activity
- Turpentine oil with α - and β -pinene is used as a rubefacient or linament in rheumatic diseases.
- Terpene alcohols are potent anti-microbiols in essential oils. They are not as irritating as phenols.
- Linalool containing essential oils are good sedatives and have spasmolytic and hypothermic effects , thus effective with CNS problem treatments or management.

Terpene effects contd.

- Geranial and citronellal impart unique aroma to citrus orange, Eucalyptus citriodora and lemon grass.
- Geranial has sedative, anti-viral and anti-microbial properties. They may exhibit skin irritation thus limiting their use in some people.
- Monoterpene phenols are some of the most potent anti-microbiols and other effects. Thymol for example is an expectorant, anti-microbiol, anthelmintic and antispasmodic.
- Clove oil is an effective topical remedy for tooth-ache and a powerful stimulant due to eugenol.

Phytol

- Phytol is a diterpene alcohol which is needed for the synthesis of vitamin E and vitamin K1.
- In the phytanic acid form, it is used by some insects as deterrents against predation.

Diosgenin

Cholesterol is the starting material for most steroids, which are converted to progesterone in the manner



Human reproductive hormones

contd.

- The quantity and type of steroidal hormones secreted by the endocrine glands (pituitary, thyroid, adrenal, pancreatic, and gonads) in humans depend on stage of maturity, and accompanied by concomitant development of secondary sexual characteristics.
- The principal hormone responsible for secondary sexual characteristics development in the male is testosterone while in females they are progesterone, estrone and estradiol

Sexuality hormones

- There are two types of female sex hormones, estrogens and progesterone.
- The estrogens are estrone and estradiol. They stimulate ovulation while progesterone maintains the fetus in the uterus by ensuring adequate blood is supplied to the uterus and that adequate nutrients and oxygen are delivered to the fetus throughout pregnancy.