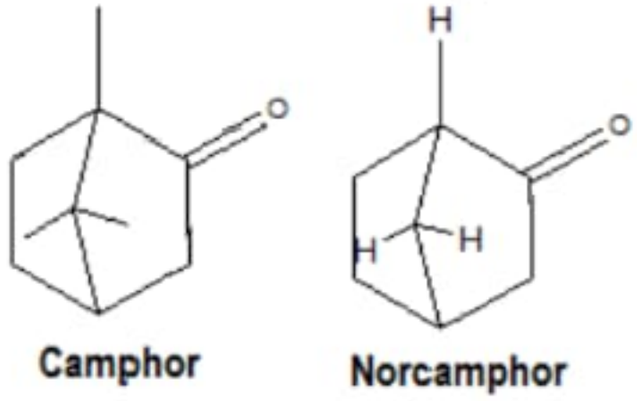
CAMPHOR

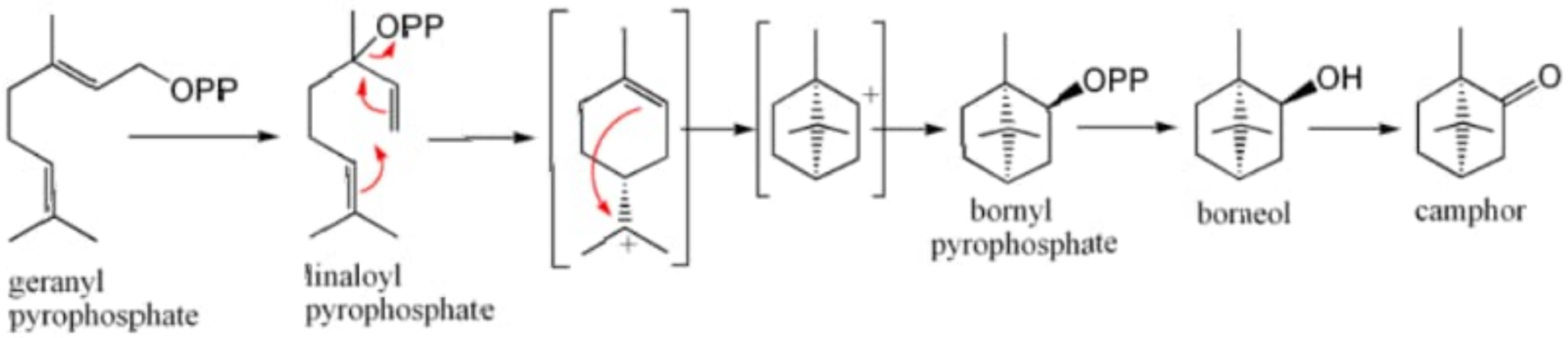
- ✓ **Camphor** occurs in camphor tree of ***Camphor laurel*** (*Cinnamomum camphora*)
- ✓ It is a terpenoid with the chemical formula $C_{10}H_{16}O$ and it is optically active; the (+) and (-) forms occur in nature. It is waxy, white or transparent solid with a strong, aromatic odor and having m.p. 180^0 C. It is obtained by steam distillation of wood, leaves or bark of camphor tree and it sublimes at room temperature
- ✓ **Norcamphor** is a **camphor** derivative with the **three methyl** groups replaced by **hydrogen**.



Camphor **Norcamphor**

BIOSYNTHESIS

In biosynthesis, camphor is produced from **geranyl pyrophosphate**, via cyclisation of **linaloyl pyrophosphate** to **bornyl pyrophosphate**, followed by hydrolysis to **borneol** and oxidation to **camphor**.



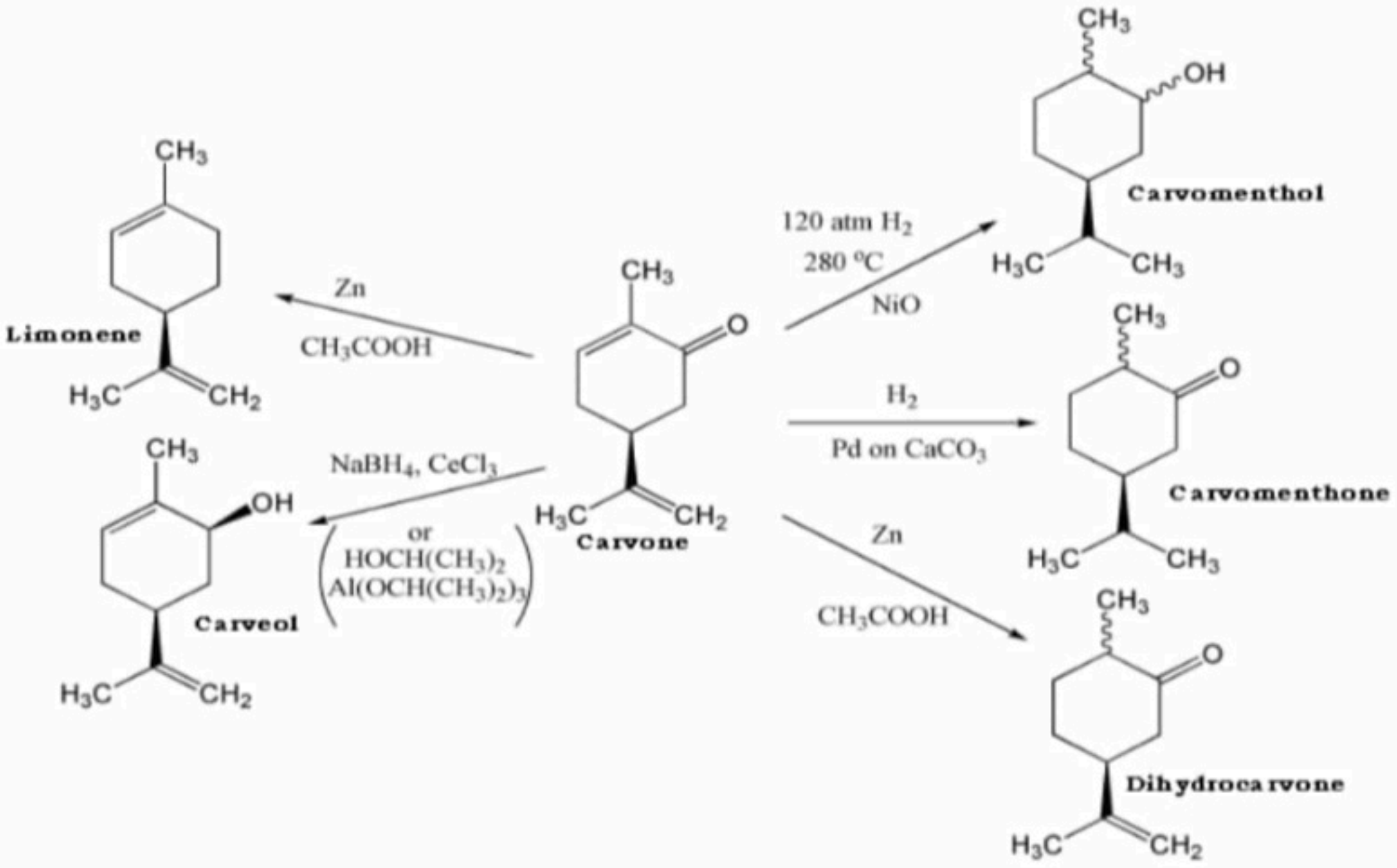
USES

- Camphor as a plasticizer for nitrocellulose, as an antimicrobial substance, also as a cough suppressant and in fireworks.
- Solid camphor releases fumes that form a rust-preventative coating and is therefore stored in tool chests to protect tools against rust.
- Some folk remedies state camphor will deter snakes and other reptiles due to its strong odor. Similarly, camphor is believed to be toxic to insects and is thus sometimes used as a repellent and is widely used in Hindu religious ceremonies.
- Currently, camphor is used as a flavoring, mostly for sweets
- Camphor is readily absorbed through the skin and produces a feeling of cooling similar to that of menthol, and acts as slight local anesthetic and antimicrobial substance.
- **Camphor Toxicity:** camphor is poisonous when ingested and can cause seizures, confusion, irritability, and neuromuscular hyperactivity. In extreme cases, even topical application of camphor may lead to hepatotoxicity. Lethal doses in adults are in the range 50–500 mg/kg (orally). Generally, two grams cause serious toxicity and four grams are potentially lethal.

- **CHEMICAL PROPERTIES:**

a. *Reduction:* There are three double bonds in carvone capable of reduction; the product of reduction depends on the reagents and conditions used.

- ✓ Catalytic hydrogenation of carvone can give either **carvomenthol** or **carvomenthone**.
- ✓ Zinc and acetic acid reduce carvone to give **dihydrocarvone**.
- ✓ MPV reduction using propan-2-ol and aluminium isopropoxide effects reduction of the carbonyl group only to provide **carveol**; a combination of sodium borohydride and $CeCl_3$ (*Luche reduction*) is also effective.
- ✓ Hydrazine and potassium hydroxide give **limonene** via a *Wolff-Kishner* reduction.



b. *Oxidation:*

- ✓ On of carvone in presence of an alkali such as $Ba(OH)_2$, carvone is oxidised by air or oxygen to give the **diketone** derivative.
- ✓ With hydrogen peroxide the **epoxide** derivative is formed.
- ✓ Carvone may be cleaved using ozone followed by steam, giving **dilactone** derivative.