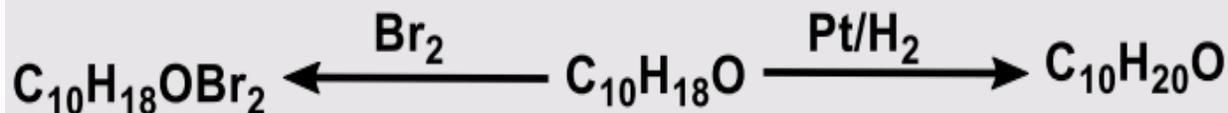


α -Terpineol

Structure Elucidation

(By- Dr. Manju kumari)

1. Mol formula was determined as C₁₀H₁₈O
2. Presence of one double bond (C=C): It adds one molecule of H₂ or one molecule of bromine to form addition product, which indicate the presence of one carbon-carbon double bond.

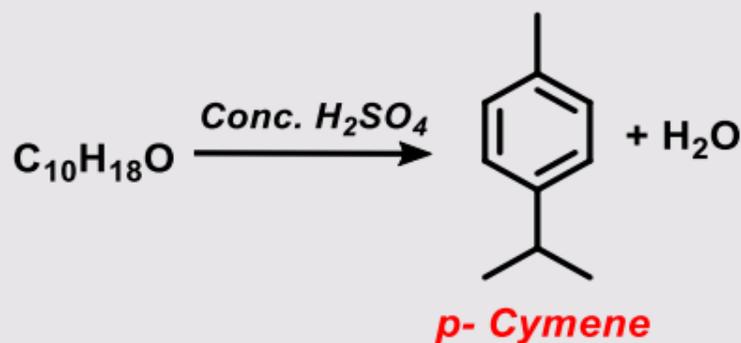


3. It does not give aldehyde or ketone on mild oxidation and can be dehydrated to limonene. Hence the alcoholic group should be tertiary.

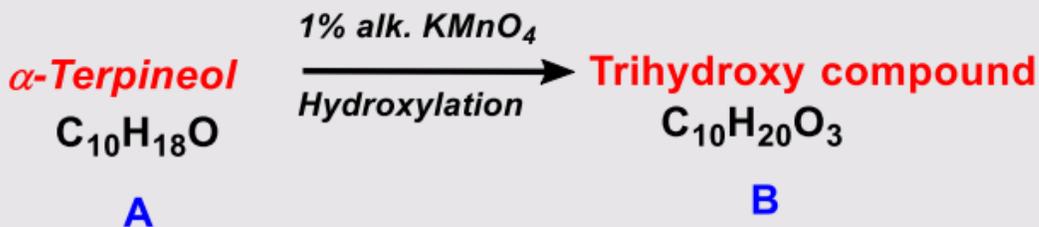
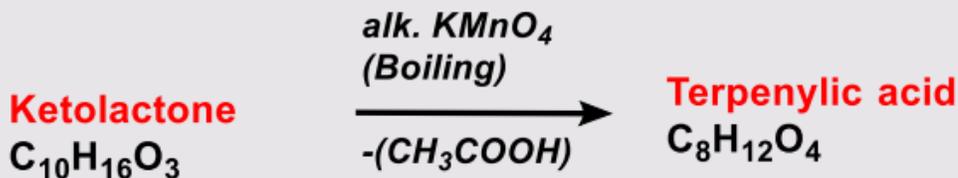
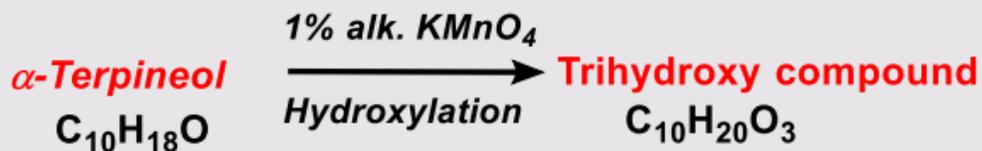


4. The fully saturated hydrocarbon corresponds to α -terpineol is $C_{10}H_{20}$. Therefore it should be monocyclic monoterpenoid tertiary alcohol.

5. When treated with conc. H_2SO_4 it gives p-cymene.



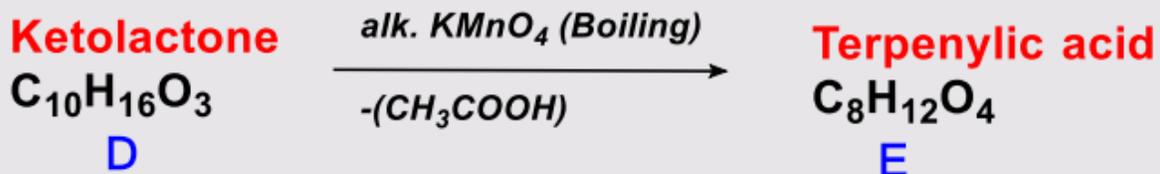
6. Position of tertiary alcohol was found out by oxidation reactions



A double bond is dihydroxylated by alk. KMNO4

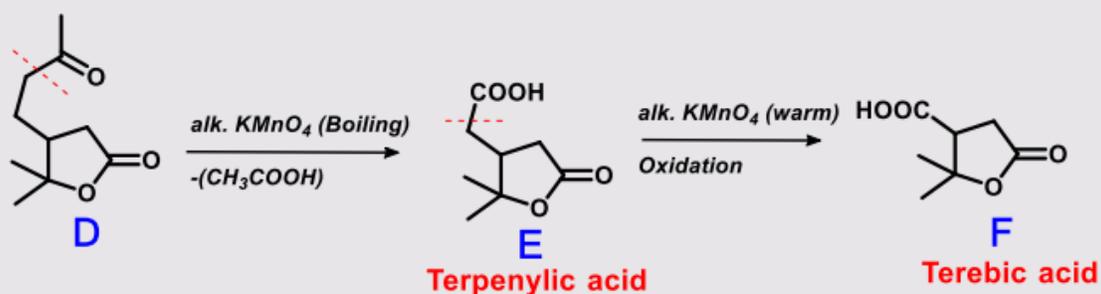


After oxidation, the product is neutral and contains a ketonic group. This compound when refluxed with NaOH solution, consumes alkali equivalent to one $-\text{COOH}$ group. This indicates that D is a lactone of carboxylic acid C.



Oxidation of D gives E and acetic acid. This indicates that D must be a methyl ketone having $\text{CH}_3\text{CO}-$ group.

Structure of D to be a **homoterpenyl methyl ketone** was confirmed by its synthesis. Oxidation of D to E and then to F is given below.



References

1. **K.D Sharma and Y. R. Sharma, Kalyani Publishers, Unit III**
2. **University Chemistry, Vol-IV, Dr. U. N. Dash, Dr. K. K. Ojha, Himalaya Publishing house, Unit V**
3. **Text Book of Organic Chemistry-III, M. K. Jain, S. C. Sharma, Amita, Vishal Publishing Co, Chapter- 6, Page-165.**