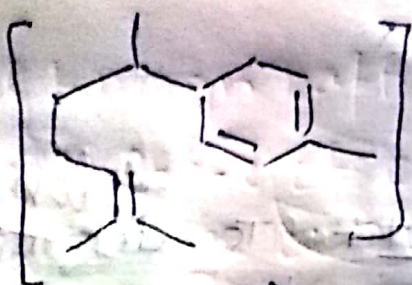
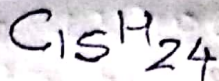


## Zinzibarene

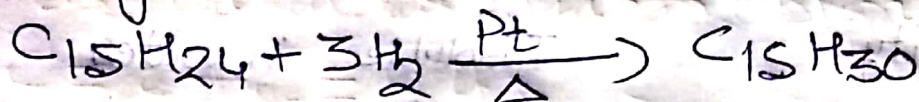


## Ziziberene

It is example of monocyclic sesquiterpene which abundantly occurs in ginger oil as its natural source. It is optically active liq. of b.p.  $134^{\circ}C$ .

Constitution: (i) The elemental analysis & mol. wt. determination confirm its mol. formula is  $C_{15}H_{24}$ .

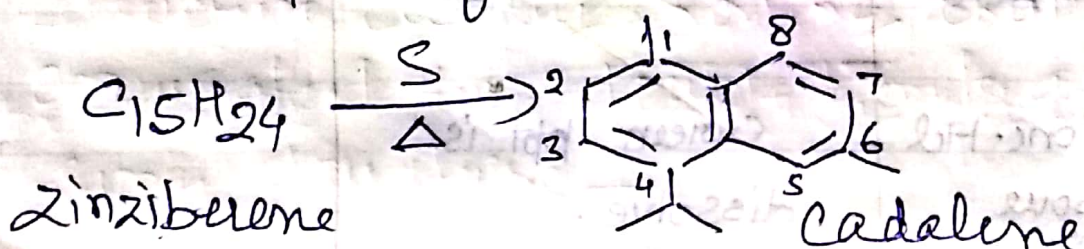
(ii) Zingiberone on hydrogenation by  $H_2/Pt$ , reacts with 3 moles of  $H_2$  form fully saturated hexahydrozinzibarene.

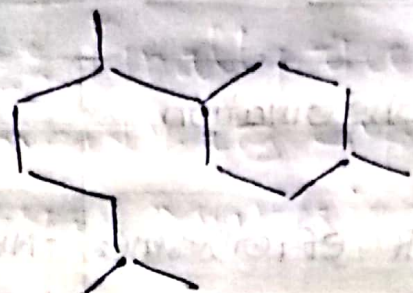


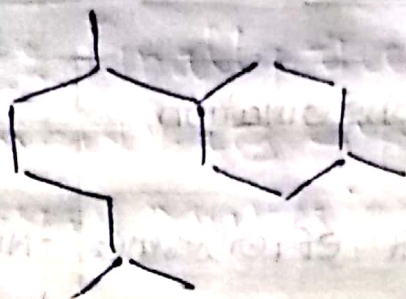
It show that it contain 3  $>C=C<$  linkages.

(iii) The fully saturated ( $3H_2$ ) zinziberene of formula  $C_{15}H_{30}$  correspond to  $C_nH_{2n}$  for a monocyclic

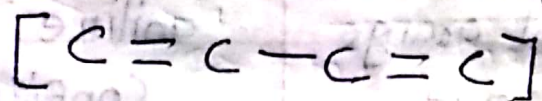
(iv) Zinzibarene on dehydrogenation by heating with sulphur form cadalene.



the cadalene is well known naphthalene derivative (1,6-dimethyl-4-isopropyl naphthalene). So it can be assumed that zinziberone must have following skeleton like  of cadalene,

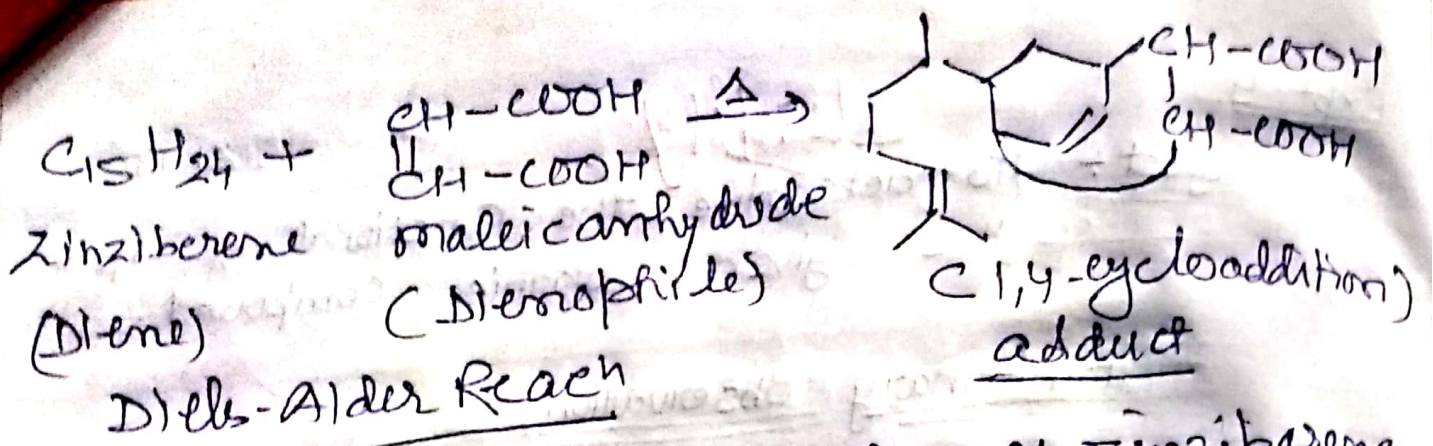


(V) Zinziberone forms adduct with maleic anhydride (Diels-Alder Reac<sup>n</sup>), indicate that out of 3 double bonds the 2 double bonds are in conjugation (Diene).

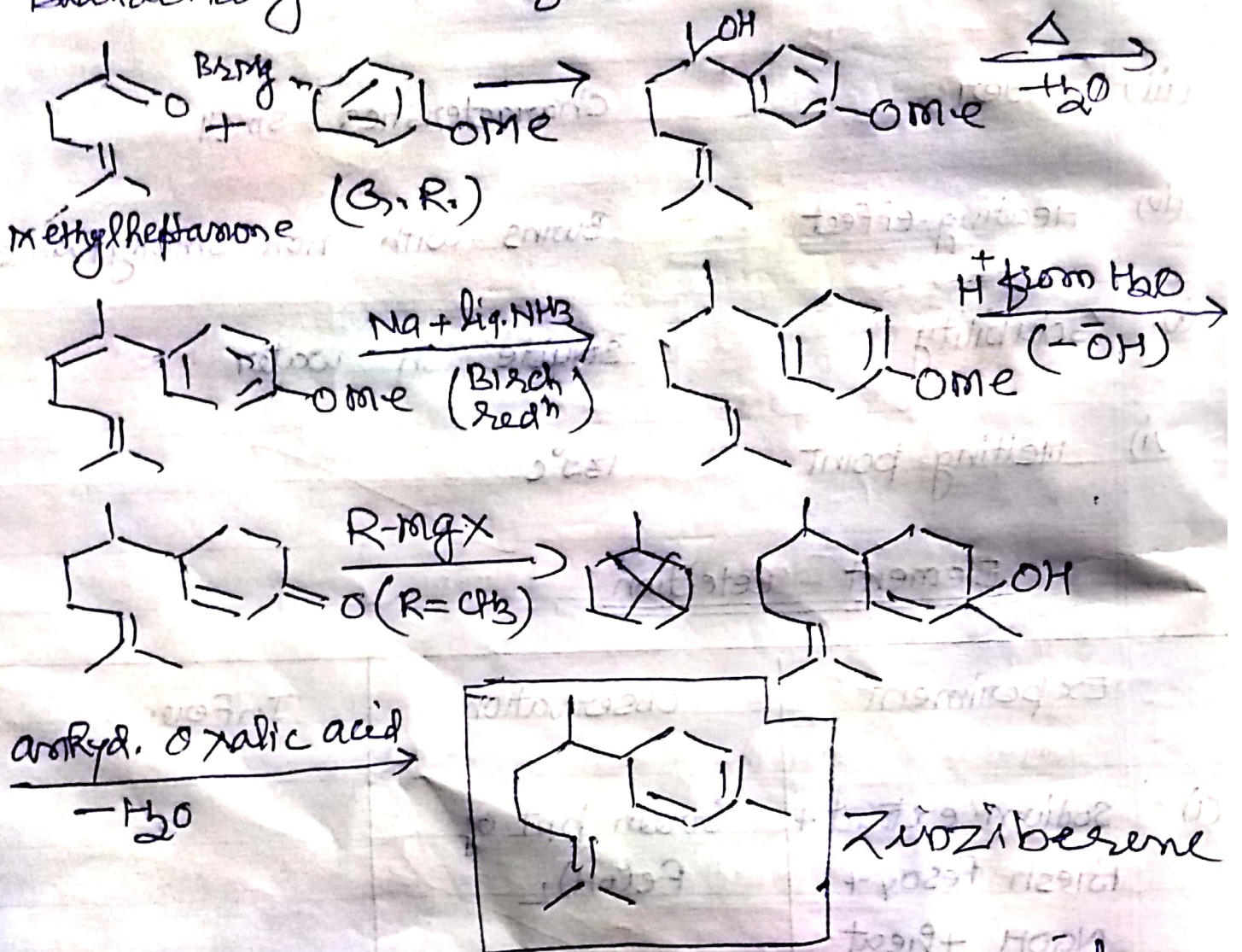


(VI) Zinziberone on ozonolysis gives one of the product acetone that indicate presence of  $\begin{matrix} CH_3 \\ | \\ CH_2 > C = \end{matrix}$  (isopropylidene grp.)

(VII) The formation & structure of Diels-Alder product with maleic anhydride is confirmed by Eschenmoser (1953). The structure clearly showing that the conjugated two double bonds are in ring structure —



Synthesis: Finally the structure of zingiberene is confirmed by its synthesis given by Braatacharya & Mukerjee from methyl heptanone,



The product is confirmed by b.p. & its spectral studies.