

31/3/2020

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(+)- Disparlure : Gypsy moth pheromone

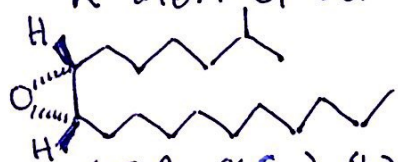
Gypsy moth, Porthetria dispar (L.) was responsible for defoliation of millions of acres of forest in America and North America. The hairs of Gypsy moth caterpillar causes skin rash.

Bierl and Beroza (Science 1970, 170, 87) isolated Gypsy moth pheromone (sex attractant) from 78,000 tips, i.e. last two abdominal segments of female moth collected from Spain.

Structure elucidation and synthesis of Gypsy moth pheromone was done by many other groups. The synthesized compound was found to be active, both in the laboratory and in the field test at conc. 2×10^{-12} and 2×10^{-9} g, respectively.

K. Mori et al. have described enantioselective synthesis of the both enantiomers of Disparlure, the pheromone of Gypsy moth isolated by Bierl and Beroza.

K Mori et al. Tetrahedron 1979, 35, 833-837.



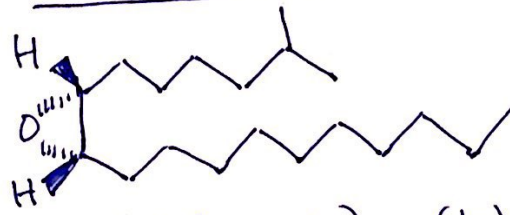
(7R, 8S)-(+)-Disparlure



(7S, 8R)-(-)-Disparlure

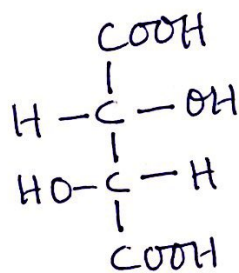
(2)

The structure of Natural Gypsy moth Pheromone

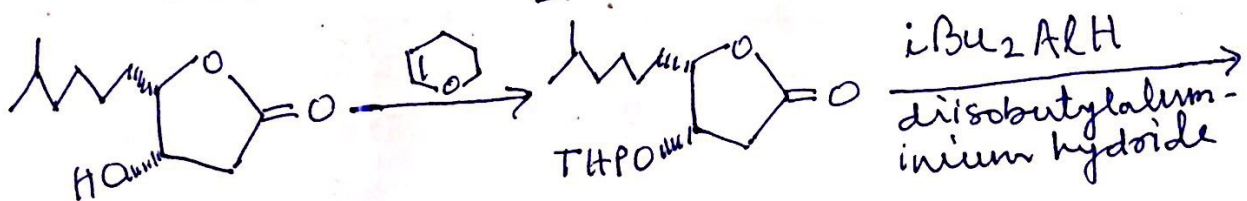
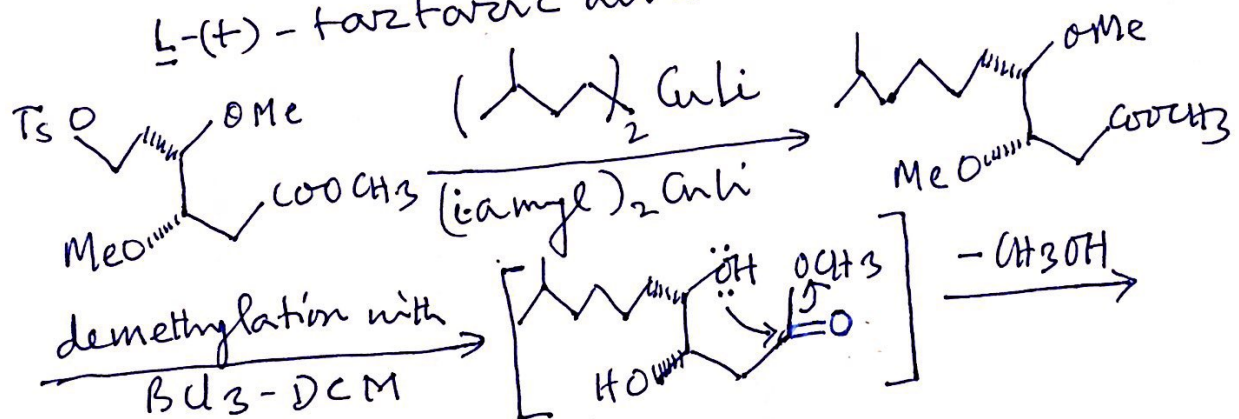
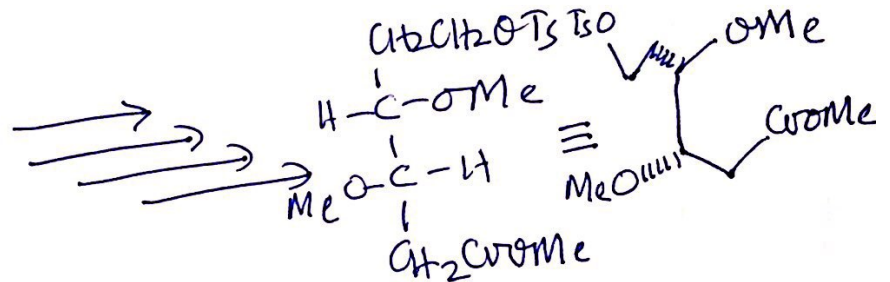


$(7R, 8S) - (+) - \text{Disparlure}$

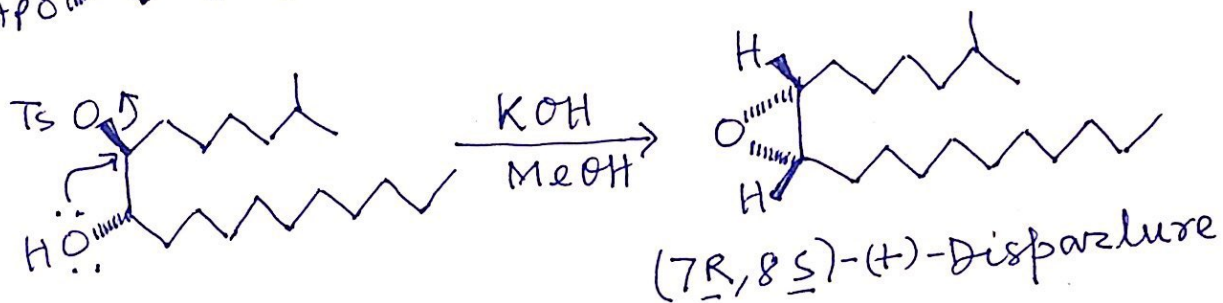
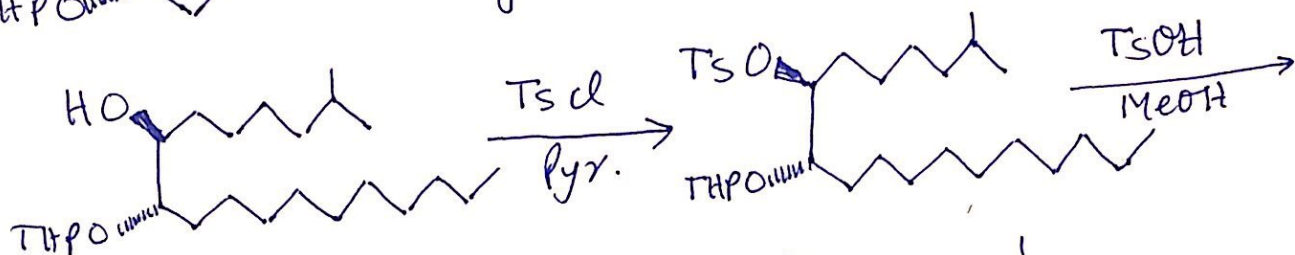
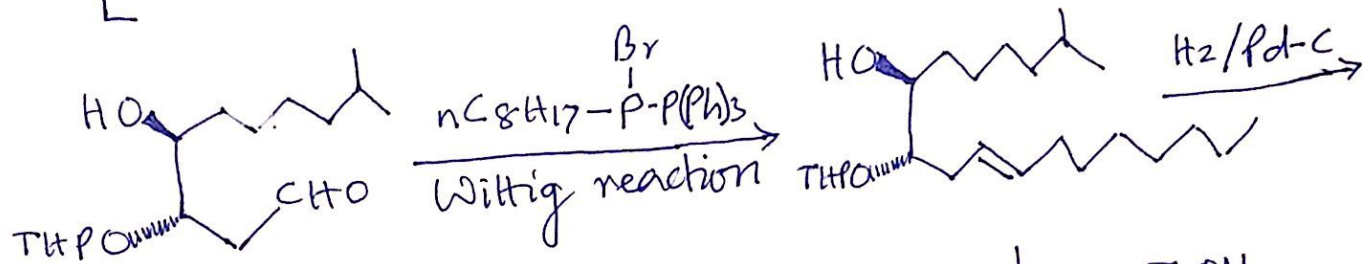
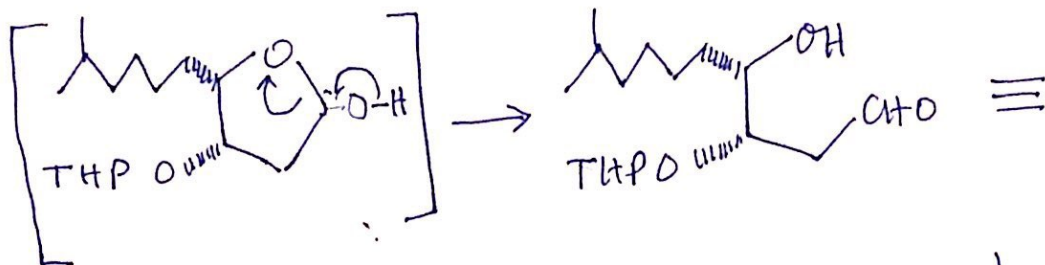
K Mori et al. used $(2R, 3R) - \text{threo}$ configured $L-(+)-\text{tartaric acid}$ for the synthesis of $(+) -$ and $(-) - \text{disparlure}$. They converted $L-(+)-\text{tartaric acid}$ to a suitable precursor:



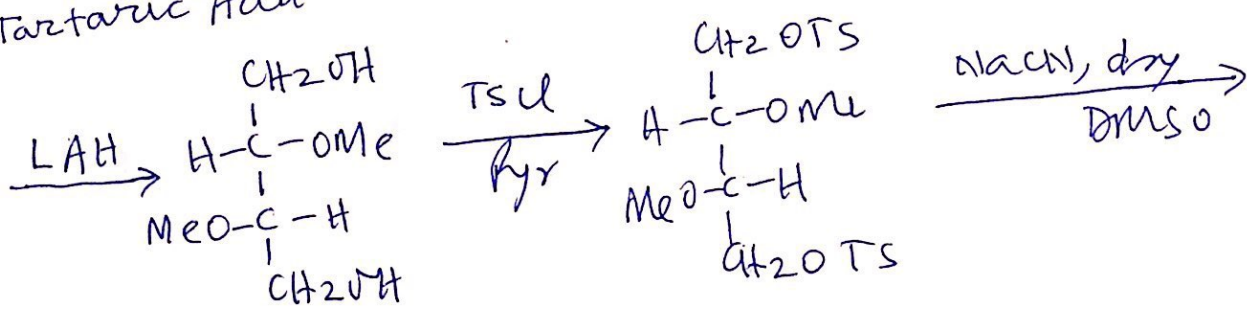
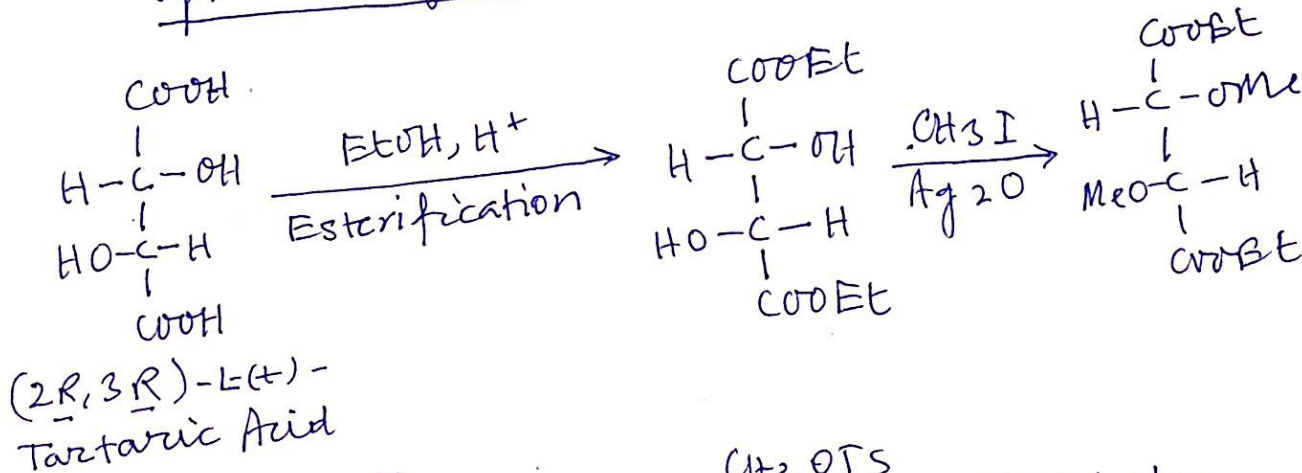
threo - tartaric Acid/
 $L-(+)-\text{tartaric acid}$

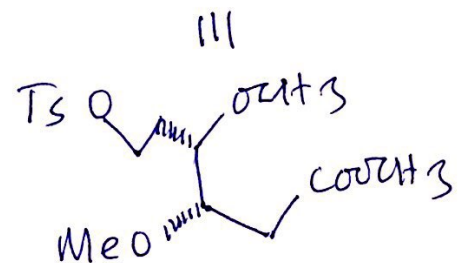
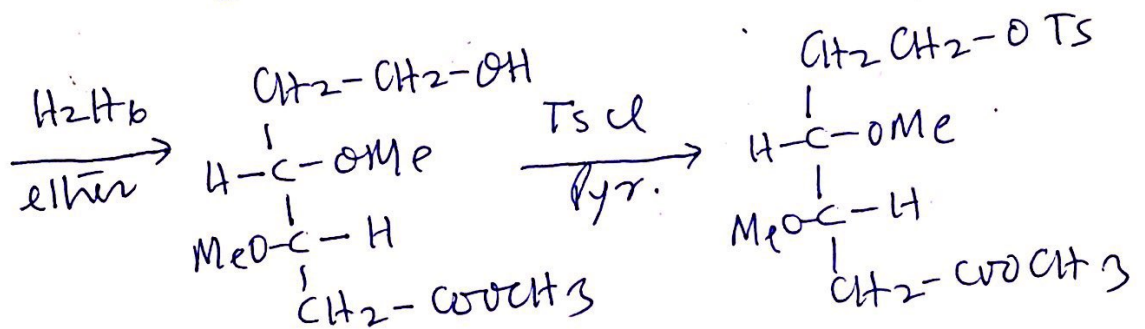
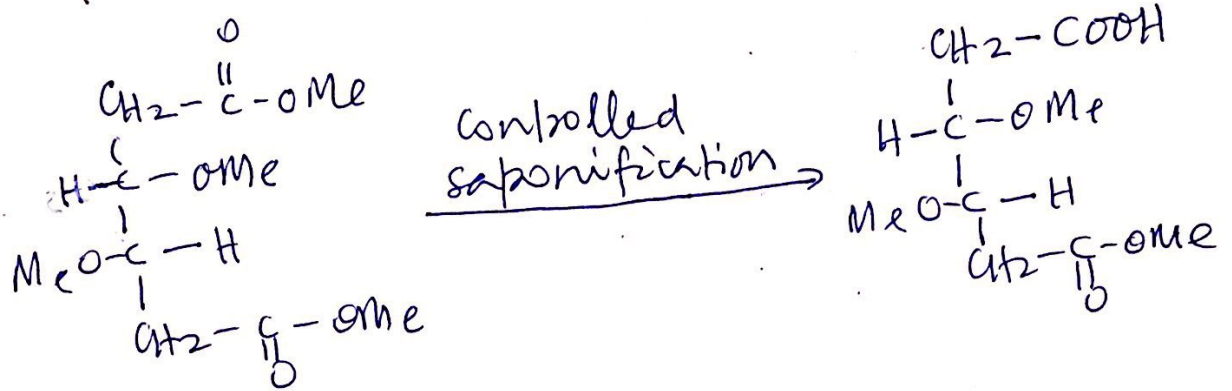
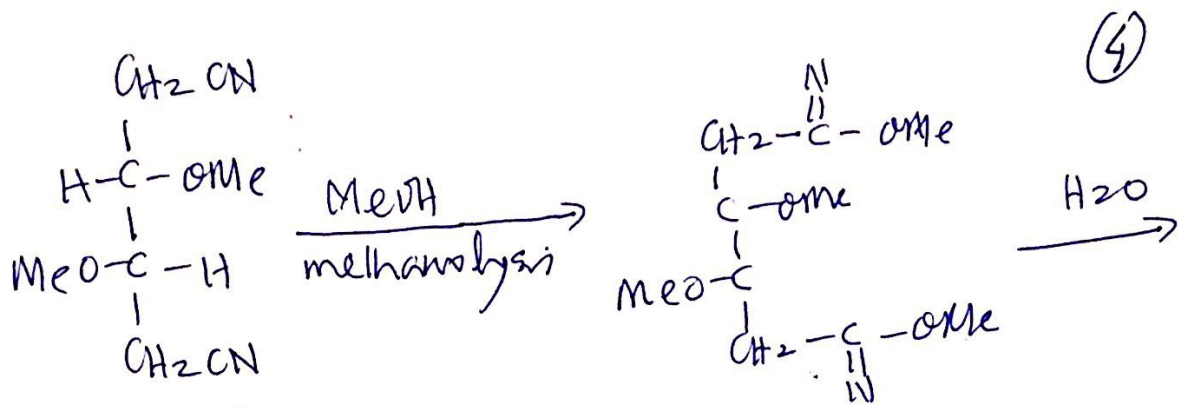


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Synthesis of precursor from L-(+)-Tartaric acid





Precursor