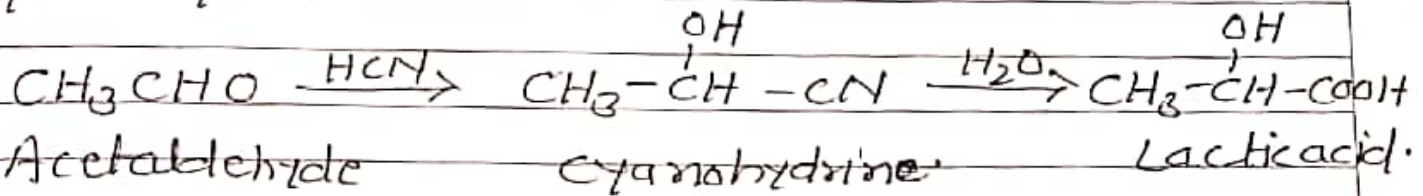


Lactic acid :→

Lactic acid is the main constituent of milk hence its name L. lactis = milk.

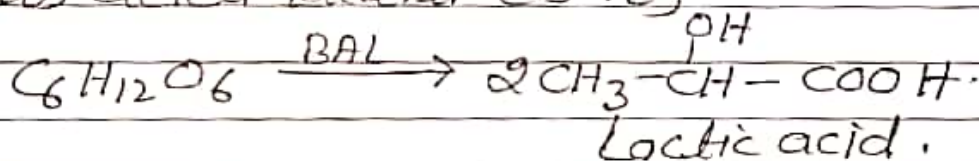
Preparation :→

(i) By the hydrolysis of acetaldehyde and cyanohydrin.



(ii) From Molasses :→

Lactic acid is manufactured by fermentation of molasses by the microorganism *Bacillus acidilactici* (BAL)

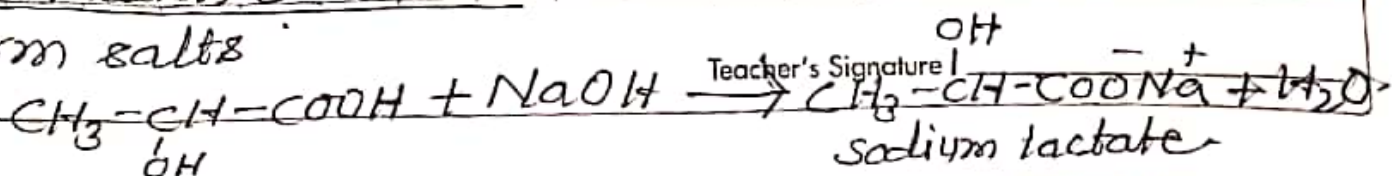
Physical Properties :→

Lactic acid is a colourless, crystalline solid, mp 53°C, and has sour taste. The acid obtained from molasses is D-isomer. The synthetic product is racemic lactic acid, mp 18°C. Lactic acid soluble in water, alcohol and ether.

Chemical Properties :→

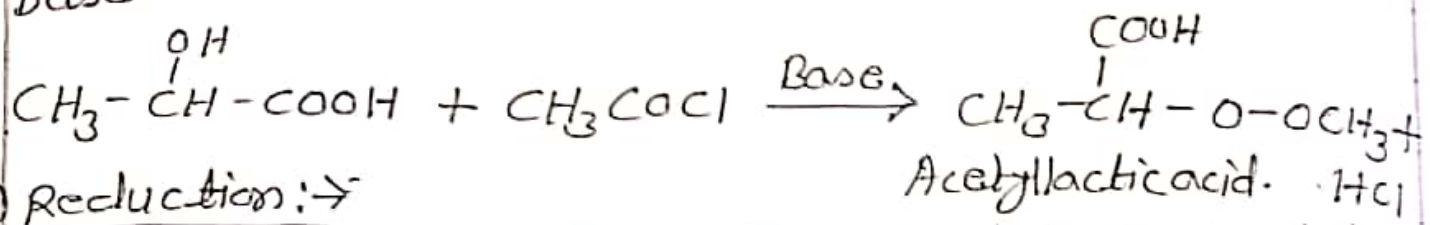
Lactic acid molecule contains a secondary alcohol group and a carboxyl group, and gives reactions of both.

(i) Formation of salts :→ It reacts with alkali and form salts.



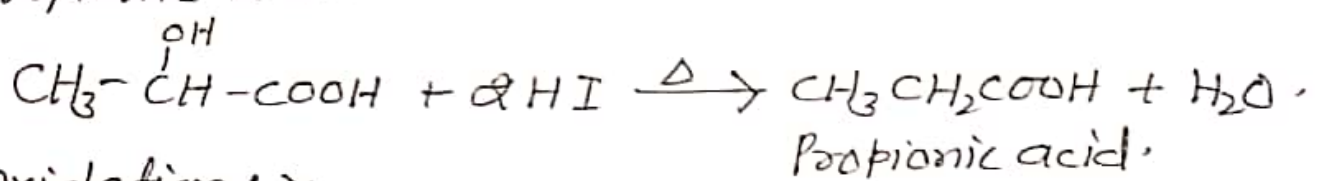
② Action with acetyl chloride (CH₃COCl) :→

The alcoholic OH group is acetylated on reaction with acetyl chloride in the presence of base.



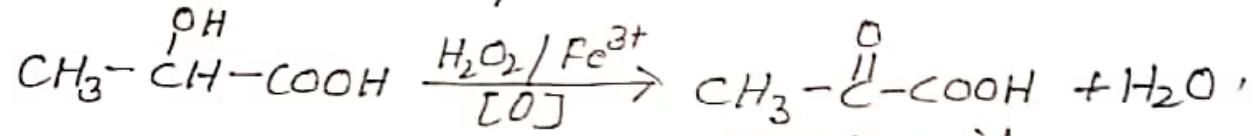
③ Reduction :→

When heated with HI, it is reduced to propionic acid



④ Oxidation :→

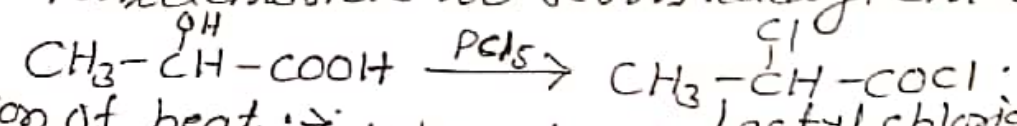
On oxidation with Fenton's reagent (H₂O₂/Fe³⁺) it is converted to pyruvic acid.



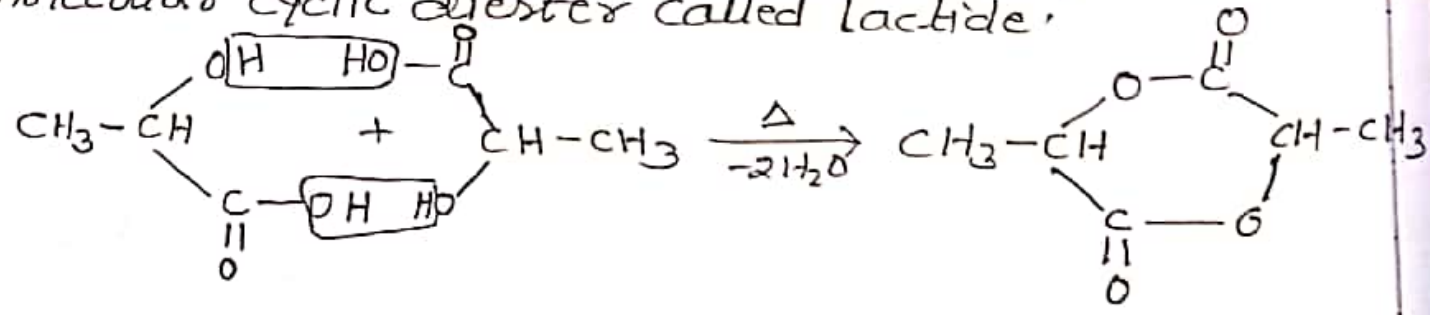
With KMnO₄ it gives acetic acid. Pyruvic acid.

⑤ Action with PCl₅ :→

Both OH and COOH groups attacked by Phosphorous Pentachloride to form lactyl chloride.

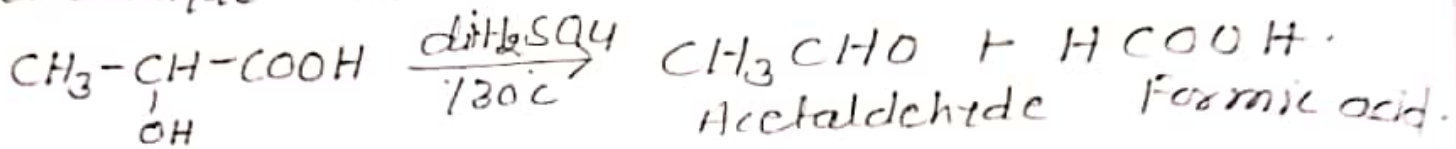


⑥ Action of heat :→ When heated alone, it forms an inter-molecular cyclic diester called lactide.



Lactide

⑦ Action with H_2SO_4 : \rightarrow When heated with dilute sulphuric acid at $130^\circ C$, lactic acid is decomposed to give acetaldehyde and formic acid.



Uses of Lactic acid : \rightarrow

- (i) In cultured dairy product
- (ii) As acidulant in beverages and candies.
- (iii) For delimiting of hides
- (iv) As a mordant.
- (v) Calcium and iron lactates are used in medicine.
- (vi) Ethyl and butyl lactates are used as plasticizers.