

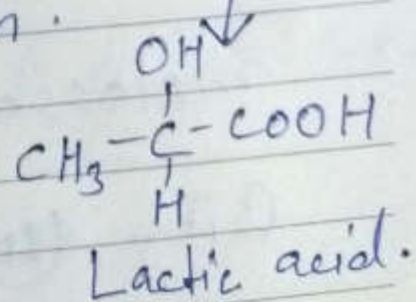
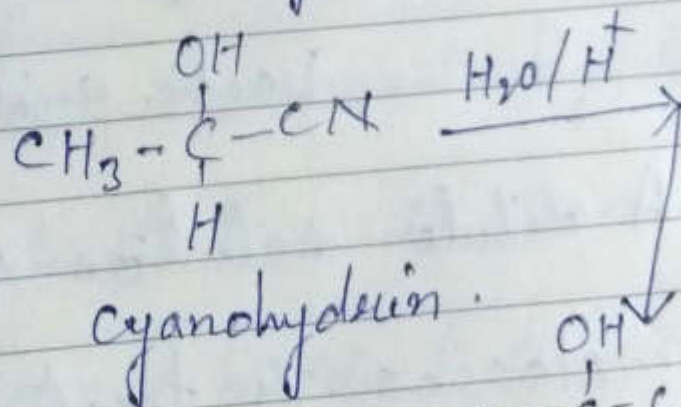
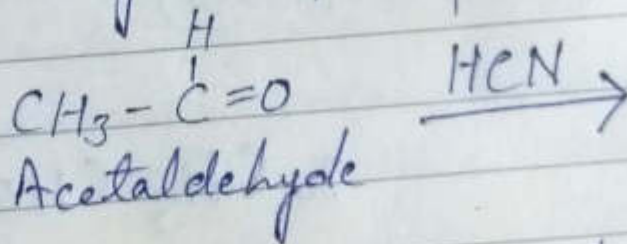
Lactic Acid :

Lactic acid is the main constituent of milk that has gone sour and hence its name :

(L. Lactis = milk)

Preparation :

1. By the hydrolysis of acetaldehyde cyanohydrin.



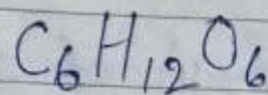
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2. From Molasses.

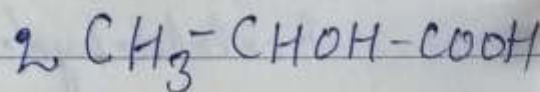
Lactic acid is manufactured by fermentation of

molasses by the microorganism *Bacillus acidilactici* (BAL).



(from molasses)

BAL



Lactic acid.

A dilute solution of molasses is treated with BAL (sour milk).

The fermentation is

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carried at $35 - 40^{\circ}\text{C}$ in the presence of CaCO_3 .

As the lactic acid is produced, it reacts with CaCO_3 to

form calcium lactate. The calcium lactate is filtered off and decomposed with calcined quantity of dilute H_2SO_4 . The insoluble calcium sulphate is removed and the lactic acid set free in the solution is recovered by distillation

distillation in vacuo.

The product is D-Lactic acid.

Properties :

Physical : Lactic acid

is a colourless, crystalline, mp 53°C and has a sour taste.

The acid obtained from molasses is

D-isomer.

Lactic acid is soluble in water, alcohol and ether.

Chemical Properties :

Lactic acid molecule contains a secondary alcohol group (XHOH) and

carboxyl group (COOH),

and give reactions of both.

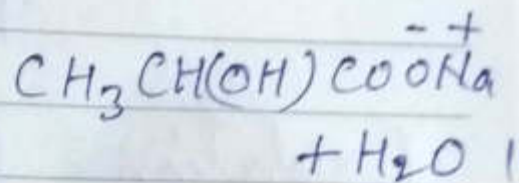
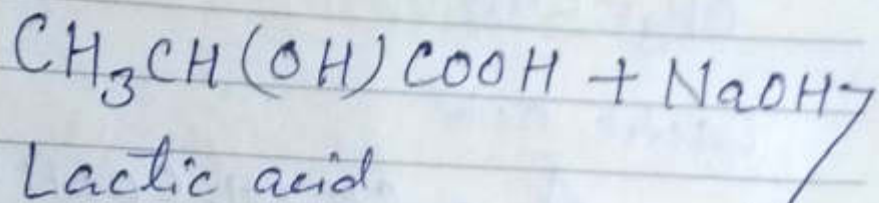
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Reaction involving -COOH Gr.

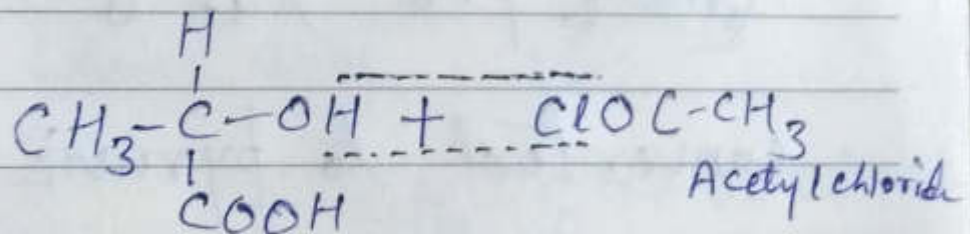
(1) Formation of salts :

It reacts with alkalis to form salts.

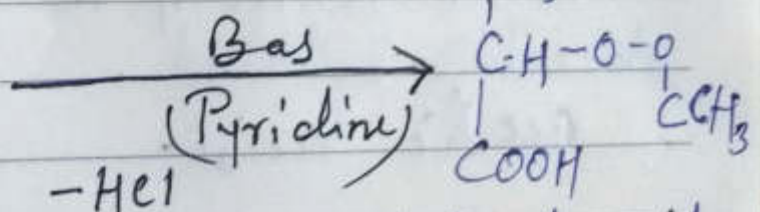


Reactions involving OH Group.

2. Reaction with CH_3COCl

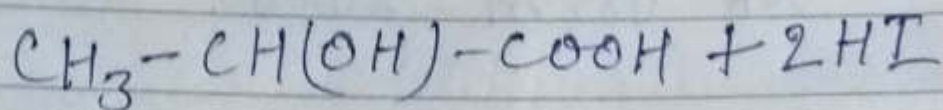


Lactic acid

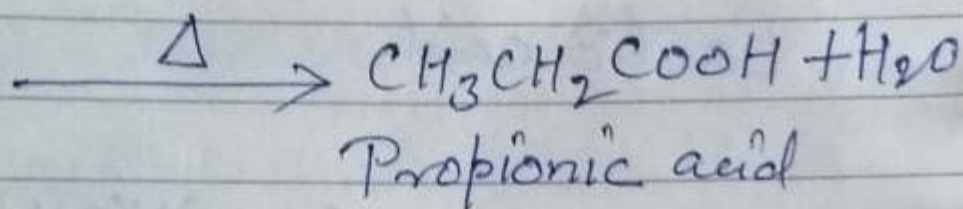


Acetyllactic acid.

Reduction: When heated with HI, it is reduced to propionic acid.

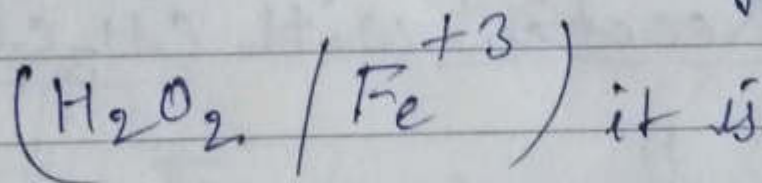


Lactic acid



Oxidation: On oxidation

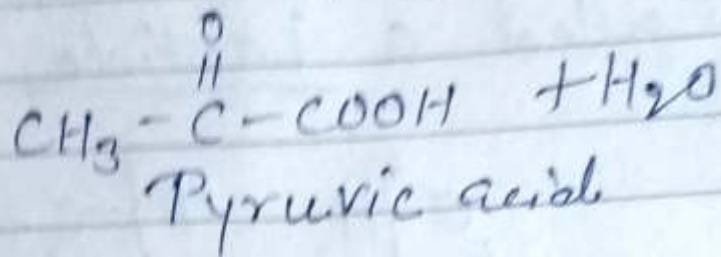
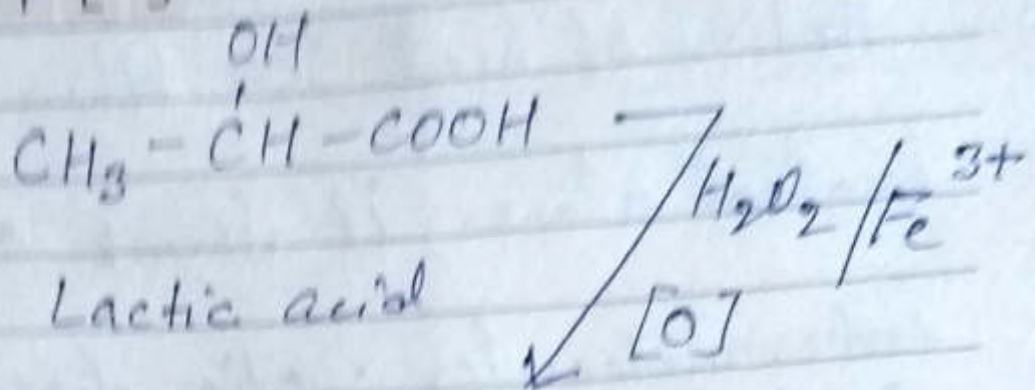
with Fenton's reagent



converted to pyruvic acid.

with KMnO_4 it yields

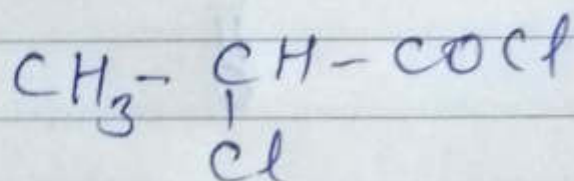
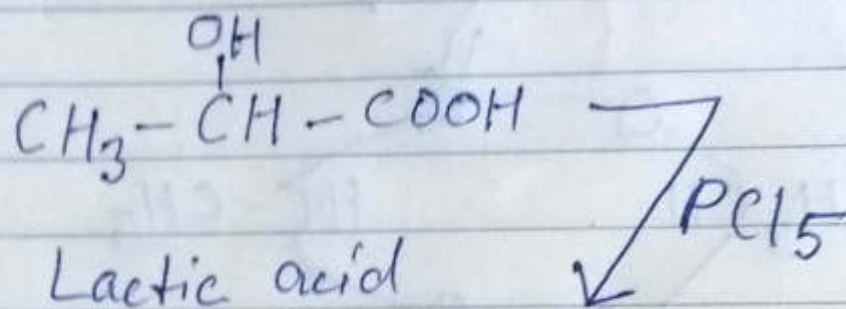
acetic acid.



Reactions involving both

OH and COOH

Reaction with PCl₅



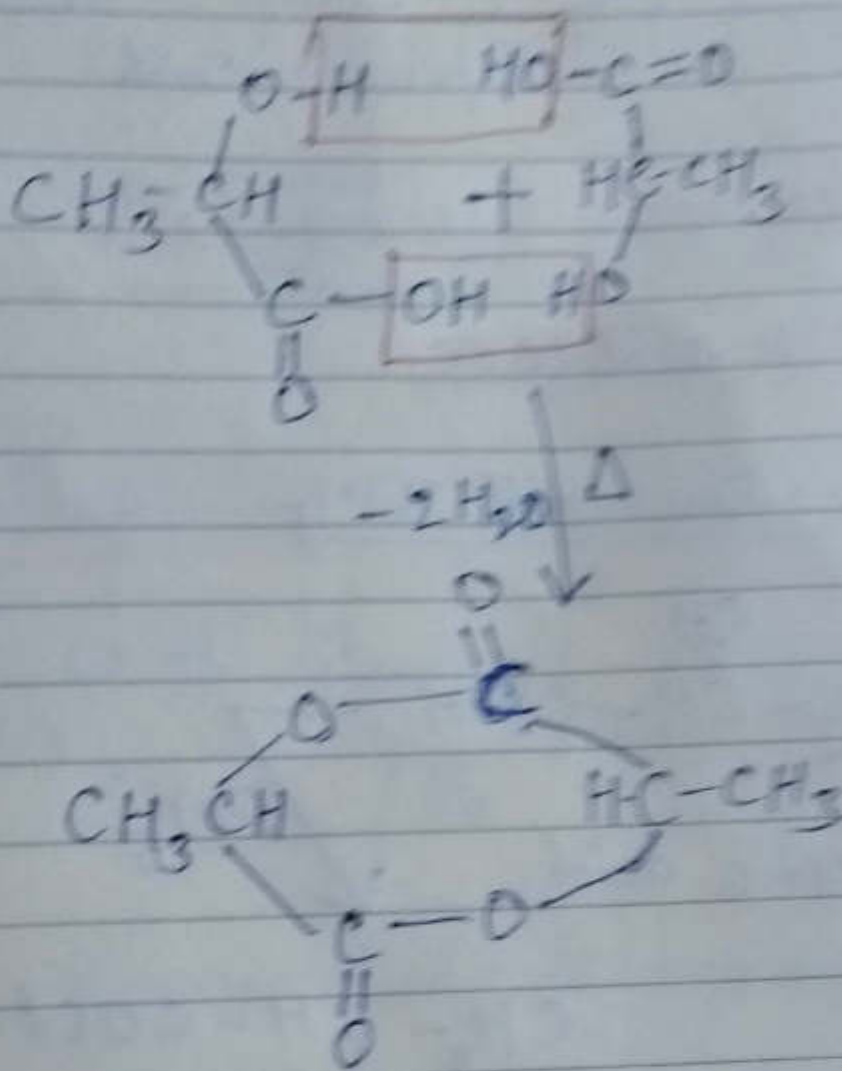
Lactyl chloride

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Action of heat :- When

heated alone, it forms an

intermolecular cyclic diester
called a Lactide.



Lactide.

To be continued