

SUBJECT - CHEMISTRY

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CLASS - B.Sc (Hons) PART - II

PAPER - IV

TOPIC - Citric acid

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Q What is the natural source of citric acid

Ans Citric acid (2-hydroxy propane-1,2,3-tricarboxylic acid),
 $\text{COOHCH}_2\text{C}(\text{OH})\text{COOH}\cdot\text{CH}_2\text{COOH}$ occurs in all citrus fruits e.g
lemon, lime, tomatoes, orange etc.

Q How is citric acid isolated from lemon juice?

Ans Citric acid from lemons: The juice of unripe lemons containing 6-8% of the acid is extracted and boiled to coagulate the proteins. After filtration, the juice is then concentrated and is next neutralised by lime. Ca-citrate formed is soluble in cold but insoluble in hot. Ca-citrate is precipitated on boiling, filtered, washed and decomposed with calculated amount of dil H_2SO_4 . The ppt of CaSO_4 is removed by filtration and the filtrate on concentration to crystallising point yield the monohydrate of citric acid in large rhombic prisms.

Q How is citric acid isolated from molasses?

Ans Molasses, come sugar or glucose is diluted with water to 10-15% sugar content and acidified with H_2SO_4 . Small amount of H_3PO_4 may be added as source of phosphorus.

The solution is then sterilised, cooled and then certain moulds eg *Aspergillus Niger* is added. The temperature of air passed through the fermentation vat is kept at 40° in the beginning but reduced to 30° after two days. fermentation is complete in 10-12 days. A clear liquid is then decanted off and heated to 80° and citric acid is precipitated as Ca-citrate from which citric acid is isolated by