

TIKRIT UNIVERSITY COLLEGE OF PHARMACY



Inorganic Pharmaceutical Chemistry

Lab3

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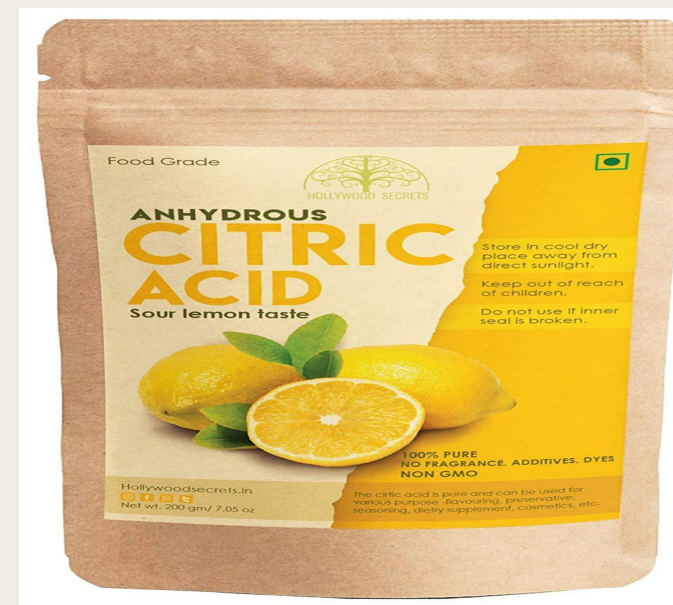
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Assay of citric

Citric acid $C_6H_8O_7$, m. Wt= 192.09 is a white crystalline powder ,or colourless crystal. It is very soluble in water and freely soluble in alcohol. It is a tri-basic acid, so its solutions are strongly acidic. It is available as the anhydrous form or monohydrate form. Assay of citric acid is based on the anhydrous form. The monohydrate effloresces in dry air.

In biochemistry, it is an intermediate in the citric acid cycle, which occurs in the metabolism of all aerobic organisms.



Uses of citric acid

- food Additive

Citric acid is used in food as a flavouring agent and preservative. It is used in processed food products like beverages, soft drinks etc.

- cleaning and deodorant agent:

It is used in soaps and laundry detergents as water is softened by the acid.

- Cosmetics: Citric acid helps in the removal of dead skin so used for home masks. Improves skin tone and skin growth reducing wrinkles, acne scars etc. To balance the pH levels citric acid is commonly used as an ingredient in cosmetics.

- Industrial: uses of citric acid include detergent manufacturing, electroplating and leather tanning. also used as a preservative for stored blood and a buffer and antioxidant in the pharmaceutical and cosmetic industries.

- Citric acid liberates carbonates, so it is used widely in effervescent salts. Citric acid is also used to dissolve renal stones

Adverse effects of citric acid

Citric acid may cause:

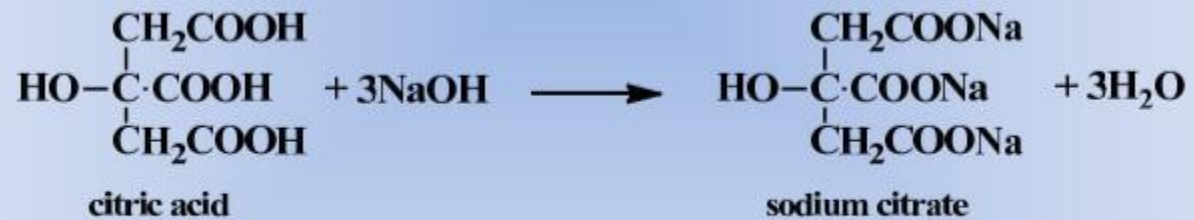
Skin irritation. When it touches your skin for long periods of time, it can cause stinging, swelling, or hives.

Eye pain. It will burn if it gets in your eyes. If this happens, flush them well with water for several minutes. If you wear contact lenses, take them out as soon as you can.

Tooth problems. Drinks and candies that contain citric acid can wear away the enamel (the outer layer) of your teeth. This can make your teeth more sensitive, turn them yellow, and make it more likely you'll get cavities.

Chemical principle

- Since citric acid has strong acid properties, it is titrated against a standard basic solution like 0.1N NaOH solution in an acid- base reaction



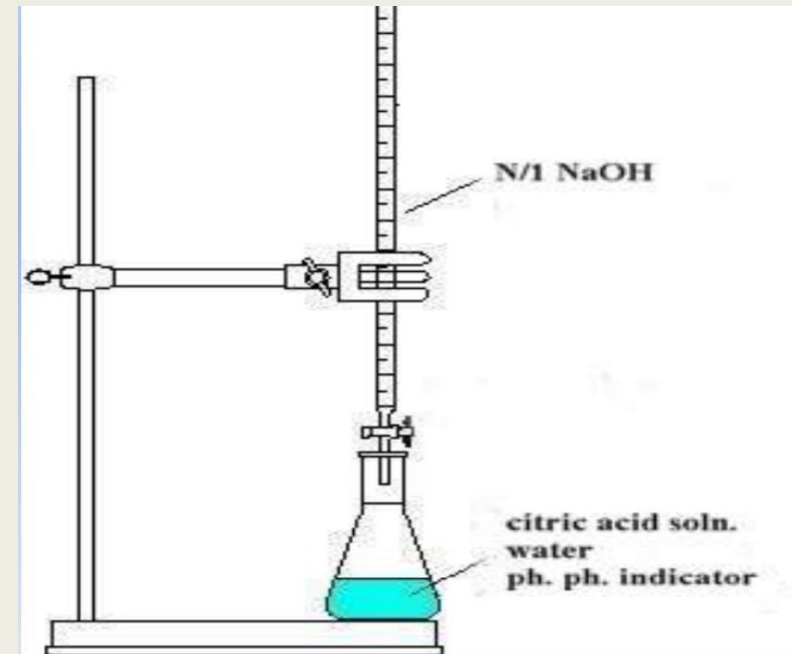
Procedure

- Weigh accurately 1 g of citric acid) or you may take 10 mL of an unknown citric acid solution(dissolve in 20 ml of distilled distilled water, and titrate with 0.1N sodium hydroxide solution using 2drops of phenolphthalein solution as the indicator.Titrate until you get a faint pink colour



Titration apparatus

- Glasswares: Burette, stand for burette, a conical flask, volumetric pipette to makeup volume, beaker, volumetric flask, funnel, glass rod, washed bottle, etc
Chemicals: citric acid solution, standard NaOH solution, Ph.Ph indicator.



Calculation

- Calculate the chemical factor: each 1 mL of 0.1N sodium hydroxide solution is equivalent to 0.06403 g of $C_6H_8O_7$.
correct the volume of NaOH solution used into N/1 volume.
Calculate the quantity of citric acid present in your sample.
Calculate the percentage w/v of your citric acid sample.