

# DEPTH OF BIOLOGY

## UNIT IV

Expectorants: Potassium iodide, Ammonium chloride\*.

Emetics: Copper sulphate\*, Sodium potassium tartarate

Haematinics: Ferrous sulphate\*, Ferrous gluconate

Poison and Antidote: Sodium thiosulphate\*, Activated charcoal, Sodium nitrite333

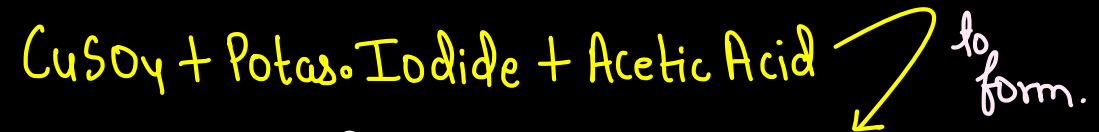
Astringents: Zinc Sulphate, Potash Alum

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## Assay of Copper Sulphate

An assay for copper sulfate is a process that determines the percentage of copper sulfate in a sample. It can be performed using acidimetry or iodometry

### Iodometry



Treat copper sulfate with potassium iodide and acetic acid to form cuprous iodide and release iodine

Titrate the iodine with a sodium thiosulfate solution



Add starch at the end of the titration to form a complex with any excess iodine

The color change indicates the amount of excess iodine

Calculate the percentage of copper sulfate in the sample

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## Assay of ferrous sulphate

The assay of ferrous sulfate ( $\text{FeSO}_4$ ) is a process that determines the purity of a sample of ferrous sulfate.

### Procedure

Weigh a sample of ferrous sulfate

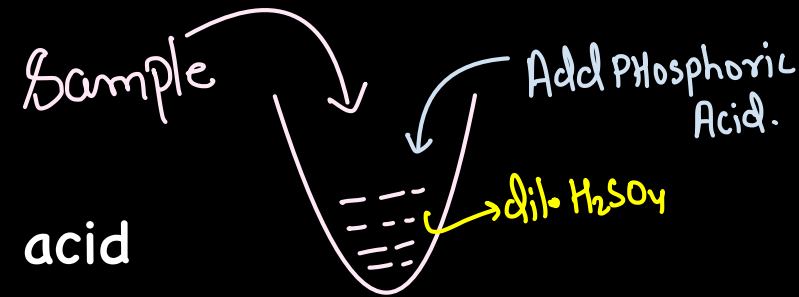
Dissolve the sample in an acid solution, such as dilute sulfuric acid

Add phosphoric acid

Titrate the solution with a potassium permanganate or ceric sulfate solution until a color change occurs

Repeat the titration to get consistent values

Calculate the percentage purity of the sample



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## Assay of Sodium Thiosulphate

The assay of sodium thiosulfate involves titrating a known volume of sodium thiosulfate with iodine and starch.

### Procedure

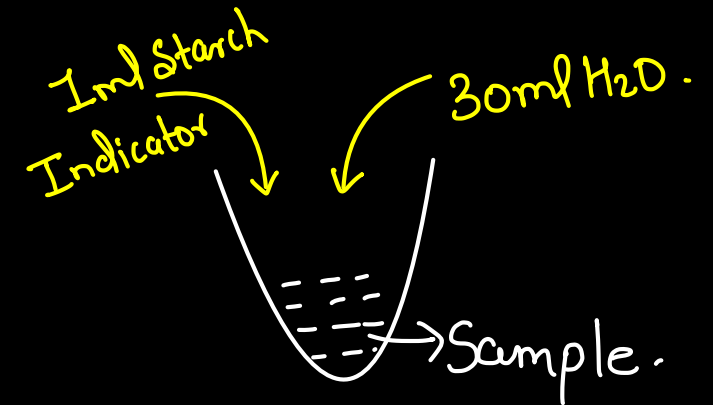
Accurately measure a volume of sodium thiosulfate solution

Add water to make a 30 mL solution

Add 1 mL of starch indicator solution

Titrate with 0.05 mol/L iodine solution ( $I_2$ )

Calculate the amount of sodium thiosulfate based on the amount of iodine used



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## Astringent



A substance that shrinks or constricts body tissues often used to **stop bleeding**, **reduce swelling** or **tighten skin**.

### 1. Mechanism of Action

**Protein Precipitation:** Astringents typically contain compounds that interact with proteins in the skin or mucous membranes. This interaction causes proteins, such as collagen, to denature (lose their natural structure), leading to their coagulation or precipitation. As a result, skin cells contract, leading to a tightening effect.

**Pore Constriction:** In skincare, astringtons can shrink or constrict pores by causing the skin's outer layers to tighten. This can help reduce the appearance of pores, prevent excess oil production, and reduce the likelihood of acne.

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## 2. Common Types of Astringents

### 1. Natural Astringents:

**Tea Tree Oil:** Has natural astringent properties and is frequently used for acne and skin irritation.

**Lemon Juice:** The citric acid in lemon can act as a mild astringent, tightening skin and cleansing pores.

### 2. Chemical Astringents:

**Alcohol:** Ethanol and isopropyl alcohol are often used in astringent formulations, especially in products designed to cleanse oily skin or disinfect small cuts.

**Salicylic Acid:** While primarily known as a keratolytic agent (promoting exfoliation), salicylic acid has mild astringent properties that help reduce oil production and tighten pores.

→ Process of removing Dead Skin Cell & Dirt.

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## 3. Uses of Astringents

**Skincare:** Astringents are commonly used in toners, cleansers, and acne treatments. They help control oil, tighten pores, and reduce inflammation. They can also soothe minor skin irritations.

→ Group of Veins Swollen. (Piles)

**Hemorrhoid Relief:** Some astringents, like witch hazel, are used in topical treatments for hemorrhoids due to their ability to constrict blood vessels and reduce swelling.

**Minor Cuts and Infections:** Astringents are sometimes used to clean and tighten the skin around small wounds, reducing the risk of infection by tightening the skin around the injury.

**Mouth and Throat:** Certain astringents are used in gargles or mouthwashes for conditions like sore throats or to tighten the mucous membranes.

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## 4. Potential Side Effects

**Dryness and Irritation:** Since astringents work by tightening and drying out tissues, they can sometimes lead to dryness, peeling, or irritation, especially in individuals with sensitive skin.

Loss the  
Upper Layer of Skin

**Overuse:** Overuse of astringent products, particularly those containing alcohol, can strip the skin of natural oils, potentially leading to a rebound effect where the skin produces even more oil in compensation.

**Sensitivity to Sunlight:** Some astringents, especially those containing acid, can increase the skin's sensitivity to the sun, raising the risk of sunburn or pigmentation changes.