



“बेटी बचाओ, बेटी पढ़ाओ”

JAYOTI VIDYAPEETH WOMEN'S UNIVERSITY, JAIPUR
Faculty of Pharmaceutical Science

Faculty Name	- JV'n Abhishek Kumar
Course	- B. Pharm (1 st sem)
Session	- Pharmaceutical Inorganic Chemistry – (General Methods of Preparation)

Academic Day starts with –

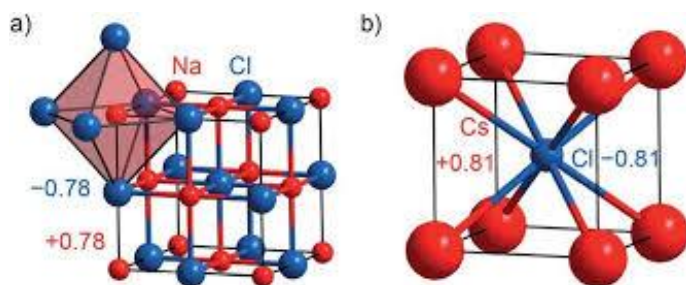
- Greeting with saying ‘**Namaste**’ by joining Hands together following by 2-3 Minutes Happy session, Celebrating birthday of any student of respective class and **National Anthem**

Pharmaceutical Inorganic chemistry

General methods of Preparation

Preparation of Sodium Chloride:

- 1. Synthesis from Sodium Hydroxide and Hydrochloric Acid:** Sodium chloride can be prepared by reacting sodium hydroxide (NaOH) with hydrochloric acid (HCl): **NaOH + HCl -> NaCl + H₂O**



2. The reaction yields sodium chloride and water.

3. **Evaporation of Seawater:** Sodium chloride is often obtained by evaporating seawater, leaving behind the salt crystals.

Assay of Sodium Chloride:

Assaying sodium chloride involves determining the concentration or purity of the compound. One common method for the assay of sodium chloride is the Mohr method.



Mohr Method:

- This method involves titration with a silver nitrate (AgNO_3) solution of known concentration.

- A few drops of potassium chromate solution are added to the sodium chloride solution, forming a reddish-brown precipitate of silver chromate (Ag_2CrO_4) when all chloride ions have reacted.
- The appearance of the reddish-brown color indicates the endpoint of the titration.
- The amount of silver nitrate solution used in the titration allows calculation of the amount of chloride ions in the samples

General Methods of Preparation:

Sodium chloride is primarily obtained through the evaporation of seawater or brine. The most common method involves allowing seawater or brine to evaporate, leaving behind sodium chloride crystals. It can also be obtained from salt mines through mining processes.

Assay for Sodium Chloride:

The assay for sodium chloride typically involves determining the percentage of NaCl in a given sample. This can be done through titration methods, gravimetric analysis, or flame photometry. Titration with a silver nitrate solution is a common method to determine the chloride ion content, which is then used to calculate the sodium chloride content.

Properties of Sodium Chloride:

- Sodium chloride is a white crystalline solid with a cubic crystal structure.
- It has a high melting point and boiling point.
- It is highly soluble in water and forms a salt solution.
- Sodium chloride is odorless and has a characteristic salty taste.

- It conducts electricity when dissolved in water due to the presence of ions.

Medicinal Uses:

- Sodium chloride is commonly used as a saline solution for various medical purposes, including intravenous administration to restore electrolyte balance and hydration.
- It is used as a nasal spray to relieve congestion and dry nasal passages.
- In some cases, saline solutions are used for wound cleaning and irrigation.
- Salt baths (saline baths) are used for their potential therapeutic effects, such as soothing skin irritations.



General Methods of Preparation:

Sodium bicarbonate, commonly known as baking soda, is typically prepared by two main methods:

1. **Solvay Process:** This involves reacting sodium chloride (table salt) with ammonia and carbon dioxide to produce sodium bicarbonate.
2. **Trona Ore Mining:** Trona ore, a naturally occurring mineral, contains sodium bicarbonate. It's mined and then processed to extract sodium bicarbonate.

Assay for Sodium Bicarbonate:

The assay for sodium bicarbonate often involves titration. An acid, such as hydrochloric acid (HCl), is added to a solution of sodium bicarbonate until the solution reaches a certain pH, indicating that the bicarbonate ions have reacted with the acid. The amount of acid used in the titration can then be used to calculate the amount of sodium bicarbonate present in the sample.

Properties of Sodium Bicarbonate:

- **Chemical Formula:** NaHCO_3
- **Physical State:** White crystalline powder
- **Solubility:** Soluble in water
- **Taste:** Alkaline taste
- **Odor:** Odorless
- **Reactivity:** Reacts with acids to release carbon dioxide gas
- **pH Regulation:** Acts as a buffer, helping to regulate pH in various applications



Medicinal Uses:

Sodium bicarbonate has several medicinal uses, including:

- **Antacid:** It can help neutralize excess stomach acid and provide relief from conditions like acid reflux and heartburn.
- **Metabolic Acidosis:** It's used in medical treatments to counteract metabolic acidosis, a condition where the body's pH becomes too acidic.
- **Kidney Conditions:** In some cases, it's administered intravenously to treat certain kidney conditions.
- **Oral Health:** Sodium bicarbonate can be used as an ingredient in toothpaste for its mild abrasive properties and potential to neutralize oral acids.

