# Lab sheet #5

## -Qualitative Analysis of Renal Calculi-

**Objectives:**

- Identification and qualitative analysis of kidney stones.

**Method:**

**(1) Test for Uric acid:**

1. Put a small amount of the sample.
2. Add 5-7 drops of concentrated nitric acid (*Carefully*).
3. Heating in a water bath.

➔ (The positive result is yellow to orange color on the inner surface of the test tube).

**(2) Test for carbonate:**

1. Add 0.5 ml con. hydrochloric acid (2M HCL) to a small portion of the sample.

➔ (Gas bubbles will indicate the presence of carbonate).

**(3) Test for oxalate:**

1. Heat a part of the sample with 2 ml dilutes sulphuric acid (2M $H_2SO_4$) for 1 min.
2. Add 2 drops (one by one) of, potassium permanganate ($KMnO_4$) solution and Mix.

➔ (The decolorization and evolution of bubbles will confirm the presence of oxalate).

**(4) Test for phosphates:**

1. Dissolve a little of the sample in about 1.5 ml of concentrated nitric acid ($HNO_3$).
2. Add an equal volume (1.5 ml) of ammonium molybdate solution.
3. Heat to boiling.

➔ (If phosphates are present, a yellow precipitate of ammonium phosphomolybdate is obtained).

**(5) Test for calcium:**

1. Dissolve small amount of the sample by heating with 2 ml dilute hydrochloric acid (2M HCL).
2. Add 1 ml ammonium oxalate.

➔ (A white precipitate of calcium oxalate shows the presence of calcium).

**(6) Test for magnesium:**

1. On a few amounts of magnesium, add 1ml of titan followed by 1 ml potassium hydroxide–*to be strongly alkaline*-.

➔ (An orange to red color indicates the presence of magnesium).

**Results:**

| | **Observation** | **Type of stone/s** |
|---|---|---|
| **Uric acid** | | |
| **Carbonate** | | |
| **Oxalate** | | |
| **Phosphates** | | |
| **Calcium** | | |
| **Magnesium** | | |