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Diploma in Pharmacy 2nd Year
Biochemistry & Clinical Pathology
Experiment

To detect the chlorides in given sample of urine by qualitative test.

Aim:

To detect the chlorides in given sample of urine by qualitative test.

Reference :

‘ Dr. Gupta G.D. , Dr. Sharma Shailesh, Kaur Manpreet, “Practical Manual of Biochemistry & Clinical Pathology” Published by Nirali Prakashan, Page no 30 – 33

Materials Required

Concentrated nitric acid, acetic acid, Robert's solution, sulphosalicylic acid or a solution containing 13% salicylic acid and 20% sulphuric acid, test tube stand, test tube holder, test tubes, graduated pipette (5 ml. capacity), and spirit lamp.

Principle

Albumin precipitates due to nitric acid. Albumin coagulates when heated or exposed to sulphosalicylic acid.

Theory

Along with sodium, potassium, and bicarbonate, chloride is an anion (negatively charged ion) that helps in controlling the amount of body fluids and the acid-base balance. It is present in all body fluids but is more concentrated outside of cells. Chloride enters the body through foods, and the kidneys remove extra chloride by excreting it in the

urine Urinary Chloride Test is prescribed whenever the doctor suspects any disturbance with acid base balance, changes in the levels of body fluids or electrolytes (rons present im body fluids), or in a condition known as renal tubular acidosis.

Procedure

1) Nitric Acid Ring Test:

i) 5 ml of conc nitric acid should be taken in a test tube.
ii) The test tube should be inclined and the urine sample should be added to it with a dropper so that it slowly drips down the side and forms a distinct layer.
iii) At the point where the two liquids meet, a white ring forms, indicating the presence of albumin in the urine sample.

Or

i) 5 ml. of Robert's solution should be taken in a test tube.
ii) The test tube should now be inclined and 2-3ml of the given sample of urine should be added to it with a dropper along the inner side of test tube so that it forms a layer over the Robert's solution.
iii) The presence of albumin in the sample is indicated by the presence of white ring at the junction of two layers.

2) Heat Coagulation Test:

i) 6 to 8ml of urine should be taken in a test tube.
ii) The test tube should now be inclined at an angle and the upper one-third of test tube should be heated at a low flame.
iii) The heated part of the urine becomes turbid.
iv) 1% acetic acid should be added drop by drop and boiled or a drop of 33% acetic acide should be added.
v) Appearance of turbidity confirms the presence of albumin in the urine sample whereas disappearance of turbidity confirms the presence of phosphate.

3) Sulphosalicylic Acid Test:

i) 3mL of urine should be taken in a test tube.
ii) Few drops of sulphosalicyclic acid should be added and heated gently.
iii) The presence of albumin in the urine sample is indicated by a white, hazy, or turbid precipitate (coagulation) in the solution.

Observation

Less than 250 mg (in a 24-hour urine sample) of protein are present in normal urine Albumin is found in urine at levels above normal when pathogenic conditions, such as albuminuria, are present. This level is so small that it cannot be detected by any easy tests. Albumin levels in urine are significantly high in case of renal disruption and high blood pressure

Result :

The given sample of urine contains chlorides.

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