

Estimation of Serum Sodium:

Sodium is a mineral that your body must have in order to function properly. The primary source of dietary sodium is sodium chloride, or salt. Excessive sodium can cause hypertension, which in turn can lead to other health problems.

Your body keeps sodium in balance through a variety of mechanisms. Sodium gets into your blood through food and drink. It leaves the blood through urine, stool, and sweat. Having the right amount of sodium is important for your health. Too much sodium can raise your blood pressure.

Although sodium is often maligned as a cause of high blood pressure, it also plays several essential roles in the body. Sodium helps control blood pressure and regulates the function of muscles and nerves, which is why sodium concentrations are carefully controlled by the body.

However, most people consume far more sodium than their bodies need.

Blood Pressure Control

Sodium is dissolved in the blood and plays a key role in maintaining blood pressure. Sodium attracts and holds water, so the sodium in the blood helps maintain the liquid portion of the blood. On the other hand, if you consume too much sodium, your body may hold onto extra water, increasing the volume of your blood. Since your blood vessels cannot expand to accommodate this increased blood volume, your blood pressure will rise. High blood pressure is a risk factor for many diseases, including heart problems and stroke.

Hypernatremia: Higher than normal sodium level It may be due to:

- 1-Increased fluid loss due to excessive sweating, diarrhea, burns, or use of diuretics
- 2-Adrenal gland problems
- 3-Diabetes insipidus (type of diabetes in which kidneys are not able to conserve water).
- 4-Too much salt or sodium bicarbonate in the diet.

Hyponatremia : Lower than normal sodium level it may be due to:

- 1-Use of medicines such as diuretics (water pills), morphine
- 2-Increased fluid loss from body, vomiting, or diarrhea
- 3-Increase in total body water seen in those with heart failure, certain kidney diseases, or cirrhosis of the liver
- 3-Adrenal glands not making enough of their hormones (Addison disease)
- 4-Buildup in urine of waste product from fat breakdown (ketonuria)

Estimation of Serum Potassium

Potassium K :is a mineral that your body needs to work properly .It is a type of electrolyte. Most people get enough potassium by eating a balanced diet. Healthy kidneys maintain normal potassium levels in the body because they remove excess amounts through urine.

Functions of Potassium

- 1- Potassium regulates water and salt metabolism in the cell
- 2- Maintains osmotic pressure and acid-base balance
- 3- normalizes heartbeat
- 4- participate in the surrender of nerve impulses muscles
- 5- increases removal of sodium and water from the body and activates certain enzymes.
- 6- potassium plays an important role in protein biosynthesis and the conversion of blood sugar into glycogen

Hyperkalemia: is an elevated level of potassium (K^+) in the blood.

Causes of hyperkalemia:

Kidney failure is the most common cause of high potassium. When your kidneys fail or don't function properly, they can't remove extra potassium from your body. This can lead to potassium buildup.

Symptoms of hyperkalemia:

- 1- tiredness or weakness
- 2- a feeling of numbness or tingling □
- 3- nausea or vomiting □
- 4- trouble breathing
- 5- chest pain

6- palpitations or irregular heartbeats

Hypokalemia:

is a low level of potassium (K⁺) in the blood serum. Usually, levels below 3.6 are considered low, and below 2.5 mmol/L is life-threateningly low.

Causes of hypokalemia:

- 1- vomit a lot
- 2- diarrhea
- 3- kidneys or adrenal glands don't work well
- 4- medication that makes you pee (water pills or diuretics)
- 5- Drinking too much alcohol
- 6- Sweating a lot
- 7- Folic acid deficiency

Symptoms of hypokalemia

- 1- paralysis
- 2- respiratory failure
- 3- breakdown of muscle tissue
- 4- ileus (lazy bowels)
- 5- Kidney problems