SODIUM
(Colorimetric)

INTENDED USE:

This reagent kit is intended for "in vitro" quantitative determination of Sodium concentration in serum.

CLINICAL SIGNIFICANCE:

Sodium is the major positive ion in fluid outside of cells. Most of the sodium in the body (about 85%) is found in blood and lymph fluid. It ensures a proper fluid and electrolyte or pH balance in our body , together with chloride and potassium. It enables our cell walls to draw in nutrients. It plays a role in nerve function and muscle contraction, in controlling the heartbeat by helping in its origin and maintenance.
Sodium levels in the body are partly controlled by a hormone called aldosterone, which is made by the adrenal glands. Aldosterone levels tell the kidneys when to hold sodium in the body instead of passing it in the urine. Too much or too little sodium therefore can cause cells to malfunction, and extremes in the blood sodium levels (too much or too little) can be fatal.
Too much sodium in the diet may raise blood pressure in some people. For those who have high blood pressure, eating foods with a lot of sodium makes their chance of heart disease, stroke, and kidney damage higher. Heart failure gets worse when too much sodium is eaten. It increases the amount of water the body holds in and this causes swelling of the legs and hands. Increased sodium (hypernatremia) in the blood occurs whenever there is excess sodium in relation to water. There are numerous causes of hypernatremia; these may include kidney disease, too little water intake, and loss of water due to diarrhea and/or vomiting. High levels of sodium in the body are associated with high blood pressure and hypertension.
Low sodium levels are uncommon and most often occur as a side effect of taking medicines that make you urinate more, such as diuretics. Severe diarrhea or vomiting or heavy sweating may also cause low sodium levels. A decreased concentration of sodium (hyponatremia) occurs whenever there is a relative increase in the amount of body water relative to sodium. This happens with some diseases of the liver and kidney, in patients with congestive heart failure, in burn victims, and in numerous other conditions. Sodium deficiency results in muscle cramps, headache, Poor appetite and dehydration, but the main sign is fatigue.

PRINCIPLE:

The method is based on reaction of sodium with a selective Chromogen producing a chromophore whose absorbance varies directly as the concentration of sodium in the test specimen.

REAGENT COMPOSITION:

Reagent 1: Enzyme reagent
Triglyceride standard: 200 mg/dl

SAMPLES:

Serum free of hemolysis.

STABILITY OF REAGENT:

When Stored tightly closed at 2° to 8°C temperature protected from light and contaminations prevented during their use; reagents are stable up to the expiry date stated on the label.

WORKING REAGENT:

The Reagent is ready for use.

GENERAL SYSTEM PARAMETERS:

Reaction type	End Point
Wave length	603 nm
Light Path	1 Cm
Reaction Temperature	37°C
Blank / Zero Setting	Reagent
Reagent Volume	1ml
Sample Volume	10 µ.
Incubation Time	10 Minutes
Standard Concentration	150 mmol/L
Low Normal	135 mmol/L
High Normal	155 mmol/L
Linearity	180 mmol/L

ASSAY PROCEDURE:

	Blank	Standard	Sample
Reagent	1ml	1ml	1ml
Standard		10 µl	
Sample			10 µl

Mix and read the optical density (A) after a 10- minute incubation at 37°C.

CALCULATION:

$$\text{Sodium Conc. (mmol/L)} = \frac{\text{OD of Sample}}{\text{OD of Standard}} \times \text{Conc. of Standard}$$

LINEARITY:

Reagent is Linear up to 180 mmol/L.
Dilute the sample appropriately and re-assay if Sodiium concentration exceeds 180 mmol/L. Multiply result with dilution factor.

REFERENCE NORMAL VALUE:

135-155 mmol/L.

QUALITY CONTROL:

For accuracy it is necessary to run known controls with every assay..

LIMITATION & PRECAUTIONS:

1. Storage conditions as mentioned on the kit to be adhered.
2. Do not freeze or expose the reagents to higher temperature as it may affect the performance of the kit.
3. Before the assay bring all the reagents to room temperature.
4. Avoid contamination of the reagent during assay process
5. Use clean glassware free from dust or debris..

BIBLIOGRAPHY:

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