SODIUM

(Colorimetric method)

CHEM Count

INTRODUCTION

Sodium is the major positive ion in fluid outside of cells. Most of the sodium in the body (about 85%) is found in blood any 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 too 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.

METHOD 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.

KIT CONTENTS

Reagent Name	Pack Size	Pack Size
R1 - Sodium Reagent	25 x 1ml	2 x50ml
R2 - Standard	2 ml	2 ml

Please refer the standard value mentioned in the vial.

WORKING REAGENT PREPARATION AND STABILITY

The reagent is ready to use.

The reagent is stable up to the kit expiry date printed on the package when stored at **R.T** Protect from direct Sunlight.

ADDITIONAL EQUIPMENT

- Automatic analyzer or photometer able to read at 630 nm
- Thermostat at 37ºC
- General laboratory equipment

SPECIMEN

Serum free from hemolysis.

PROCEDURE

These reagents may be used for manual assay and in several semi automatic analysers. **Programme Sheets are** available on request.

Wavelength	630 nm
Temperature	37°C
Cuvette	1 cm

Pipette into the cuvette:

Reagent	Blank (B)	Standard (S)	Test (T)
R1 Sodium Reagent	1000 µl	1000 µl	1000 µl
Bring upto the temperature of determination. Then add			
Distilled Water	10 µl		
R2 - Standard		10 µl	
Sample			10 µl

Mix well and incubate for **5** minute. Read the absorbance of test sample A(T) and standard sample A(S) against reagent blank (B).

CALCULATION

Sodium concentration = A(T) / A(S) x standard concentration

REFERENCE VALUES

135 - 155 mmol/L

It is recommended for each laboratory to establish its own reference ranges for local population.

QUALITY CONTROL

To Ensure adequate quality control, each run should include assayed normal and abnormal controls. If commercial controls are not available it is recommended that known value samples be aliquoted, frozen and used as controls.

PERFORMANCE CHARACTERISTICS

- **Linearity:** up to 180 mmol/L . For higher concentration of sodium dilute the sample with distilled water and repeat the assay. Multiply the result by dilution factor.

WASTE MANAGEMENT

Please refer to local legal requirements.

LITERATURE

1. Tietz, N.W., Fundamentals of clinical chemistry, W.b. saunders Co. phila, P.A.p874.
2. Henry R.F., et al, Clinical chemistry principles and technics. 2nd edition Ed, Harper and Row, Hargersein, M.D. (1974)
3. Maruna RFL., Clin Chem, Acta. 2:581, (1958)
4. Trinder, P: Analyst, 76:596, (1951)

SYSTEM PARAMETERS

Method	End Point
Wavelength	630 nm
Zero Setting	Reagent blank
Temperature Setting	37° C
Incubation Temperature	37° C
Incubation Time	5 mins
Delay Time	----
Read Time	----
No. of Reading	----
Interval Time	----
Sample Volume	0.1 ml (10 ul)
Reagent Volume	1.0 ml (1000 ul)
Standard Concentration	Refer Standard vial
Units	mmol/L
Factor	----
Reaction Slope	Increasing
Linearity	180 mmol/l

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