Spectrum For Diagnostic Industries

Sodium

Cat. No.	Pack size
221 01 050	(1 x 50 ml) 50 tests
221 02 030	(2 x 30 ml) 60 tests
221 05 030	(5 x 30 ml) 150 tests

IVD

Intended Use

Sodium reagent is intended for the in-vitro quantitative diagnostic estimation of sodium in human serum on manual systems.

Background

Sodium and Potassium are the major cations of extracellular and intracellular fluids respectively. Sodium maintains the normal distribution of water and the osmotic pressure in the various fluid compartments. Potassium influences the acid base balance and osmotic pressure including water retention. Increased sodium levels are found in severe dehydration and excessive treatment with sodium salts. Decreased levels are found in severe polyurea, metabolic acidosis, diarrhoea and renal insufficiency. Increased potassium levels are found in renal failure, dehydration, shock and adrenal insufficiency. Decreased levels are found in malnutrition, gastrointestinal fluid loss and hyperactivity of the adrenal cortex.

Method

Colorimetric method.

Assay Principle

The Present 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.

Reagents

Reagent (R) Color Reagent

Chromogen	0.03 gm/L
EDTA	25 mmol/L
Dimethyl sulfoxide (DMSO)	75 mmol/L
Preservatives	0.05 %
Antifoam	0.01 %

Standard (S) Sodium 150 mEq/l

Precautions and Warnings

Do not ingest or inhalate. In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice immediately.

Reagent Storage and Stability

Reagents and standard are ready-to-use. When stored at 15 - 25^{O}C; they are stable up to the expiry date stated on the label. Once opened, the reagent and standard are stable for 3 months at the specified temperature.

Deterioration

Failure to recover control values within the assigned range may be an indication of reagent deterioration.

Sample Preparation and Preservation

Serum and plasma
Freshly drawn non-hemolysed serum is the specimen of choice. Heparinised plasma can also be used.
Stability: Serum Sodium is stable for at least 24 hours at room temperature and two weeks at 2-8°C.

Urine
Urine diluted 1+1 with distilled water can be used for Sodium estimation.

Procedure

Wavelength	630 nm
Optical path	1 cm
Assay type	colorimetric end-point
Direction	Increase
Sample: Reagent Ratio	1:100
Temperature	Room temperature
Zero adjustment	Against reagent blank
Sensitivity	55 mEq/l.
Linearity	180 mEq/l
Incubation	5 min.
Blank absorbance limit	1.2

Pipette into clean test tubes:

	Blank	Standard	Sample
Reagent (**R**)	1 ml	1 ml	1 ml
Standard	.....	10 µl	.....
Sample	.....	.....	10 µl

Mix well and let stand for 5 minutes at Room Temperature.
Read absorbances ,A standard and A sample against Reagent Blank at 630 nm.

Calculation

$$\text{Serum Sodium Conc.(mEq/l)} = \frac{A_{\text{Sample}}}{A_{\text{Standard}}} \times 150$$

Quality Control

Normal and abnormal control serum of known concentrations should be analyzed with each run.

Performance Characterstics

Precision

Within run (Repeatability)

	Level 1	Level 2
n	20	20
Mean (mEq/l)	140	170
SD	0.72	1.44
CV%	0.51	0.84

Run to run (Reproducibility)

	Level 1	Level 2
n	20	20
Mean (mEq/l)	140	170
SD	0.76	1.58
CV%	0.54	0.93

Methods Comparison

A comparison between Sodium reagent and a commercial reagent of the same methodology was performed on 20 human sera. A correlation of 0.979 was obtained.

Sensitivity

When run as recommended, the minimum detection limit of the assay is 55 mEq/l.

Linearity

The assay is linear up to 180 mEq/l.

Interfering Substances

Hemoglobin and Lithium
Demonstrates positive interference

Lipemia
No significant interference

Other Ions
No adverse influence is exerted on the procedure by blood calcium, chloride and potassium levels of up to 3 times normal values. Hypermagnesemia may interfere with sodium assay.

Anticoagulants
Complexing Anticoagulants such as citrate and oxalate must be avoided.

Expected Values

Serum : 135 – 150 mEq/l.

Urine(24 hr): 40-220 mEq/ 24 hr

Note:
It is recommended for each laboratory to establish and maintain its own reference values. The given data are only an indication.

Analytical Range

55 – 180 mEq/l.

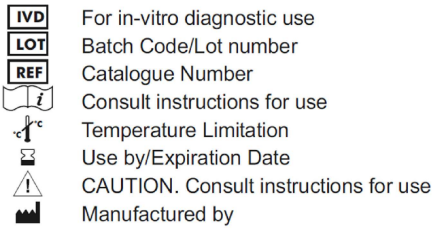
Waste Disposal

This product is made to be used in professional laboratories. Please consult local regulations for a correct waste disposal.
S56: dispose of this material and its container at hazardous or special waste collection point.
S57: use appropriate container to avoid environmental contamination.
S61: avoid release in environment. refer to special instructions/safety data sheets.

References

1. Tietz, N.W., Fundamentals of clinical Chemistry, W.b. Saunders Co. Phila, P.A. p. 874.
2. Henry R.F., et, al, Clinical Chemistry Principles and Technics. 2nd Ed, Harper and Row, Harper and Row, Hargersein, M.D. (1974)
3. Maruna RFL., Clin Chem. Acta. 2:581, (1958)
4. Trinder, P:Analyst, 76:596, (1951)

SYMBOLS IN PRODUCT LABELLING



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