

Sodium & Potassium

Electrolytes Test Kit

Code : 10020 (2X15 Tests)

(For the analyser/Colorimetric estimation of Na⁺/K⁺)

In VITRO USE Only.

PRINCIPLE FOR SODIUM :

The sodium and the proteins are Precipitated Simultaneously by means of a reagent containing magnesium uranyl acetate containing alcohol. The precipitate is separated by centrifugation. The content of sodium is calculated from the loss in the concentration of magnesium uranyl acetate in the reagent solution in comparison to a standard sodium solution treated similarly. The residual amount of magnesium uranylacetate is estimated by forming brown (dark) ferrous uranyl acetate. Which is read in a colorimeter.

PRINCIPLE FOR POTASSIUM :

Potassium can be determined by a number of different methods. It can be directly estimated by flame photometry, colorimetry. It can also be measured by the use of ion selective electrode. The method is based on the measurement of turbidity of the reaction mixture containing Sodium Tetrphenyl Boron, Alkaline EDTA, Formaldehyde and sample containing potassium or standard potassium salt. The method accurate within the concentration of 2.0 to 7.0 mmol/L. There is a good agreement with flame photometry.

REAGENTS:

- | | |
|---------------------------------|--------|
| 1. Sodium Precipitating Reagent | 33 ml. |
| 2. Standard Sodium /Potassium | 3 ml. |
| 3. Sodium Color Reagent | 10 ml. |
| 4. Potassium Reagent | 45 ml. |

The reagents are ready to use and usable to the expiration date when stored at 2-8°C, if contamination is avoided.

SAMPLE:

Serum (Haemolysed sera should not be used)

1. Serum should be separated from the clotted blood without delay to prevent any leakage of potassium from the RBC, which contains 23 times higher concentration of potassium than the serum.
2. Lipemic samples should be avoided. Turbid or icteric samples produced falsely elevated potassium results.
3. Serum urea level higher than 150 mg% will produce elevated potassium results.

EXPECTED RANGE :

Potassium : 3.5 to 5.5 mmol/L
Sodium : 135 to 155 mmol/L

LINEARITY:

Potassium : This method is linear between 2 to 7 mmol/L
Sodium : This method is linear between 100 to 200 mmol/L
STRICT ADHERENCE TO THE INSTRUCTIONS AND TO THE PROCEDURES ALONE GIVE THE PROPER RESULTS.

INSTRUCTIONS:

Contamination of glassware usually from detergents, results in falsely elevated concentrations. Therefore glassware should be washed with 1N Nitric Acid rinsed with high purity deionized water before use. Slowly transfer standard/serum in reagent (4) of the respective test tubes by dipping the micropipette/glass pipette tips in the solution for potassium test.

Sodium assay is an inverse reaction, hence blank is higher than the standard and test.

DIRECTIONS FOR USE ON ANALYSERS :

FOR SODIUM :

Reaction Type : End point with std
Reaction Slope : Increasing
Wave Length : 540 nm
Incubation Temp. : RT
Incubation Time : 10 mins
Standard Conc. : 150mmol/L
Linearity : 200mmol/L
Unit : mmol/L

FOR POTASSIUM :

Reaction Type : End point with std
Reaction Slope : Increasing
Wave Length : 620 nm
Incubation Temp. : RT
Incubation Time : 5 mins
Standard Conc. : 5mmol/L
Linearity : 7mmol/L
Unit : mmol/L

SODIUM ASSAY :

Step I - Precipitation of sodium and proteins.

Pipette into two clean dry test tubes labelled standard (S) and test (T)

	S	T
Sodium PPT Reagent(1)	1.0 ml	1.0 ml
Standard Sodium/Potassium(2)	0.02 ml
Serum	0.02 ml

Mix well on vortex for one minute and wait for five minutes at room temperature. Centrifuge for one minute at 3000 rpm.

Step II - Color Development.

Pipette into three clean dry test tubes labelled blank (B), standard (S) and test (T)

	B	S	T
Distilled Water	3ml	3ml	3ml
Supernatant from step I	...	0.05ml	0.05ml
Sodium PPT Reagent (1)	0.05ml
Sodium Color Reagent (3)	0.2ml	0.2ml	0.2ml

Mix well and allow it to stand at room temperature for five minutes. Then measure absorbance of B,S,T against distilled water on a photocolormeter at 540 nm within 10 minutes.

Calculation :

Sodium in mmol/L =
Absorbance of B-T X 150 (Standard concentration)
Absorbance of B-S

POTASSIUM ASSAY:

Pipette into two clean dry test tubes labelled standard (S) and test (T)

	S	T
Potassium Reagent (4)	1.0 ml	1.0 ml
Standard Sodium/Potassium(2)	0.05 ml
Serum	...	0.05 ml

Mix gently wait for five minutes at room temperature and read the absorbance of standard and test against distilled water on a photocolormeter at 620 nm within 10 minutes.

CALCULATION :

Potassium in mmol/L =
Absorbance of T x 5 (standard concentration)
Absorbance of S

NOTES :

★ Due to variations in inter - laboratory assay conditions, instruments and demography, it is recommended that each laboratory should establish its own normal range. To ensure adequate quality control, each run should include a normal and abnormal assayed controls. The assigned value of the control must be confirmed by this methodology.

★ Final diagnosis should be based on a co-relation of test results with other clinical observations / Diagnostic tools.

BIBLIOGRAPHY:

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