Elecyt

Electrolytes Test Kit

Code : 10008 (3x15 Tests)

(For the Analyser/ Colorimetric Estimation of $Na^+/K^+/Cl^-$)

In VITRO USE Only.

PRINCIPLE FOR SODIUM :

The Sodium and the proteins are precipitated Simultaneously by means of reagent containing magnesium uranyl acetate containing alcohol. The precipitate is separated by centrifugation. The content of Sodium is Calculated from the loss in concentration of magnesium uranyl acetate in the reagent solution in comparison to a standard sodium solution treated similarly. The residual amount of magnesium uranyl acetate 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 Tetraphenyl Boron, Alkaline EDTA, Formaldehyde and sample containing potassium or standard potassium salt. The method accurate within the concentration of 2.0 to 7.0 m.M per Litre. There is a good agreement with flame photometry.

PRINCIPLE FOR CHLORIDE :

Chloride ions form a coloured complex when reacting with mercury (II) thiocynate solution. The intensity of the colour is proportional to the chloride concentration.

REAGENTS:

1.	Sodium Precipitating Reagent	33 ml.
2.	Standard Sodium / Potassium	3 ml.
3.	Sodium Color Reagent	10 ml.
4.	Potassium Reagent	45 ml.
5.	Chloride Reagent	45 ml.
6.	Standard Chloride	3 ml.

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

SAMPLE :

Serum (Haemolysed sera should not be used)

1. Serum should be separated from the cloted 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:

Sodium	:	135 to 155 mMol/L
Potassium	:	3.5 to 5.5 mMol/L
Chloride	:	98 to 107 mMol/L

LINEARITY:

Sodium	:	This method is linear between 100 to 200 mMol/L
Potassium	:	This method is linear between 2 to 7 mMol/L
Chloride	:	This method is linear between 70 to 130 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 IN 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 min.
Standard Conc.	:	150 m.Mol/L
Linearity	:	200 m.Mol/L
Unit	:	m.Mol/L

FOR POTASSIUM:

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

FOR CHLORIDE:

Reaction Type	:	End point with std.
Reaction Slope	:	Increasing
Wave Length	:	505 nm
Incubation Temp	:	RT
Incubation Time	:	2 min.
Standard Conc.	:	100 m.Mol/L
Linearity	:	130 m.Mol/L
Unit	:	m.Mol/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

Mixwell 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	3 ml	3 ml	3 ml
Supernatant from Step I	-	0.05ml	0.05ml
Sodium PPT Reagent (1)	0.05 ml	-	-
Sodium Color Reagent (3)	0.2 ml	0.2 ml	0.2 ml

Mix well and allow it to stand at room temperature for five minutes. Then measure absorbance of Blank, Standard and Test against distilled water on a photocolorimeter at 540 nm within 10 minutes.

CALCULATION:

Sodium in m.Mol/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

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

CALCULATION:

Potassium in m.Mol/L =

Absorbance of T x 5 (Standard Concentration)

Absorbance of S

CHLORIDE ASSAY:

Pipette into three clean dry test tubes labeled Blank (B), Standard (S) and Test (T).

	B	S	T
Chloride Reagent (5)	1.0 ml	1.0 ml	1.0 ml
Standard Chloride (6)	-	0.005 ml	-
Serum	-	-	0.005 ml

Mix well wait for two minutes at room temperature and read the absorbance of blank, standard and test against distilled water on a photocolorimeter at 505 nm within 10 minutes.

CALCULATION:

Chloride in m.Mol/L =

Absorbance of T-B x 100 (Standard Concentration)

Absorbance of S-B

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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