



POTASSIUM

(Colorimetric Method)
Liquid Reagent

INTENDED USE:

This reagent kit is used for *in-vitro* quantitative determination of Potassium in human serum.

TEST PRINCIPLE:

Potassium reacts with sodium tetraphenyl boron in a specially prepared buffer to form a colloidal suspension. The amount of the turbidity produced is directly proportional to the concentration of Potassium in the serum.

KIT CONTENTS:

Reagent 1: Potassium Reagent

Reagent 2: Potassium Standard (5mmol/L)

Product Insert : 01 No.

PREPARATION OF THE WORKING REAGENT:

All the reagents are ready to use.

STORAGE AND STABILITY:



All the reagent should be stored in 2-8°C and are stable till the expiry date mentioned in the labels.

SPECIMEN COLLECTION AND STORAGE:

Unhemolysed serum is recommended.

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. After use store the kit contents immediately as 2-8°C.
5. Avoid contamination of the reagents during assay process.
6. Use clean glassware and plastic ware free from dust or debris.

TEST PRECEDURE (Automated):

Refer to specific instrument application instructions.

TEST PRECEDURE (Manual):

Labelled tubes Blank (B), Standard (S) and Test (T) on the pre-dispensed reagent-1 tubes as follows:

Wavelength : 630 nm

Temperature : 37°C

Cuvette : 1 cm

Pipette into Pre-dispensed Reagent-1	Blank	Standard	Test
Potassium Reagent-1	Pre-dispensed	Pre-dispensed	Pre-dispensed
Standard	-	50 µl	-
Sample	-	-	50 µl

Mix well and incubate for 5 minutes at 37°C.

Read the absorbance of Standard (A_s), and Tests (A_T) against Blank (A_b) at 630 nm.

CALCULATIONS:

Potassium in mmol/L

$$\frac{\text{Abs of } A_T - A_b}{\text{Abs of } A_s - A_b} \times 5 \text{ (Conc. of Standard)}$$

NORMAL VALUES*:

3.50 – 5.50 mmol/L

*It is recommended that each laboratory should establish its own range representing its patient population.

PERFORMANCE:

Linearity: 9 mmol/L

CLINICAL SIGNIFICANCE:

The clinical significance of potassium lies in its essential role for normal cell function, particularly in muscles, nerves, and the heart, where it regulates electrical activity and contractions. Maintaining proper potassium levels is vital for a steady heartbeat, nerve signal transmission, and moving nutrients into cells while removing waste. Imbalances, including hypokalemia (low Potassium) or hyperkalemia (high Potassium), can lead to serious health issues like irregular heart rhythms and even heart attack, making potassium homeostasis critical.

AUTOMATED APPLICATIONS:

Potassium reagent can be used in several automated analyzers. Application sheets for use on specific semiautomatic/automatic analyzers are available on request.

Input parameters for semiautomatic/automatic analyzers are given below:

INPUT PARAMETERS	VALUES
Type of reaction	End Point
Wavelength	630 nm
Incubation time	5 minutes
Standard Concentration	5 mmol/L
Units	mmol/L
Upper Normal Value	5.50 mmol/L
Lower Normal Value	3.50 mmol/L
Linearity	9 mmol/L

Reagent volume	1.0 ml
Sample/Standard volume	50 µl
Reaction Slope	Increasing

QUALITY CONTROL:

For accuracy, it is necessary to run known serum controls with each assay.

REFERENCES:

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).