

**Quantitative determination of potassium ion in Serum
Only For *In vitro* Diagnostic Use**

ORDER INFORMATION

REF	Cont.
KM 15	15 X 1 ML
KM 50	50 X 1 ML
KM 100	2 x 50 ML

CLINICAL SIGNIFICANCE

Potassium (K⁺) is the major positive ion within cells and is particularly important for maintaining the electric charge on the cell membrane. This charge allows nerves and muscles to communicate and is necessary for transporting nutrients into cells and waste products out of the cell. The concentration of potassium inside cells is about 30 times that in the blood and other fluids outside of cells. Potassium levels are mainly controlled by the steroid hormone aldosterone. Aldosterone is secreted from the adrenal gland when levels of potassium increase. Aldosterone, in turn, causes the body to rid itself of the excess potassium. Metabolic acidosis (for example, caused by uncontrolled diabetes) or alkalosis (for example, caused by excess vomiting) can affect blood potassium. In normal people, taking potassium supplements or potassium-containing drugs is of no consequences, because the kidneys efficiently dispose of excess potassium.

PRINCIPLE

Potassium ions in a protein-free alkaline medium react with sodium tetraphenylboron to produce a finely dispersed turbid suspension of potassium tetraphenylboron. The turbidity produced is proportional to the potassium concentration and read photometrically.

REAGENT COMPOSITION

Reagent I : Potassium Reagent
Standard : Potassium Standard 5.0 mEq/L

SAMPLE COLLECTION AND PRESERVATION

Serum: Use unhaemolysed serum.

Plasma: Use heparinised plasma.

Storage: Serum and plasma samples are stable for at least 24 HRS at room temperature (18-25°C) and for at least two weeks at 2-8°C.

REAGENT PREPARATION

The reagent is provided in a ready to use format.

REAGENT STORAGE AND STABILITY

The reagents are stable until the expiration date at room temperature (15-30°C). as indicated on the label.

AUTOMATED PARAMETERS	
Wavelength	630 nm (620-650 nm)
Cuvette 1 cm	1 cm
Reaction Temperature R.T.	R.T.
Measurement Against	Reagent blank
Reaction type	End Point
Sample Volume	20 µl
Reagent Volume	1000 µl
Incubation 5 mins.	5 mins.
Blank Absorbance Limit	< 0.100
Low Normal	3.6 mEq/l
High Normal	5.5 mEq/l
Linearity	7.0 mEq/l

MANUAL ASSAY PROCEDURE

PIPETTE INTO TEST TUBES

	BLANK	STANDARD	TEST
Reagent	1 ml	1 ml	1 ml
Standard	-	20 µl	-
Serum /Plasma	-	-	20 µl

Mix & Incubate for 5 min. at R.T. Measure absorbance of Sample (AT) and Standard (AS) against Reagent Blank at 630 nm.

CALCULATION

$$\text{Potassium (mEq/l)} = \text{AT/AS} \times \text{Conc of Standard}$$

LINEARITY

The method is linear to a concentration of 7 mEq/l

REFERENCE INTERVAL

Serum	: 3.60 – 5.50 mEq/L
Plasma	: 4.00 – 4.80 mEq/L

NOTES

1. K-p CAL: Proceed carefully with this product because due its nature it can get contaminated easily.
2. As red blood cells contain about 25 times the amount of potassium, they have to be separated from the serum within one hour after blood collection. Otherwise, falsely elevated potassium concentrations will be found.
3. Traces of detergents produce turbidity which leads to falsely elevated potassium concentrations. They therefore have to be avoided.
4. Calibration with the aqueous standard may cause a systematic error in automatic procedures. In these cases, it is recommended to use a serum Calibrator.

QUALITY CONTROL

It is recommended to run a normal and a pathological control serum which is commercially available to verify the performance of the measured procedure. The value of controls should fall within the established limit.

BIBLIOGRAPHY

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