

**Quantitative determination of potassium in serum/plasma**  
**Only for in vitro diagnostic use**

**Clinical significance**

Potassium (K<sup>+</sup>) 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.

**Method**

Photometric test with endpoint determination.

**Reagent composition**

Reagent I: Potassium Reagent

Standard: Potassium standard 5.0 mEq/L

**Sample collection and preservation**

**Serum or plasma(lithium heparin)**

Separate from cellular contents immediately after blood collection.

Stability: at least one year at -20° C in case of immediate freezing.

7 days at 4-8°C freeze only once! Discard contaminated specimens!

**Reagent preparation**

All reagent is provided in ready to use.

**Reagent storage and stability**

When stored at recommended storage temperature stated on label, reagent is stable until the expiration date stated on the bottle and kit box label.

**Warning and precautions**

- For in vitro diagnostic use
- Do not use components beyond the expiration date.
- Do not mix materials from different kit lot numbers.
- Exercise the normal precautions required for handling all laboratory reagents.
- The reagent contains preservative. Do not swallow. Avoid contact with skin and mucous membranes.
- For detailed information refer material safety data sheet.

- Proceed carefully with this product because due to its nature it can get contaminated easily.
- most of the detergents and water softening products used in the laboratories contain chelating agents. A defective rising will invalidate the procedure.

**Waste management**

Please refer to legal requirements.

**Materials required but not provided**

- NaCl solution 9 g/l
- General laboratory equipment

**Operating instructions**

- Check reagent inventories at least daily to ensure that quantities are sufficient for the planned work load.
- Bring all reagents, standard and sample to room temperature 18-28°C, prior to analysis.

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 volumen	20 µl
Reagent volume	1000 µl
Incubation	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
Potassium Rgt.	1 ml	1 ml	1 ml
Standard	-	20 µl	-
Serum / plasma	-	-	20 µl

Mix & incubate for 5 min at RT. Measure absorbance of sample (AT) and standard (AS) against reagent blank at 630 nm.

**Sample dilutions**

- This method is linear upto a concentration of 7 mEq/L
- Dilute samples above this concentration 1:1 with DI water
- and repeat assay. multiply the result by 2.

**Calculation**

Potassium Conc. In=  $\frac{\text{Abs Sample} \times \text{Concentration of standar}}{\text{Serum / plasma (mEq/L) Asb Standar}}$

## Performance characteristics

### Within Run

Sample	Mean Concentration	SD	CV %
Norm	3.26	0.12	3.73%
Path	4.38	0.16	3.67%

### Run to Run

Sample	Mean Concentration	SD	CV %
Norm	3.30	0.10	3.01
Path	4.41	0.15	3.35%

### Linearity

The method is linear to a concentration of 7 mEq/L. Dilute samples above this concentration 1:1 with DI water and repeat assay. Multiply the result by 2.

### Reference Values

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

### INTERFERENCE

- Bilirubin: No interference found upto Bilirubin 40mg/dl
- Hemoglobin: No interference found upto 500mg/dl
- Ascorbic acid: No interference found upto 60mg/dl
- Lipemia: No interference found upto 1000mg/dl
- These characteristics have been obtained using an automatic analyzer. Results may vary if a different instrument or a manual procedure is used.

### 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

1. Hillmann G. Beyer, G.Z.klin.chem.klin.biochem. 5 ,93.
2. Henry R.F., et al, Clinical Chem,Harper&Row, New yor, Sec.Edit.646(1974)
3. Tietz, N.W., Fundamentals of clinical Chemistry, W.b. Saunders Co. Phila, P.A. p. 874.(1976)

### PRESENTACIÓN:

50x1 ml CODIGO: RS29053