Test Definition: RKUR

Potassium, Random, Urine

Overview

Useful For

Determining the cause for hyper- or hypokalemia using a random urine specimen

Method Name

Indirect Potentiometry

NY State Available

Yes

Specimen

Specimen Type

Urine

Specimen Required

Supplies: Sarstedt 5 mL Aliquot Tube (T914)

Container/Tube: Plastic, 5-mL tube

Specimen Volume: 4 mL

Collection Instructions:

1. Collect a random urine specimen.
2. No preservative.

Specimen Minimum Volume

1 mL

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	14 days	
	Ambient	7 days	
	Frozen	30 days	

Clinical & Interpretive

Clinical Information

Potassium (K+) is the major intracellular cation. Functions of K+ include regulation of neuromuscular excitability, heart contractility, intracellular fluid volume, and hydrogen ion concentration. The physiologic function of K+ requires the body to maintain a low extracellular fluid (ECF) concentration of the cation; the intracellular K+ concentration is 20 times greater than the extracellular concentration. Only 2% of total body K+ circulates in the plasma.

The kidneys provide the most important regulation of K+. The proximal tubules reabsorb almost all the filtered K+. Under the influence of aldosterone, the remaining K+ can then be secreted into the urine in exchange for sodium in both the collecting ducts and the distal tubules. Thus, the distal nephron is the principal determinant of urinary K+ excretion.

Decreased excretion of K+ in acute kidney disease and end-stage kidney failure are common causes of prolonged hyperkalemia.

Renal losses of K+ may occur during the diuretic (recovery) phase of acute tubular necrosis, during administration of non-potassium sparing diuretic therapy, and during states of excess mineralocorticoid or glucocorticoid.

Reference Values

No established reference values
Random urine potassium may be interpreted in conjunction with serum potassium, using both values to calculate fractional excretion of potassium.

The calculation for fractional excretion (FE) of potassium (K) is
FE(K)= ([K(urine) X Creat(serum)]/[K(serum) X Creat(urine)]) X 100

Interpretation

Hypokalemia reflecting true total body deficits of potassium (K+) can be classified into renal and nonrenal losses based on the daily excretion of K+ in the urine. During hypokalemia, if urine excretion of K+ is less than 30 mEq/day, it can be concluded that renal reabsorption of K+ is appropriate. In this situation, the causes for the hypokalemic state are either decreased K+ intake or extra renal loss of K+ rich fluid. Urine excretion of more than 30 mEq/day in a hypokalemia setting is inappropriate and indicates that the kidneys are the primary source of the lost K+.

Cautions

Ion-selective electrodes are selective for the ion in question but are not specific. Other monovalent cations may interfere but not in the physiologic range.

Clinical Reference

1. Delaney MP, Lamb EJ: Kidney disease. In: Rifai N, Horvath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:1308-1309
2. Toffaletti J: Electrolytes. In: Dufour DR, Rifai N, eds. Professional Practice in Clinical Chemistry: A Review. AACC Press; 1993

Performance

Method Description

An ion-selective electrode (ISE) makes use of the unique properties of ion-selective membrane to develop an electrical potential (electromotive force: EMF) for the measurements of ions in solution. Selective membrane is in contact with both the test solution and an internal filling solution. Due to the selectivity of the membrane, only the ions to be measured contribute to the EMF. The membrane EMF is determined by the difference in concentration of the test ion in the test solution and the internal filling solution. The EMF develops according to Nernst equation of a specific ion in solution.(Package insert: ISE indirect Na-K-Cl for Gen 2. Roche Diagnostics; 05/2024)

PDF Report
No

Day(s) Performed
Monday through Sunday

Report Available
Same day/1 to 2 days

Specimen Retention Time
7 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification
This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
84133

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
RKUR	Potassium, Random, U	2828-2

Result ID	Test Result Name	Result LOINC® Value
RKUR	Potassium, Random, U	2828-2