Test Definition: ZNUCR

Zinc/Creatinine Ratio, Random, Urine

Overview

Useful For

Identifying the cause of abnormal serum zinc concentrations using a random urine specimen

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
ZNCU	Zinc/Creat Ratio, U	No	Yes
CRETR	Creatinine, Random, U	No	Yes

Special Instructions

- Metals Analysis Specimen Collection and Transport

Method Name

ZNCU: Triple-Quadrupole Inductively-Coupled Plasma Mass Spectrometry (ICP-MS/MS)
CRETR: Enzymatic Colorimetric Assay

NY State Available

Yes

Specimen

Specimen Type

Urine

Ordering Guidance

The use of blood testing is recommended for children younger than 10 years. Order ZN_S / Zinc, Serum.

Specimen Required

Patient Preparation: High concentrations of barium are known to interfere with this test. If barium-containing contrast media has been administered, **the specimen should not be collected for at least 96 hours**.

Supplies: Urine Tubes, 10 mL (T068)
Collection Container/Tube: Clean, plastic urine collection container with no metal cap or glued insert
Submission Container/Tube: Plastic urine tube or clean, plastic aliquot container with no metal cap or glued insert
Specimen Volume: 3 mL
Collection Instructions:
1. Collect a random urine specimen.
2. See Metals Analysis Specimen Collection and Transport for complete instructions.

Specimen Minimum Volume
2 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)	28 days	
	Ambient	14 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information
Zinc is an essential element; it is a critical cofactor for carbonic anhydrase, alkaline phosphatase, RNA and DNA polymerases, alcohol dehydrogenase, and many other physiologically important proteins. Zinc is a key element required for active wound healing.

Zinc depletion occurs because it is either not absorbed from the diet (excess copper or iron interfere with absorption) or lost after absorption. Dietary deficiency may be due to absence (parenteral nutrition) or because the zinc in the diet is bound to fiber and not available for absorption. Once absorbed, the most common route of loss is via exudates from open wounds, such as third-degree burns, or gastrointestinal loss as in colitis. Hepatic cirrhosis also causes excess loss of zinc by enhancing renal excretion. The peptidase, kinase, and phosphorylase enzymes are most sensitive to zinc depletion.

Zinc excess is not of major clinical concern. The popular American habit of taking megavitamins (containing huge doses of zinc) produces no direct toxicity problems. Much of this zinc passes through the gastrointestinal tract and is excreted in the feces. The excess fraction that is absorbed is excreted in the urine. The only known effect of excessive zinc ingestion relates to the fact that zinc interferes with copper absorption, which can lead to hypocupremia.

Reference Values
ZINC/CREATININE:
0-17 years: Not established
> or =18 years: 89-910 mcg/g creatinine

CREATITINE:
> or =18 years old: 16-326 mg/dL
Reference values have not been established for patients who are younger than 18 years.

Interpretation
Fecal excretion of zinc is the dominant route of elimination. Renal excretion is a minor, secondary elimination pathway. Normal daily excretion of zinc in the urine is in the range of 89 to 910 mcg/g creatinine.

High urine zinc associated with low serum zinc may be caused by hepatic cirrhosis, neoplastic disease, or increased catabolism.

High urine zinc with normal or elevated serum zinc indicates a large dietary source, usually in the form of high-dose vitamins.

Low urine zinc with low serum zinc may be caused by dietary deficiency or loss through exudation common in burn patients and those with gastrointestinal losses.

Cautions

No significant cautionary statements

Clinical Reference

1. Sata F, Araki S, Murata K, Aono H. Behavior of heavy metals in human urine and blood following calcium disodium ethylenediamine tetraacetate injection: observations in heavy metal workers. J Toxicol Environ Health A. 1998;54(3):167-178
2. Afridi HI, Kazi TG, Kazi NG, et al. Evaluation of cadmium, lead, nickel and zinc status in biological samples of smokers and nonsmokers hypertensive patients. J Hum Hypertens. 2010;24(1):34-43
3. Zorbas YG, Kakuris KK, Neofitov IA, Afoninos NI. Zinc utilization in zinc-supplemented and-unsupplemented healthy subjects during and after prolonged hypokinesia. Tr Elem Electro. 2008;25(2):60-68. doi:10.5414/TEP25060
4. Roohani N, Hurrell R, Kelishadi R, Schulin R. Zinc and its importance for human health: An integrative review. J Res Med Sci. 2013;18(2):144-157
5. Rifai N, Chiu RWK, Young I, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 7th ed. Elsevier; 2023

Performance

Method Description

The metal of interest is analyzed by triple-quadrupole inductively-coupled plasma mass spectrometry.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday, Thursday

Report Available

2 to 5 days

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Superior Drive

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 was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

84630
82570

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
ZNUCR	Zinc/Creat Ratio, Random, U	13473-4

Result ID	Test Result Name	Result LOINC® Value
CRETR	Creatinine, Random, U	2161-8
615260	Zinc/Creat Ratio, U	13473-4