MAYO CLINIC LABORATORIES

Test Definition: ZNU

Zinc, 24 Hour, Urine

Overview

Useful For

Identifying the cause of abnormal serum zinc concentrations using 24-hour urine specimens

Special Instructions

- Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens
- Metals Analysis Specimen Collection and Transport

Method Name

Triple-Quadrupole Inductively Coupled Plasma Mass Spectrometry (ICP-MS/MS)

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.

Necessary Information

24-Hour volume (in milliliters) is required.

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: 10 mL

Collection Instructions:

1. Collect urine for 24 hours.
2. Refrigerate specimen within 4 hours of completion of 24-hour collection.
3. See Metals Analysis Specimen Collection and Transport for complete instructions.

Additional Information: See Urine Preservatives-Collection and Transportation for 24-Hour Urine Specimens for multiple collections.

Urine Preservative Collection Options

Note: The addition of preservative or application of temperature controls **must occur within 4 hours of completion** of the collection.

Ambient (no additive)	OK
Refrigerate (no additive)	Preferred
Frozen (no additive)	OK
50% Acetic Acid	OK
Boric Acid	No
Diazolidinyl Urea	No
6M Hydrochloric Acid	OK
6M Nitric Acid	OK
Sodium Carbonate	No
Toluene	No

Specimen Minimum Volume

0.4 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	28 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

0-17 years: Not established
> or =18 years: 109-1,476 mcg/24 h

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 20 to 967 mcg/24 h.

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

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

Low urine zinc levels associated with low serum zinc concentrations 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
4. Rifai N, Horwath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018

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

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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

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
ZNU	Zinc, 24 Hr, U	5765-3

Result ID	Test Result Name	Result LOINC® Value
8591	Zinc, 24 Hr, U	5765-3
TM8	Collection Duration (h)	13362-9
VL5	Volume (mL)	3167-4