

Overview

Useful For

Detecting zinc deficiency

Special Instructions

- [Trace Metals Analysis Specimen Collection and Transport](#)

Method Name

Dynamic Reaction Cell-Inductively Coupled Plasma-Mass Spectrometry (DRC-ICP-MS)

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Patient Preparation: High concentrations of gadolinium, iodine, and barium are known to interfere with most metals tests. If gadolinium-, iodine-, or barium-containing contrast media has been administered, a specimen should not be collected for at least 96 hours.

Supplies:

-Metal Free B-D Tube (No Additive), 6 mL (T184)

-Metal Free Specimen Vial (T173)

Collection Container/Tube: 6-mL Plain, royal blue-top Vacutainer plastic trace element blood collection tube

Submission Container/Tube: 7-mL Metal-free, screw-capped, polypropylene vial

Specimen Volume: 0.8 mL

Collection Instructions:

1. Allow the specimen to clot for 30 minutes after collection; then centrifuge the specimen to separate serum from the cellular fraction. Serum must be removed from cellular fraction within 4 hours of specimen collection. Avoid hemolysis.
2. Remove the stopper. Carefully **pour** specimen into a metal-free, polypropylene vial, avoiding transfer of the cellular components of blood. **Do not** insert a pipet into the serum to accomplish transfer, and **do not** ream the specimen with a wooden stick to assist with serum transfer.
3. See [Trace Metals Analysis Specimen Collection and Transport](#) in Special Instructions for complete instructions.

Forms

If not ordering electronically, complete, print, and send a [General Request](#) (T239) with the specimen.

Specimen Minimum Volume

0.2 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	28 days	METAL FREE
	Ambient	28 days	METAL FREE
	Frozen	28 days	METAL FREE

Clinical and 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. The peptidases, kinases, and phosphorylases are most sensitive to zinc depletion. Zinc is a key element required for active wound healing.

Zinc depletion occurs either because it is not absorbed from the diet (excess copper or iron interfere with absorption) or it is lost after absorption. Dietary deficiency may be due to absence (parenteral nutrition), or because the zinc in the diet is bound to phytate (fiber) and not available for absorption. Excess copper and iron in the diet (eg, iron supplements) interfere with zinc uptake. Once absorbed, the most common route of loss is via exudates from open wounds or gastrointestinal loss. Zinc depletion occurs in burn patients who lose zinc in the exudates from their burn sites. Hepatic cirrhosis causes excess loss of zinc by enhancing renal excretion. Other diseases that cause low serum zinc are ulcerative colitis, Crohn disease, regional enteritis, sprue, intestinal bypass, neoplastic disease, and increased catabolism induced by anabolic steroids. The conditions of anorexia and starvation also result in low zinc levels.

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

0-10 years: 0.60-1.20 mcg/mL

> or =11 years: 0.66-1.10 mcg/mL

Interpretation

Normal serum zinc is 0.66 to 1.10 mcg/mL.

Burn patients with acrodermatitis may have zinc as low as 0.4 mcg/mL; these patients respond quickly to zinc supplementation.

Elevated serum zinc is of minimal clinical interest.

Cautions

Hemolyzed specimens will cause false elevation of serum zinc levels.

It is essential that the specimen is collected following the trace metals collection procedure (see [Trace Metals Analysis Specimen Collection and Transport](#) in Special Instructions.)

Clinical Reference

1. Tucker SB, Schroeter AL, Brown PW Jr, McCall JT: Acquired zinc deficiency: cutaneous manifestations typical of acrodermatitis enteropathica. JAMA. 1976;235:2399-2402
2. Skelton JA, Havens PL, Werlin SL: Nutrient deficiencies in tube-fed children. Clin Pediatr (Phila). 2006;45(1):37-41
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;25:60-68
4. Rifai N, Horwath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018

Performance

Method Description

Zinc in serum is analyzed by inductively coupled plasma-mass spectrometry in dynamic reaction cell mode using gallium as an internal standard and a salt matrix calibration.(Unpublished Mayo method)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday; 2 p.m.

Tuesday through Friday; 5 p.m.

Saturday; 2 p.m.

Analytic Time

1 day

Maximum Laboratory Time

3 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. 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. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

84630

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
ZNS	Zinc, S	5763-8

Result ID	Test Result Name	Result LOINC Value
8620	Zinc, S	5763-8