MAYO CLINIC LABORATORIES

Test Definition: ZN_S

Zinc, Serum

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 metal tests. If gadolinium-, iodine, or barium-containing contrast media has been administered, a specimen should not be collected for 96 hours.
Supplies: 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 Mayo metal-free, screw-capped, polypropylene vial
Specimen Volume: 0.8 mL
Collection Instructions:
1. Allow the specimen to clot for 30 minutes; 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 Mayo 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 for complete instructions.

Forms
If not ordering electronically, complete, print, and send General Test 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 & 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 kidney 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 mega-vitamins (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: 60-120 mcg/dL
11-17 years: 66-110 mcg/dL
> or =18 years: 60-106 mcg/dL

Interpretation

Normal serum zinc levels are from 66 to 106 mcg/dL in adults.

Burn patients with acrodermatitis may have zinc as low as 40 mcg/dL; 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.

Clinical Reference

1. Tucker SB, Schroeter AL, Brown PW Jr, McCall JT: Acquired zinc deficiency. Cutaneous manifestations typical of acrodermatitis enteropathica. JAMA. 1976 May 31;235(22):2399-2402
2. Skelton JA, Havens PL, Werlin SL: Nutrient deficiencies in tube-fed children. Clin Pediatr. 2006 Jan-Feb;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 hypokinesis. 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

The metal of interest is analyzed by inductively coupled plasma mass spectrometry.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday through Saturday

Report Available

1 to 3 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

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. This test 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
ZN_S	Zinc, S	5763-8

Result ID	Test Result Name	Result LOINC® Value
7735	Zinc, S	5763-8