
Lab Dept: Chemistry

Test Name: COPPER, SERUM

General Information

Lab Order Codes: COPP

Synonyms: Cu, blood

CPT Codes: 82525 - Copper

Test Includes: Copper level reported in mcg/mL.

Logistics

Test Indications: Useful for diagnosis of Wilson's disease, primary biliary cirrhosis (PBC) and primary sclerosing cholangitis (PSC).

In normal serum, more than 95% of the copper is incorporated into the enzyme, ceruloplasmin; the remaining copper is loosely bound to albumin. A deficiency in copper results in severe derangement in growth and metabolism and impairment of erythropoiesis.

Lab Testing Sections: Chemistry - Sendouts

Referred to: Mayo Medical Laboratories (MML Test: CUS)

Phone Numbers: MIN Lab: 612-813-6280

STP Lab: 651-220-6550

Test Availability: Daily, 24 hours

Turnaround Time: 1 - 3 days; performed Monday-Saturday

Special Instructions: See [Container](#) and [Collection](#) and [Patient Preparation](#) for special requirements.

Specimen

Specimen Type: Blood

Container: **Dark Blue top with Red Stripe** [Metal Free Navy (No additive) tube] – available from the laboratory)

Draw Volume: 2.4 mL (Minimum: 1.5 mL) blood

Processed Volume: 0.8 mL (Minimum: 0.2 mL) serum

Note: Submission of the minimum volume does not allow repeat analysis.

Collection: Use stainless steel needle or butterfly vacutainer collection. Collect in a royal blue top tube (See [Container](#)). Avoid hemolysis.

Special Processing: Lab Staff: Blood specimens for serum testing should be collected in the dark blue-top with red stripe, Trace Element Blood Collection Tube.

1. Allow the specimen to clot for 30 minutes; then centrifuge the specimen to separate serum from the cellular fraction within 4 hours of specimen collection.

2. Remove the stopper and carefully pour serum aliquot into a 7 mL, Mayo metal free, screw-capped, polypropylene vial (Mayo Supply T173), 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. Place the cap on the polypropylene vial tightly, attach a specimen label and send specimen to the laboratory refrigerated.

Patient Preparation: Gadolinium is known to interfere with most metal tests. If gadolinium-containing contrast media has been administered, a specimen cannot be collected for 48 hours

Sample Rejection: Specimens other than serum; mislabeled or unlabeled specimens

Interpretive

Reference Range:

| Age: | Reference Range (mcg/mL) |
|-------------------|---------------------------------|
| 0 – 2 mos. | 0.40 – 1.40 mcg/mL |
| 3 – 6 mos. | 0.40 – 1.60 mcg/mL |
| 7 – 9 mos. | 0.40 – 1.70 mcg/mL |
| 10 – 12 mos. | 0.80 – 1.70 mcg/mL |
| 13 mos. – 10 yrs. | 0.80 – 1.80 mcg/mL |
| ≥11 yrs. | 0.75 – 1.45 mcg/mL |

Critical Values: N/A

Limitations: Gadolinium is known to interfere with most metal tests. If gadolinium-containing contrast media has been administered, a specimen cannot be collected for 96 hours.

Methodology: Dynamic Reaction Cell (DRC) II Inductively Coupled Plasma Mass Spectrophotometry (DRC-ICP-MS)

References: [Mayo Medical Laboratories Web Page](#) December 2017

Updates:
11/11/2008: Reference range previously reported as 0.75 - 1.45 µg/mL for all ages. New reference ranges have now been established for pediatrics.
4/6/2010: Method change; previously listed as Inductively Coupled Plasma (ICP) Emission Spectroscopy
9/9/2014: Clarification of tube type.
11/23/2016: Updated minimum volume due to short samples.
2/14/2017: Tube update.