MAYO CLINIC LABORATORIES

Test Definition: TRSF

Transferrin, Serum

Overview

Useful For

Evaluation of iron overload diseases

Evaluation of iron deficiency as a cause of anemia

Method Name

Immunoturbidimetric

NY State Available

No

Specimen

Specimen Type

Serum

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL
Collection Instructions:
1. Within 2 hours of collection, centrifuge the specimen.
2. For serum gel tubes, aliquot serum into a plastic vial prior to shipment.
3. For red-top tubes, aliquot the serum into a plastic vial immediately after centrifuging.

Forms

If not ordering electronically, complete, print, and send a Benign Hematology Test Request Form (T755) with the specimen.

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK

Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	7 days	
	Ambient	7 days	
	Frozen	180 days	

Clinical & Interpretive

Clinical Information

Transferrin is the primary plasma iron transport protein, which binds iron strongly at physiological pH. It is a glycoprotein with an approximate molecular weight of 80 kDa, consisting of a polypeptide strand with two N-glycosidically linked oligosaccharide chains with two homologous binding sites for ferric (Fe 3+) iron serving to keep iron nonreactive in circulation and deliver it to cells with transferrin receptors.

The rate of transferrin synthesis in the liver can be altered according to the body's iron requirements and iron reserves. The circulating concentration increases in response to iron deficiency and decreases in response to iron overload. Transferrin concentration also depends on liver function and nutritional status. It also acts as a negative acute phase reactant, decreasing in concentration in the presence of inflammation; however, it has a minor intraindividual biologic variation of 5%. Transferrin is generally only 25% to 30% saturated with iron. Total iron binding capacity (TIBC) can be estimated from transferrin concentration using the molecular weight of the transferrin and accounting that 1 transferrin molecule can bind 2 atoms of iron.(1)

The degree of iron saturation is a more useful indicator of functional iron depletion or overload than transferrin concentration alone. Serum iron, TIBC, and percent saturation are widely used for the diagnosis of iron deficiency and hemochromatosis. However, serum ferritin is a much more sensitive and reliable test for demonstration of iron deficiency. Soluble transferrin receptor performs similarly and is unaffected by inflammation. Reticulocyte hemoglobin has also been used as a sensitive early indicator of iron deficiency and anemia.

Reference Values

200-360 mg/dL

Interpretation

Transferrin concentrations are elevated in anemia of chronic disease and iron overload conditions.(1)

Transferrin concentrations are decreased in iron deficiency, iron deficiency anemia, and iron-refractory iron deficiency anemia.(1)

Cautions

An elevated transferrin may also occur in pregnancy and with the use of oral contraceptives.

A low transferrin may also occur due to malnutrition, inflammation, liver disease, or nephrotic syndrome.

Clinical Reference

1. Swinkels DW. Iron metabolism. In: Rifai N, Chiu RWK, Young I, Burnham CD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:chap 40
2. Lopez A, Cacoub P, Macdougall IC, Peyrin-Biroulet L. Iron deficiency anaemia. Lancet. 2016;387(10021):907-916

Performance

Method Description

Human transferrin forms a precipitate with a specific antiserum, which **is** determined turbidimetrically.(Package insert: TRSF2 reagent. Roche Diagnostics; v10.0, 04/2022)

PDF Report

No

Day(s) Performed

Monday through Saturday

Report Available

Same day/1 to 3 days

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Jacksonville Clinical Lab

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 has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

84466

LOINC® Information

Test Definition: TRSF

Transferrin, Serum

Test ID	Test Order Name	Order LOINC® Value
TRSF	Transferrin, S	3034-6

Result ID	Test Result Name	Result LOINC® Value
TRSF	Transferrin, S	3034-6