

Overview

Useful For

[Evaluation of suspected hereditary spherocytosis associated hemolytic anemia](#)

Confirming or detecting mild spherocytosis

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
FRAGO	Osmotic Fragility	No	Yes
SCTRL	Shipping Control Vial	No	Yes

Method Name

Osmotic Lysis

NY State Available

Yes

Specimen

Specimen Type

Control

Whole Blood EDTA

Shipping Instructions

Specimens must arrive within 72 hours of collection.

Necessary Information

Patient's age and sex are required.

Specimen Required

Both a whole blood EDTA specimen and a control specimen are required as temperature extremes can increase the fragility of the specimen and cause false-positive results.

Patient:

Container/Tube: Lavender top (EDTA)

Specimen Volume: 4 mL

Collection Instructions:

1. Immediately refrigerate specimen after collection. Refrigerate at 0 to 4 degrees C. **Do not freeze.** Freezing causes sample lysis, and tests will not be performed on hemolyzed specimens.
2. Send specimen in original tube. **Do not aliquot.**
3. Rubber band patient specimen and control vial together. Control must accompany the patient sample at all times to ensure the reliability of testing results.
4. Be sure specimen and control are stored and transported together at refrigerated temperature, carefully following proper handling and shipping instructions.

Normal Shipping Control:

Specimen Type: Whole blood

Container/Tube: Lavender top (EDTA)

Specimen Volume: 4 mL

Collection Instructions:

1. Draw a control specimen from a normal (healthy), unrelated, nonsmoking person at the same time as the patient.
2. **Handwrite "normal control"** clearly on the outermost label.
3. Immediately refrigerate specimen after collection. Refrigerate at 0 to 4 degrees C. **Do not freeze.** Freezing causes sample lysis, and tests will not be performed on hemolyzed specimens.
4. Send specimen in original tube. **Do not aliquot.**
5. Rubber band patient specimen and control vial together. Control must accompany the patient sample at all times to ensure the reliability of testing results.

Forms

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

Reject Due To

Gross hemolysis Reject
Clotted blood Reject

Specimen Minimum Volume

2 mL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Control	Refrigerated (preferred)		PURPLE OR PINK TOP/EDTA
Whole Blood EDTA	Refrigerated (preferred)		

Clinical & Interpretive

Clinical Information

Spherocytes are osmotically fragile cells that rupture more easily in a hypotonic solution than do normal RBCs. Because they have a low surface area:volume ratio, they lyse at a higher osmolarity than do normal discocyte (RBCs). Cells that have a larger surface area:volume ratio, such as target cells or hypochromic cells are more resistant to lysing. After incubation, an increase in hemolysis is seen in spherocytes. Hereditary spherocytosis typically has greater number of spherocytes than other causes of spherocytosis. Therefore, the degree of lysis is usually more pronounced, but this is not always the case. Some rare disorders can also cause marked fragility and hereditary spherocytosis cases can display moderate fragility.

Reference Values

> or =12 months:

0.50 g/dL NaCl (unincubated): 3-53% hemolysis

0.60 g/dL NaCl (incubated): 14-74% hemolysis

0.65 g/dL NaCl (incubated): 4-40% hemolysis

0.75 g/dL NaCl (incubated): 1-11% hemolysis

Reference values have not been established for patients who are <12 months of age.

Interpretation

An interpretive report will be provided.

Cautions

Spherocytosis of any cause will result in increased osmotic fragility. Infrequently, other congenital hemolytic disorders may also be associated with positive results, as in patients with congenital nonspherocytic hemolytic anemia due to RBC enzyme deficiencies.

Patients with an immunohemolytic anemia, or who have recently received a blood transfusion may also have increased RBC lysis.

Resulting Cautions:

Osmotic fragility results will be reported if the shipping control is normal.

If the shipping control is abnormal and the osmotic fragility results on the patient are within normal range, the results will be reported; however, a comment will be added to the report indicating that the shipping control was not entirely satisfactory.

The test will be cancelled if the patient specimen and shipping control are both abnormal.

Clinical Reference

Palek J, Jarolin P: Hereditary spherocytosis. *In* Hematology. Fourth edition. Edited by WJ Williams, E Beutler, AJ Erslev, MA Lichtman. New York, McGraw-Hill Book Company, 1990, pp 558-569

Performance**Method Description**

Specimens for erythrocyte osmotic fragility tests are anticoagulated with EDTA. Osmotic lysis is performed using sodium chloride (NaCl) solution, 0.50 g/dL. An incubated fragility test is performed following 24-hour incubation at 37 degrees C at the following NaCl concentrations: 0.60, 0.65, and 0.75 g/dL. Results are reported and interpreted. (Larson CJ, Scheidt R, Fairbanks VF: The osmotic fragility test for hereditary spherocytosis: use of EDTA-anticoagulated blood stored at 4 degrees C for up to 96 hours. Am Soc Clin Pathol Meeting Abstract, 1988; Larson CJ, Scheidt R, Fairbanks VF: The osmotic fragility test for hereditary spherocytosis: objective criteria for test interpretation. Am Soc Clin Pathol Meeting Abstract, 1988)

PDF Report

No

Specimen Retention Time

1 week

Performing Laboratory Location

Rochester

Fees & Codes**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

85557

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
FRAG	Osmotic Fragility, RBC	98904-6

Result ID	Reporting Name	LOINC®
9064	Osmotic Fragility, RBC	34964-7
3306	Osmotic Fragility, 0.50 g/dL NaCl	23915-2
3307	Osmotic Fragility, 0.60 g/dL NaCl	23918-6
3308	Osmotic Fragility, 0.65 g/dL NaCl	23920-2
3309	Osmotic Fragility, 0.75 g/dL NaCl	23921-0
3310	Osmotic Fragility Comment	59466-3
SCTRL	Shipping Control Vial	40431-9