

Overview

Useful For

Free T3 (triiodothyronine) is a second- or third-level test of thyroid function; it provides further confirmation of hyperthyroidism, supplementing the T4 (tetraiodothyronine), sensitive thyrotropin, and total T3 assays

Evaluating clinically euthyroid patients who have an altered distribution of binding proteins

Monitoring thyroid hormone replacement therapy

Method Name

Immunoenzymatic Assay

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Patient Preparation: For 12 hours before specimen collection do not take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.

Collection Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Submission Container/Tube: Plastic vial

Specimen Volume: 0.6 mL

Collection Instructions: Centrifuge and aliquot serum into plastic vial.

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	Reject

Specimen Minimum Volume

0.5 mL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	7 days	
	Frozen	90 days	

Clinical & Interpretive**Clinical Information**

Normally T3 (triiodothyronine) circulates tightly bound to thyroxine-binding globulin and albumin. Only 0.3% of the total T3 is unbound (free); the free fraction is the active form.

In hyperthyroidism, both T4 (thyroxine, tetraiodothyronine) and T3 levels (total and free) are usually elevated, but in a small subset of hyperthyroid patients (T3 toxicosis), only T3 is elevated. Generally, free T3 (FT3) measurement is not necessary since total T3 will suffice. However, FT3 levels may be required to evaluate clinically euthyroid patients who have an altered distribution of binding proteins (eg, pregnancy, dysalbuminemia).

Some investigators recommend the FT3 assay for monitoring thyroid replacement therapy, although its clinical role is not precisely defined.

Reference Values

> or =1 year: 2.8-4.4 pg/mL

For SI unit Reference Values, see www.mayocliniclabs.com/order-tests/si-unit-conversion.html

Interpretation

Elevated free T3 (triiodothyronine) values are associated with thyrotoxicosis or excess thyroid hormone replacement.

Cautions

Free T3 (triiodothyronine) is not a sensitive test for hypothyroidism.

Some patients who have been exposed to animal antigens, either in the environment or as part of treatment or imaging procedures, may have circulating anti-animal antibodies present. These antibodies may interfere with the assay reagents to produce unreliable results.

Clinical Reference

1. Welsh KJ, Soldin SJ: DIAGNOSIS OF ENDOCRINE DISEASE: How reliable are free thyroid and total T3 hormone assays?. Eur J Endocrinol. 2016;175(6):R255-R263. doi: 10.1530/EJE-16-0193
2. FT3 Validation 2005 and AIA Retrospective Validation V-139, 2009. Unpublished data

Performance**Method Description**

The instrument used is a Beckman Coulter Dxl 800. The Access free triiodothyronine (T3) assay is a competitive-binding immunoenzymatic assay. A sample is added to a reaction vessel with an anti-T3 monoclonal antibody conjugated to alkaline phosphatase. During the incubation, free T3 in the sample reacts with the anti-T3 antibody. Particles coated with streptavidin and biotinylated T3 analog are added to the mixture. Unoccupied binding sites on the anti-T3 antibody are bridged to the particle through the T3 analog. After incubation in a reaction vessel, materials bound to the solid phase are held in a magnetic field, while unbound materials are washed away. Chemiluminescent substrate is added to the vessel and the light generated by the reaction is measured with a luminometer. The light production is inversely proportional to the concentration of free T3 in the sample. The amount of analyte in the sample is determined from a stored, multipoint calibration curve.(Instruction manual: Beckman Coulter Instructions for Use. Beckman Coulter, Inc; 2020)

PDF Report

No

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes**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

84481

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
FRT3	T3 (Triiodothyronine), Free, S	83127-1

Result ID	Reporting Name	LOINC®
FRT3C	T3 (Triiodothyronine), Free, S	83127-1