

Free Tri-iodothyronine; Free T3

Pseudonyms: FT3

Free T3 is used in the investigation of thyroid disorders. It is not used as a first line test. TSH and Free T4 are measured routinely in the assessment of thyroid function. Free T3 is used as an additional test in the investigation of possible subclinical hyperthyroidism; for hypothyroid patients on T3 replacement; or in the management of some hyperthyroid patients on starting treatment.

General information

Collection container:

Adults – serum (with gel separator, 4.9mL brown top Sarstedt tube)

Paediatrics – lithium heparin plasma (1.2mL orange top Sarstedt tube)

Type and volume of sample:

The tubes should be thoroughly mixed before transport to the lab. 1mL whole blood is required as a minimum volume if only FT3 is requested.

Specimen transport/special precautions:

Samples should not be taken from patients receiving therapy with high biotin doses (i.e. > 5 mg/day) until at least 8 hours following the last biotin administration.

Laboratory information

Method principle:

Free T3 is analysed on the automated instruments by competitive immunoassay with electrochemiluminescence detection.

Biological reference ranges:

Adults (<18 years): 3.6-6.4 pmol/L

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Paediatrics:

Up to 4d	2.3-8.1
Up to 1m	2.4-7.9
Up to 2m	2.5-7.8
Up to 12m	2.7-7.3
Up to 6y	3.0-6.9
Up to 11y	3.3-6.8
Up to 17y	3.5-6.7
Up to 18y	3.5-6.7

Turnaround times:

Results should be available the same working day.

A request can be added on for this test to a sample collected no older than 7 days.

Clinical information

Factors known to significantly affect the results: Drugs or non-thyroidal illness significantly affecting binding protein concentrations may alter the result. Low free T3 results can also be seen in non-thyroidal illness due to an increase in reverse-T3 formation. Results can be misleading in patients with Familial Dysalbuminaemic Hyperthyroxinaemia. Autoantibodies to thyroid hormones can interfere in the assay.

Clinical decision points: Patients with hyperthyroidism have high free T3 concentrations and suppressed TSH (<0.1 mU/L).

A low or suppressed TSH and borderline raised FT3 and/or FT4 is consistent with subclinical hyperthyroidism and should be monitored clinically and biochemically.

(Last updated September 2020)