

REFERENCES

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Warning

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Free Triiodothyronine (fT3) ELISA

Catalog No. BQ 106T (96 tests)

INTENDED USE

The fT3 ELISA kit is used for the quantitative measurement of free Triiodothyronine (fT3) in human serum or plasma.

SUMMARY AND EXPLANATION

Over 99% of Triiodothyronine (T3) circulates in blood is bound to carrier proteins; thyroxine-binding globulin (TBG). However, only the free (unbound) portion of T3 is responsible for the biological action. Further, the concentrations of the carrier proteins are altered in many clinical conditions, such as pregnancy. In normal thyroid function as the concentrations of the carrier proteins alters, the total T3 level changes so that the freeT3 concentration remains constant. Thus, measurements of free T3 concentrations correlate more reliably with clinical status than total T3 levels. The increase in total T3 levels associated with pregnancy, oral contraceptives and estrogen therapy result in higher total T3 levels while the free T3 concentration remains basically unchanged.

PRINCIPLE OF THE TEST

The fT3 is a solid phase competitive ELISA. The samples, assay buffer and fT3 enzyme conjugate are added to the wells coated with anti-T3 monoclonal antibody. fT3 in the patient's serum competes with a T3 enzyme conjugate for binding sites. Unbound T3 and T3 enzyme conjugate is washed off by washing buffer. Upon the addition of the substrate, the intensity of color is inversely proportional to the concentration of fT3 in the samples. A standard curve is prepared relating color intensity to the concentration of the fT3.

MATERIALS PROVIDED	48 tests	96 tests
1. Microwell coated with fT3 MAb	6x8x1	12x8x1
2. fT3 Standard: 6 vials (ready to use)	0.35ml	0.7ml
3. fT3 Enzyme conjugate: 1 Bottle (ready to use)	6 ml	12 ml
4. TMB Substrate: 1 bottle (ready to use)	12ml	12ml
5. Stop Solution: 1 bottle (ready to use)	12ml	12ml
6. 20X Wash concentrate: 1 bottle	25ml	25ml

MATERIALS NOT PROVIDED

1. Distilled or deionized water
2. Precision pipettes
3. Disposable pipette tips
4. ELISA reader capable of reading absorbance at 450nm
5. Absorbance paper or paper towel
6. Graph paper

STORAGE AND STABILITY

1. Store the kit at 2 – 8° C.
2. Keep microwells sealed in a dry bag with desiccants.
3. The reagents are stable until expiration of the kit.

WARNINGS AND PRECAUTIONS

- Potential biohazardous materials:
The calibrator and controls contain human source components, which have been tested and found non-reactive for hepatitis B surface antigen as well as HIV antibody with FDA licensed reagents. However there is no test method that can offer complete assurance that HIV, Hepatitis B virus or other infectious agents are absent. These reagents should be handled at the Biosafety Level 2, as recommended in the Centers for Disease Control/National Institutes of Health manual, "Biosafety in Microbiological and Biomedical Laboratories" 1984.
- This test kit is designed for in vitro diagnostic use only.
- Do not pipette by mouth. Do not smoke, eat, or drink in the areas in which specimens or kit reagents are handled.
- The components in this kit are intended for use as an integral unit. The components of different lots should not be mixed.
- It is recommended that standards, control and serum samples be run in duplicate.
- Optimal results will be obtained by strict adherence to this protocol. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from this may yield invalid data.

SPECIMEN COLLECTION HANDLING

- Collect blood specimens and separate the serum immediately.
- Specimens may be stored refrigerated at (2-8° C) for 5 days. If storage time exceeds 5 days, store frozen at (-20° C) for up to one month.
- Avoid multiple freeze-thaw cycles.
- Prior to assay, frozen sera should be completely thawed and mixed well.
- Do not use grossly lipemic specimens.

REAGENT PREPARATION

- Prepare 1X Wash buffer by adding the contents of the bottle (25 ml, 20X) to 475 ml of distilled or deionized water. Store at room temperature.

ASSAY PROCEDURE

Before proceeding with the assay, bring all reagents, standards and controls to room temperature (18-26°C).

- Format the microplates' wells for control, standard and patient samples to be assayed in duplicate. Place any unused microwell strips back into the aluminum bag, seal and store at 2-8°C.
- Pipette 50 µl of FT3 standards, control and samples into the assigned well.
- Add 100 µl of FT3 enzyme conjugate to all wells.
- Incubate for 60 minutes at room temperature (18-26° C).
- Remove liquid from all wells. Fill wells with 300 µl 1X wash buffer (see buffer preparation above) Wash three times. Blot on absorbent paper towels.
- Add 100 µl of TMB substrate to all wells.
- Incubate for 15 minutes at room temperature.
- Add 50 µl of stop solution to all wells. Shake the plate gently to mix the solution.
- Read absorbance on ELISA Reader at 450 nm within 15 minutes after adding the stopping solution.

CALCULATION OF RESULTS

The standard curve is constructed as follows:

- Check FT3 standard value on each standard vial. This value might vary from lot to lot. Make sure you check the value on every kit.
- To construct the standard curve, plot the absorbance for FT3 standards (vertical axis) versus FT3 standard concentrations (horizontal axis) on a linear graph paper. Draw the best curve through the points.
- Read the absorbance for controls and each unknown sample from the curve. Record the value for each control or unknown sample.

EXPECTED VALUES

It is recommended that each laboratory establish its own normal ranges based on a representative sampling of the local population. The following values for FT3 were established by the and may be used as initial guideline ranges only:

Classification	pg/ml
Adult	1.4-4.2

LIMITATIONS OF THE TEST

- The test results obtained using this kit serve only as an aid to diagnosis and should be interpreted in relation to the patient's history, physical findings and other diagnostic procedures.
- Do not use sodium azide as preservative. Sodium azide inhibits HRP enzyme activities.

PERFORMANCE CHARACTERISTICS

1. Correlation with a Reference ELISA kit:

A total of 128 sera were tested by FT3 ELISA and a reference ELISA kit. Results were as follows:

Correlation	Slope	Intercept
0.95	0.925	0.15

2. Precision

- Intra-Assay Precision was determined by assaying 16 replicates of each of three sera; normal, low and high.

Serum	No. of Replicates	Mean pg/ml	Standard Deviation	Coefficient of Variation (%)
1	20	1.3	0.16	11.9
2	20	4.2	0.17	4.1
1	20	7.1	0.17	2.4

- Inter assay Precision was determined by assaying duplicates of three serum pools in 10 separate runs, using a standard curve constructed for each run.

Serum	No. of Runs	Mean pg/ml	Standard Deviation	Coefficient of Variation (%)
1	10	1.4	0.15	10.7
2	10	4.4	0.13	5.2
3	10	7.0	0.30	4.2

3. Sensitivity

The sensitivity was determined by calculating the mean plus 2SD of the standard zero point tested 20 times in the same run.

Serum	Mean + 2SD (Sensitivity)
Zero Standard	0.05 pg/ml

4. Specificity

The cross reaction of the Triiodothyronine antibody to selected substances was evaluated by adding the interfering substance to a serum matrix at various concentrations. The cross-reactivity was calculated by driving a ratio between dose of interfering substance to dose og Triiodothyronine needed to displace the same amount of tracer

Substance	Cross reactivity	Concentration (µg/ml)
I-Triiodothyronine	1.0000	-
I-Thyroxine	<0.0002	10
Iodothyrosine	<0.0001	10
Diiiiodothyrosine	<0.0001	10
Diiodothyronine	<0.0001	10
Phenelbutazone	<0.0001	10
Sodium Salicylate	<0.0001	10