



ELEGANCE FT₄ ELISA KIT

REF 40 465096

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WARRANTY

The manufacturer makes no express warranty other than the diagnostic kit will measure the designated analyte when used in accordance with the manufacturer's printed instructions. The use of the diagnostic kit for any other purpose is outside the intended use of this product and is done at the user's own risk.

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Manufactured by Bioclone Australia Pty Limited
(a subsidiary of Hitachi Chemical Co., Ltd) ABN 14 002 036 071
71-73 Railway Parade Marrickville NSW AUSTRALIA 2204
Tel +61 (0) 2 9517 1966 Fax +61 (0) 2 9517 2990 Freecall 1800 251 138
Email sales@bioclone.com.au Web www.bioclone.com.au

EC REP Hitachi Chemical Diagnostics Inc.
Hitachi Europe Limited, Whitebrook Park, Lower Cookham Road
Maidenhead, Berkshire, SL6 8YA, UK. Tel: +44 1628 585 591

INTENDED USE

The ELEGANCE FT₄ ELISA has been designed for the quantitative *in vitro* diagnostic measurement of Free Thyroxine (FT₄) in serum or plasma.

PRINCIPLES OF THE ELEGANCE ELISA

The ELEGANCE ELISA is an enzyme-linked immunoassay incorporating anti-T₄ monoclonal antibody (Antibody Reagent) and an anti-murine IgG polyclonal antibody bound to microwells. It is a two-step ("back titration") method, utilising a T₄ horseradish peroxidase conjugate (T₄-HRP) to produce the signal generated. During the incubation, complexes are formed between the antibodies and sample antigen. The microwells are washed to remove any unbound material. T₄-HRP (Conjugate Reagent) is added and binds to the unoccupied antigen-binding sites of the monoclonal antibody. After washing, the substrate solution reacts with any bound peroxidase to produce colour inversely proportional to the amount of sample antigen, which can be calculated from the calibrator curve.

ELEGANCE REAGENTS PROVIDED, STABILITY AND STORAGE

Kit size - 96 tests. The kit and all its components, unopened or opened, should be stored at 2-8°C until the listed expiry dates.

FT₄: Coated Microwells 96 wells REF # T4A96

Frame containing microwells coated with anti-murine IgG antibody. Ready to use.

FT₄: Antibody Reagent 1 vial REF # T4B96

10 mL murine anti-T₄ antibody in a buffered solution containing animal serum and a blue dye. Contains sodium azide, 0.1% w/v. Ready to use.

FT₄: Conjugate Reagent 1 vial REF # T4C96

10 mL T₄-HRP conjugate in a buffered solution containing a violet dye. Contains thiomersal, 0.2% v/v and thiomersal, 0.02% w/v. Ready to use.

Wash Concentrate 1 vial REF # EWC96

50 mL of a 15 x concentrated wash solution. Contains thiomersal, 0.09% w/v. To be diluted before use.

Substrate Buffer 1 vial REF # ESB20

20 mL urea peroxide in a citrate-phosphate buffer. Contains thiomersal, 0.01% w/v.

Substrate Tablets

1 vial REF # EST4

4 x 4 mg tablets of ortho-phenylenediamine (OPD) with inactive ingredients.

FT₄: Calibrators

6 vials REF # ET4S1-6

0.25 mL each in human serum. Contains sodium azide, 0.1% w/v. Ready to use.

PRECAUTIONS AND WARNINGS TO USERS

Handling of specimens and kit components, their use, storage and disposal should be in accordance with any local or national laboratory safety procedures or regulations.

Specimens and Calibrators

The source material of the calibrators has been tested by an approved accredited method for the presence of hepatitis B surface antigen, antibody to hepatitis C and antibody to HIV - 1/2 (AIDS) and has been found to be non-reactive for all. However, it is recommended that all samples be handled as if capable of transmitting infectious disease.

Preservatives

The kit contains sodium azide, thiomersal and Bronidox L as preservatives. As reagents contain potentially toxic preservatives, care should be taken in handling, to avoid ingestion or skin contact. Sodium azide may react with lead and copper plumbing to form potentially explosive azides.

Substrate

Avoid any skin contact.

SPECIMEN COLLECTION AND HANDLING

No special patient preparation is required. Specimens can be either serum or plasma collected in a manner appropriate for laboratory testing. Serum is preferred, however the anticoagulants heparin or EDTA can be employed without sacrificing accuracy.

Avoid grossly haemolytic, lipaemic and turbid specimens.

Specimens can be stored at 2-8°C for up to 48 hours. Specimens held for longer should be stored at or below -20°C. Specimens should not be frozen and thawed repeatedly. Thawed specimens should be checked for flocculent matter and mixed by inversion just prior to testing.

Turbid specimens or specimens containing particulate matter should be centrifuged prior to use.

MATERIALS AND EQUIPMENT REQUIRED BUT NOT PROVIDED

- * Distilled or deionised water
- * 1M H₂SO₄
- * Precision pipettes
- * Repeating pipette
- * 1L measuring cylinder
- * Absorbent tissue (lint-free)
- * Timer
- * Vortex mixer
- * Microtitre plate shaker
- * Microtitre plate washer
- * Microplate reader system.

PROCEDURAL NOTES

Bring all reagents and specimens to room temperature (20-25°C) and mix by gentle inversion prior to use. Duplicates are recommended. Contamination of reagents will lead to poor performance. A calibrator curve should be run with each assay.

All assay steps should be performed without interruption, but if the wells cannot be filled with Conjugate Reagent or substrate solution immediately after washing, then the microwells may be left upside down on absorbent lint-free tissue for a maximum of 15 minutes.

Reagents are matched in each kit and therefore reagents from different lot numbers should not be mixed.

The photometer and all pipettes used should be calibrated appropriately before use.

Washing

The efficiency of the wash step is vital for good precision. Microwells are washed using an automatic plate washer. Avoid overflows from one well to another.

Quality Control

Control specimens should be run in every assay to ensure correct procedure. Control values should lie within laboratory ranges before assay is approved.

ASSAY PROCEDURE

Preparation of Reagents

Wash Solution

Dilute the wash concentrate 1 in 15 with deionised water. The wash solution can be stored at room temperature (20-25°C) for 12 weeks.

Substrate Solution

It is recommended that this reagent be made up just prior to use. Place correct number of OPD tablets into the required amount of Substrate Buffer. Add 1 tablet per 5 mL.

After tablets have completely dissolved (1-2 minutes) and no bubbles remain, replace stopper on bottle and mix by inversion. Avoid strong light. The substrate solution must be used within 30 minutes of preparation.

Calibrators

Mix vials by gentle inversion. Exact concentrations determined lot-to-lot are stated on a separate label inside the kit. The calibrators should be stored at -20°C for up to 4 weeks.

Protocol

1. Assemble the microwells in the frame according to the number of tests required. Bag and return unused wells to 2-8°C.
2. Pipette 25 µL of sample (calibrator, control, specimen) in duplicate into the appropriate wells. Time taken to dispense the samples should not exceed 40 minutes.
3. Pipette 100 µL of FT₄ Antibody Reagent (blue) into all wells.
4. Cover microwells with lid and incubate for 60 minutes on a plate shaker at room temperature (20-25°C).
5. After incubation, wash the microwells. Aspirate the liquid and rinse each well 4 times with 250 µL wash solution. After the final wash, invert the microwells and tap firmly on absorbent tissue to remove any remaining wash solution. Ensure that no air bubbles remain in the wells.
6. Pipette 100 µL of FT₄ Conjugate Reagent (violet) into all wells.
7. Cover microwells with lid and incubate for 10 minutes on a plate shaker at room temperature (20-25°C).
8. After incubation, repeat wash step.
9. Pipette 100 µL of prepared substrate solution into all wells. Timing of the incubation step is measured from the addition of substrate solution to the first well.
10. Cover microwells with lid and incubate for 5 minutes stationary at room temperature (20-25°C).
11. Pipette 50 µL of 1M H₂SO₄ into all wells in the same timed sequence as for substrate solution addition.

CALIBRATION

Equilibrium dialysis was used to calibrate the calibrators in this kit which are labelled in pmol/L. Conversion of calibrator units may be made using the following relationship:

$$\text{ng/dL FT}_4 = \text{pmol/L FT}_4 \times 0.078$$

LIMITATIONS

Serum specimens showing gross haemolysis, gross lipaemia, or turbidity may give false results. Avoid heat treated specimens which can give elevated FT₄ values due to denaturation of binding proteins and disturbance of the free/bound T₄ equilibrium. Specimens from patients who have high circulating anti-mouse antibodies as a result of mouse monoclonal antibody therapy may give falsely elevated or depressed levels. These specimens should not be assayed using this kit.

12. Carry out an end-point reading at 490 nm and process data as described in the microplate reader user's manual. This reading step should be carried out within 30 minutes of stopping the reaction.

CALCULATION OF RESULTS

Calculation of results can be carried out manually if there is no automatic data reduction. Determine the OD for each well. Plot the calibrator curve using log-log graph paper with concentration of calibrators on the x-axis and OD on the y-axis. The curve may be drawn point-to-point or a curve-fitting routine, such as 4-parameter logistic interpolation, may be used. Interpolate the sample values from OD measured from this calibrator curve.

Record the value for each sample in pmol/L FT₄. The range of the *ELEGANCE* FT₄ ELISA is from 0 to approx. 125 pmol/L, but the minimum concentration that can be reported is limited by the linear performance characteristics of the photometer used.

If the OD value of the zero or lowest calibrator is above the range of the photometer, then this calibrator must be omitted from the plot of the calibrator curve.

MODEL CALCULATIONS

Endpoint Data		
ID	Ave OD	FT ₄ (pmol/L)
0	2.774	
4.99	2.412	
10.7	2.203	
25.7	1.650	
58.8	1.228	
125	1.036	
Sample 1	2.446	5.38
Sample 2	1.442	37.30
Sample 3	1.092	93.80

EXPECTED VALUES

It is recommended that each laboratory establish its own reference range based on a representative sample population. The following reference range calculated at a 95% confidence interval, was obtained by assaying serum samples from healthy individuals and is given as a guide only:

Euthyroid samples	n = 159
Mean value	6.2 pmol/L
Range of values obtained	9.3 - 24.9 pmol/L
Reference Range	10.7 - 21.7 pmol/L

PERFORMANCE CHARACTERISTICS

Intra-assay Precision

Sample	n	Mean ± 2SD (pmol/L)	%CV
1	14	7.3 ± 1.4	9.6
2	14	14.8 ± 1.6	5.4
3	14	40.4 ± 2.1	2.6

Inter-assay Precision

Sample	n *	Mean ± 2SD (pmol/L)	%CV
1	40	6.5 ± 1.9	14.6
2	40	17.8 ± 2.7	7.6
3	40	41.2 ± 4.5	5.5

* duplicate

Specificity

Analyte	% Crossreactivity
D-thyroxine	0.50
L-3,3',5-triiodothyronine (T ₃)	<0.01
L-3,3',5-triiodothyronine (rT ₃)	<0.01
L-3,5-diiodotyrosine (DIT)	<0.01
Sodium salicylate	<0.01
O-acetylsalicylic acid	<0.01
Methimazole	<0.01
Phenylbutazone	<0.01
5,5-diphenylhydantion	<0.01

Sensitivity

The sensitivity of the assay is typically less than 2 pmol/L. The sensitivity is defined as that concentration of analyte which corresponds to the dose response variable (OD) that is two standard deviations from the mean dose response variable of 20 replicate determinations of the zero calibrator run in three different assays.

Interference

No interference with analyte recovery was observed for concentrations of haemoglobin up to 250 mg/dL, bilirubin up to 10 mg/dL, triglycerides up to 970 mg/dL and non-esterified fatty acids up to 4 mmol/L.

ORDERING INFORMATION

The *ELEGANCE* FT₄ ELISA is manufactured by: Bioclone Australia Pty Limited, 71-73 Railway Parade, Marrickville NSW 2204, AUSTRALIA. Telephone +61 (0) 2 9517 1966 Freecall 1800 251 138 Fax +61 (0) 2 9517 2990 Email sales@bioclone.com.au Web www.bioclone.com.au

TECHNICAL SERVICE

Full technical service is available by calling Bioclone on +61 (0) 2 9517 1966 or Freecall 1800 251 138

PART No.: EKB4 Ed. 7

Revision date: 17 May 2009