Datasheet for ABIN649023

Anti-Thyroid-Globulin Antibody (TGAB) ELISA Kit

1 Image

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Overview

Quantity:	96 tests
Target:	Anti-Thyroid-Globulin Antibody (TGAB)
Reactivity:	Human
Method Type:	Sandwich ELISA
Application:	ELISA

Product Details

Purpose:	A Sequential ELISA Method (TYPE 1): The reagents required for the sequential ELISA assay include immobilized antigen, circulating autoantibody and enzyme-linked species-specific antibody. In this procedure, the immobilization takes place during the assay at the surface of a microplate well through the interaction of streptavidin coated on the well and exogenously added biotinylated thyroglobulin antigen. Upon mixing biotinylated antigen and a serum containing the autoantibody, reaction results between the antigen and the antibody to form an immune-complex. The anti-h-IgG enzyme conjugate that binds to the immune complex in a second incubation is separated from unreacted material by a wash step. The enzyme activity in this fraction is directly proportional to the antibody concentration in the specimen. By utilizing several different serum references of known antibody activity, a reference curve can be generated from which the antibody activity of an unknown can be ascertained.
Analytical Method:	Quantitative
Detection Method:	Colorimetric
Components:	A. Anti-Thyroglobulin Calibrators (1ml/vial): Six vials of references for anti-Tg at levels of 0 (A), 50 (B), 125 (C), 500 (D), 1000 (E), and 2000 (F) IU/ml. Store at 2-8°C. A preservative has been

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	added. Note: The calibrators, human serum based, were calibrated using the 1st International Reference Preparation, which was assayed against the Medical Research Council (MRC) Research Standard A 65/93 for anti-thyroglobulin activity. B. Thyroglobulin Biotin Reagent (13ml/vial): One vial of biotinylated thyroglobulin stabilized in a buffering matrix. A preservative has been added. Store at 2-8°C. C. x-Tg Enzyme Reagent (13ml/vial): One vial of anti-human IgG-horseradish peroxidase (HRP) conjugate stabilized in a bufferred matrix. A preservative has been added. Store at 2-8°C. D. Streptavidin Coated Plate (96 wells). One 96-well microplate coated with streptavidin and packaged in an aluminum bag with a drying agent. Store at 2-8°C. E. Serum Diluent (20ml). One vial of serum diluent concentrate that containing buffer salts and a dye. Store at 2-8°C. F. Wash Solution Concentrate (20ml). One vial containing a surfactant in buffered saline. A preservative has been added. Store at 2-8°C. G. Substrate A (7ml/vial). One bottle containing tetramethylbenzidine (TMB) in buffer. Store at 2-8°C. H. Substrate B (7ml/vial). One bottle containing hydrogen peroxide (H2O2) in buffer. Store at 2-8°C. I. Stop Solution (8ml/vial). One bottle of stop solution containing a strong acid (1N HCl). Store at 2-8°C. J. Product Instructions: Note 1: Do not use reagents beyond the kit expiration date. Note 2: Opened reagents are stable for 60 days when stored at 2-8°C. Note 3: Above reagents are for a single 96-well microplate.
Material not included:	1. Pipette capable of delivering 10µl & 50µl volumes with a precision of better than 1. 5%. 2. Dispenser(s) for repetitive deliveries of 0. 100ml and 0. 350ml volumes with a precision of better than 1. 5%. 3. Microplate washers or a squeeze bottle (optional). 4. Microplate Reader with 450nm and 620nm wavelength absorbance capability. 5. Absorbent Paper for blotting the microplate wells. 6. Plastic wrap or microplate cover for incubation steps. 7. Vacuum aspirator (optional) for wash steps. 8. Test tube (s) for patient dilution. 9. Timer. 10. Quality control materials.

Target Details

Target:	Anti-Thyroid-Globulin Antibody (TGAB)
Alternative Name:	Antibodies to thyroglobulin (Tg) (TGAB Products)
Target Type:	Antibody
Background:	Summary and Explanation of the test: Antibodies to thyroglobulin have been shown to be characteristically present from patients with thyroiditis and primary thyrotoxicosis. This has lead to the clinical measurement becoming a valuable tool in the diagnosis of thyroid dysfunction. Passive Hemaglutination (PHA) methods have been employed in the past for measurements of antibodies to Tg. PHA tests do not have the sensitivity of enzyme

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	immunoassay and are limited by subjective interpretation. This procedure, with the enhanced sensitivity of EIA, permits the detectability of subclinical levels of antibodies to Tg. In addition, the results are quantitated by a spectrophotometer, which eliminates subjective interpretation. The microplate enzyme immunoassay methodology provides the technician with optimum sensitivity while requiring few technical manipulations. In this method, serum reference, diluted patient specimen, or control is first added to a microplate well. Biotinylated thyroglobulin (Tg) is added, and then the reactants are mixed. Reaction results between the autoantibodies to Tg and the biotinylated Tg to form an immune complex, which is deposited to the surface of streptavidin coated wells through the high affinity reaction of biotin and streptavidin. After the completion of the required incubation period, aspiration or decantation separates the reactants that are not attached to the wells. An enzyme anti-human IgG conjugate is then added to permit quantitation of reaction through interacting with human IgG of the immune complex. After washing, the enzyme activity is determined by reaction with substrate to produce color. The employment of several serum references of known antibody activity permits construction of a graph of enzyme and antibody activities. From comparison to the dose response curve, an unknown specimen's enzyme activity can be correlated with autoimmune antibody level. Intended Use: The Quantitative Determination of Thyroglobulin (Tg) Autoantibodies in Human Serum or Plasma by a Microplate Enzyme Immunoassay. Measurements of Tg autoantibodies may aid in the diagnosis of certain thyroid diseases such as Hashimoto's and Grave's as well as nontoxic goiter. Q. C. Parameters: In order for the assay results to be considered valid the following criteria should be met: 1. The absorbance (OD) of calibrator F should be greater than 1.3. 2. Four out of six quality control pools should be within the established ranges.

Application Details

Application Notes:	Precautions: All products that contain human serum have been found to be non-reactive for Hepatitis B Surface Antigen, HIV 1&2 and HCV Antibodies by FDA licensed reagents. Since no known test can offer complete assurance that infectious agents are absent, all human serum products should be handled as potentially hazardous and capable of transmitting disease. Good laboratory procedures for handling blood products can be found in the Center for Disease Control / National Institute of Health, Biosafety in Microbiological and Biomedical Laboratories, 2nd Edition, 1988, HHS Publication No. (CDC) 88-8395.
Sample Volume:	50 µL
Plate:	Pre-coated
Reagent Preparation:	1. Serum Diluent: Dilute the serum diluent to 200ml in a suitable container with distilled or

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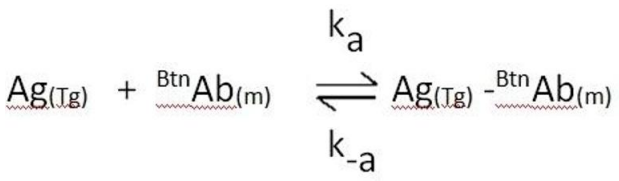
	deionized water. Store at 2-8°C. 2. Wash Buffer: Dilute contents of wash concentrate to 1000 ml with distilled or deionized water in a suitable storage container. Store at room temperature 20-27 °C for up to 60 days. 3. Working Substrate Solution: Pour the contents of the amber vial labeled Solution A into the clear vial labeled Solution B. Place the yellow cap on the clear vial for easy identification. Mix and label accordingly. Store at 2 - 8 °C. Note: Do not use the working substrate if it looks blue. 4. Patient Sample Dilution (1/100): Dispense 0. 010ml (10µl) of each patient specimen into 1ml of serum diluent. Cover and vortex or mix thoroughly by inversion. Store at 2-8°C for up to 48 hours.
Sample Collection:	The specimens shall be blood, serum or plasma in type and the usual precautions in the collection of venipuncture samples should be observed. For accurate comparison to established normal values, a fasting morning serum sample should be obtained. The blood should be collected in a plain redtop venipuncture tube without additives or anti-coagulants (for serum) or evacuated tube(s) containing EDTA or heparin. Allow the blood to clot for serum samples. Centrifuge the specimen to separate the serum or plasma from the cells. Samples may be refrigerated at 2-8°C for a maximum period of five days. If the specimen(s) cannot be assayed within this time, the sample(s) may be stored at temperatures of -20 °C for up to 30 days. Avoid repetitive freezing and thawing. When assayed in duplicate, 0. 100ml of the diluted specimen is required.
Calculation of Results:	A reference curve is used to ascertain the concentration of anti-Tg in unknown specimens. 1. Record the absorbance obtained from the printout of the microplate reader. 2. Plot the absorbance for each duplicate serum reference versus the corresponding anti-Tg activity in IU/ml on linear graph paper. 3. Draw the best-fit curve through the plotted points. 4. To determine the level of anti-Tg activity for an unknown, locate the average absorbance of the duplicates for each unknown on the vertical axis of the graph, find the intersecting point on the curve, and read the concentration (in IU/ml) from the horizontal axis of the graph (the duplicates of the unknown may be averaged as indicated). In the following example, the average absorbance (1. 387) intersects the dose response curve at (790 IU/ml) anti-Tg concentration.
Restrictions:	For Research Use only

Handling

Handling Advice:	Before proceeding with the assay, bring all reagents, serum references and controls to room temperature (20-27°C). 1. Format the microplates' wells for each serum reference, control and patient specimen to be assayed in duplicate. Replace any unused microwell strips back into the

Handling

	aluminum bag, seal and store at 2-8°C. 2. Pipette 0. 050 ml (50µl) of the appropriate serum reference, control or diluted patient specimen into the assigned well. 3. Add 0. 100 ml (100µl) of Tg Biotin Reagent. 4. Swirl the microplate gently for 20-30 seconds to mix and cover. 5. Incubate 60 minutes at room temperature. 6. Discard the contents of the microplate by decantation or aspiration. If decanting, blot the plate dry with absorbent paper. 7. Add 350µl of wash buffer (see Reagent Preparation Section), decant (blot and tap) or aspirate. Repeat two additional times for a total of three washes. An automatic or manual plate washer can be used. Follow the manufacturer's instruction for proper usage. If a squeeze bottle is employed, fill each well by depressing the container (avoiding air bubbles) to dispense the wash. Decant the wash and Repeat two additional times. 8. Add 0. 100 ml (100µl) of x-Tg Enzyme Reagent to all wells. Always add reagents in the same order to minimize reaction time differences between wells. DO NOT SHAKE THE PLATE AFTER ENZYME ADDITON. 9. Swirl the microplate gently, cover and incubate for 30 minutes at room temperature. 10. Repeat steps (6 & 7) as explained above. 11. Add 0. 100 ml (100µl) of Working Substrate Solution to all wells (see Reagent Preparation Section). Always add reagents in the same order to minimize reaction time differences between wells. DO NOT SHAKE THE PLATE AFTER SUBSTRATE ADDITON. 12. Incubate at room temperature for 15 minutes. 13. Add 0. 050ml (50µl) of stop solution to each well and mix gently for 15-20 seconds. Always add reagents in the same order to minimize reaction time differences between wells. 14. Read the absorbance in each well at 450nm (using a reference wavelength of 620-630nm to minimize well imperfections) in a microplate reader. The results should be read within 30 minutes of adding the stop solution. Note: For re-assaying specimens with concentrations greater than 2000 IU/ml, dilute the sample an additional 1:5 or 1:10 using the original diluted material. Multiply by the dilution factor to obtain the concentration of the specimen.
Storage:	4 °C/-20 °C



$Ag_{(Tg)} + {}^{Btn}Ab_{(m)} \underset{k_{-a}}{\overset{k_a}{\rightleftharpoons}} Ag_{(Tg)} - {}^{Btn}Ab_{(m)}$

${}^{Btn}Ab_{(m)}$ = Biotinylated Monoclonal Antibody (Excess Quantity)
$Ag_{(Tg)}$ = Native Antigen (Variable Quantity)
$Ag_{(Tg)} - {}^{Btn}Ab_{(m)}$= Antigen-Antibody complex (Variable Quan.))
k_a = Rate Constant of Association
k_{-a} = Rate Constant of Disassociation

Image 1. The essential reagents required for an immunoenzymometric assay include high affinity and specificity antibodies (enzyme and immobilized), with different and distinct epitope recognition, in excess, and native antigen. In this procedure, the immobilization takes place during the assay at the surface of a microplate well through the interaction of streptavidin coated on the well and exogenously added biotinylated monoclonal Thyroglobulin antibody.

When monoclonal biotinylated antibody is mixed with a serum containing the Tg antigen, a reaction results between the Tg antigen and the antibody, to form an antibody-antigen complex. Simultaneously the biotin attached to the antibody binds to the streptavidin coated on the microwells resulting in immobilization of the complex. The interaction is illustrated by the equation in Figure 1.

After a suitable incubation period, the antibody-antigen bound fraction is separated from unbound antigen by decantation or aspiration. Another antibody (directed at a different epitope) labeled with an enzyme is added. Another interaction occurs to form an enzyme labeled antibody-antigen-biotinylated-antibody complex on the surface of the wells. Excess enzyme is washed off via a wash step. A suitable substrate is added to produce color measurable with the use of a microplate spectrophotometer. The enzyme activity on the well is directly proportional to the native antigen concentration. By utilizing several different serum references of known antigen con centration, a dose response curve can be generated from which the antigen concentration of an unknown can be ascertained (Figure 3).