

# ORGENTEC Diagnostika GmbH

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**For research use only.  
Not for diagnostic procedures.**



## RUO 5TG Thyroglobulin

### INTENDED USE

Thyroglobulin is an ELISA test system for the quantitative measurement of thyroglobulin in human serum or plasma. This product is intended for research use only. Not for diagnostic procedures.



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### SYMBOLS USED ON LABELS



Manufacturer



Catalogue number



Sufficient for 96 determinations



Batch code



Use by



Temperature limitation



Keep away from sunlight



Do not reuse



Date of manufacture



Consult instructions for use

MICROPLATE

Microplate

CALIBRATOR A

Calibrator

CALIBRATOR B

Calibrator

CALIBRATOR C

Calibrator

CALIBRATOR D

Calibrator

CALIBRATOR E

Calibrator

CALIBRATOR F

Calibrator

CONTROL +

Control positive

CONTROL -

Control negative

RECOVERY

Recovery

DILUENT

Sample Buffer

CONJUGATE

Enzyme Conjugate

TMB

TMB Substrate

STOP

Stop solution

WASH

Wash Buffer

RTU

Ready to use

## PRINCIPLE OF THE TEST

Highly specific anti-human-thyroglobulin antibodies are bound to microwells.

The reaction is based on indirect enzyme immuno assay (ELISA) method with these steps: thyroglobulin present in a sample binds to the antibody coated forming an antigen-antibody-complex. Washing of the microwells removes unbound unspecific serum and plasma components. During incubation with enzyme-conjugate immunologically a conjugate/antibody/antigen complex is formed. Washing of the microwells removes unbound conjugate. An anti-thyroglobulin enzyme substrate in the presence of bound conjugate hydrolyzes to form a blue colour. The addition of an acid stops the reaction forming a yellow end-product. The intensity of this yellow colour is measured photometrically at 450 nm. The amount of colour is directly proportional to the concentration of antibodies present in the original sample. This assay includes a recovery test.

## WARNINGS AND PRECAUTIONS

- All reagents of this kit are intended for professional use only.
- Components containing human serum were tested and found negative for HBsAg, HCV, HIV1 and HIV2 by FDA approved methods. No test can guarantee the absence of HBsAg, HCV, HIV1 or HIV2, and so all human serum based reagents in this kit must be handled as though capable of transmitting infection.
- Bovine serum albumin (BSA) used in components has been tested for BSE and found negative.
- Avoid contact with the substrate TMB (3,3',5,5'-Tetramethyl-benzidine).
- Stop solution contains acid, classification is non-hazardous. Avoid contact with skin.
- Control, sample buffer and wash buffer contain sodium azide 0.09% as preservative. This concentration is classified as non-hazardous.
- Enzyme conjugate contains ProClin 300 0.05% as preservative. This concentration is classified as non-hazardous.

During handling of all reagents, controls and serum samples observe the existing regulations for laboratory safety regulations and good laboratory practice:




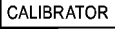


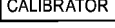
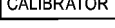
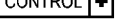



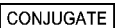

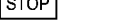
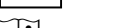

- First aid measures: In case of skin contact, immediately wash thoroughly with water and soap. Remove contaminated clothing and shoes and wash before reuse. If system fluid comes into contact with skin, wash thoroughly with water. After contact with the eyes carefully rinse the opened eye with running water for at least 10 minutes. Get medical attention if necessary.
- Personal precautions, protective equipment and emergency procedures:

Observe laboratory safety regulations. Avoid contact with skin and eyes. Do not swallow. Do not pipette by mouth. Do not eat, drink, smoke or apply makeup in areas where specimens or kit reagents are handled. When spilled, absorb with an inert material and put the spilled material in an appropriate waste disposal.

- Exposure controls / personal protection: Wear protective gloves of nitril rubber or natural latex. Wear protective glasses. Used according to intended use no dangerous reactions known.
- Conditions to avoid: Since substrate solution is light-sensitive. Store in the dark.
- For disposal of laboratory waste the national or regional legislation has to be observed.

Observe the guidelines for performing quality control in medical laboratories by assaying control sera.

## CONTENTS OF THE KIT

RUO 5TG	 96	Sufficient for 96 determinations
	1	One divisible microplate consisting of 12 modules of 8 wells each. Ready to use. Product code on module: <b>THY</b>
 A	1.5 ml	Calibrator A 0 ng/ml, containing serum/buffer matrix (PBS, BSA, detergent, NaN <sub>3</sub> 0.09%), yellow. Ready to use.
 B	1.5 ml	Calibrator B 3 ng/ml, containing thyroglobulin in a serum/buffer matrix (PBS, BSA, detergent, NaN <sub>3</sub> 0.09%), yellow. Ready to use.
 C	1.5 ml	Calibrator C 10 ng/ml, containing thyroglobulin in a serum/buffer matrix (PBS, BSA, detergent, NaN <sub>3</sub> 0.09%), yellow. Ready to use.
 D	1.5 ml	Calibrator D 30 ng/ml, containing thyroglobulin in a serum/buffer matrix (PBS, BSA, detergent, NaN <sub>3</sub> 0.09%), yellow. Ready to use.
 E	1.5 ml	Calibrator E 100 ng/ml, containing thyroglobulin in a serum/buffer matrix (PBS, BSA, NaN <sub>3</sub> 0.09%), yellow. Ready to use.
 F	1.5 ml	Calibrator F 300 ng/ml, containing thyroglobulin in a serum/buffer matrix (PBS, BSA, detergent, NaN <sub>3</sub> 0.09%), yellow. Ready to use.
 +	1.5 ml	Control positive, containing thyroglobulin in a serum/buffer matrix (PBS, BSA, detergent, NaN <sub>3</sub> 0.09%), yellow. Ready to use. The concentration is specified on the certificate of analysis.
 -	1.5 ml	Control negative, containing thyroglobulin in a serum/buffer matrix (PBS, BSA, detergent, NaN <sub>3</sub> 0.09%), yellow. Ready to use. The concentration is specified on the certificate of analysis.
	3 ml	Recovery, 50 ng/ml, containing thyroglobulin in a serum/buffer matrix (PBS, BSA, detergent, NaN <sub>3</sub> 0.09%), yellow. Ready to use.
	20 ml	Sample Buffer STP, containing PBS, BSA, detergent, preservative sodium azide 0.09%, yellow. Ready to use.
	15 ml	Enzyme Conjugate containing anti-human thyroglobulin antibodies, HRP labelled; PBS, BSA, detergent, preservative PROCLIN 0.05%, light red. Ready to use.
	15 ml	TMB Substrate; containing 3,3', 5,5'- Tetramethylbenzidin, colorless. Ready to use.
	15 ml	Stop solution; contains acid. Ready to use.
	20 ml	Wash Buffer, containing Tris, detergent, preservative sodium azide 0.09%; 50 x conc.
	1	Certificate of Analysis

## MATERIALS REQUIRED

- Microplate reader capable of endpoint measurements at 450 nm; optional: reference filter at 620 nm
- Data reduction software
- Multi-channel dispenser or repeatable pipette for 100 µl
- Vortex mixer
- Pipettes for 50 µl, 100 µl and 1000 µl
- Laboratory timing device
- Distilled or deionised water
- Measuring cylinder for 1000 ml and 100 ml
- Plastic container for storage of the wash solution

This ELISA assay is suitable for use on open automated ELISA processors. Each assay has to be validated on the respective automated system. Detailed information is provided upon request.

## SPECIMEN COLLECTION, STORAGE AND HANDLING

- Collect whole blood specimens using acceptable medical techniques to avoid hemolysis.
- Allow blood to clot and separate the serum or plasma by centrifugation.
- Test serum should be clear and non-hemolyzed. Contamination by hemolysis or lipemia should be avoided, but does not interfere with this assay.
- Specimens may be refrigerated at 2-8°C for up to five days or stored at -20°C up to six months.
- Avoid repetitive freezing and thawing of serum or plasma samples. This may result in variable loss of antibody activity.
- Testing of heat-inactivated sera is not recommended.

## STORAGE AND STABILITY

- Store test kit at 2-8°C in the dark.
- Do not expose reagents to heat, sun, or strong light during storage and usage.
- Store microplate sealed and dessicated in the clip bag provided.
- Shelf life of the unopened test kit is 18 months from day of production.  
Unopened reagents are stable until expiration of the kit. See labels for individual batch.
- Diluted Wash Buffer and Sample Buffer are stable for at least 30 days when stored at 2-8°C.  
We recommend consumption on the same day.

## PROCEDURAL NOTES

- Do not use kit components beyond their expiration dates.
- Do not interchange kit components from different lots and products.
- All materials must be at room temperature (20-28°C) prior to use.
- Prepare all reagents and samples. Once started, perform the test without interruption.
- Double determinations may be done. By this means pipetting errors may become obvious.
- Perform the assay steps only in the order indicated.
- Always use fresh sample dilutions.
- Pipette all reagents and samples into the bottom of the wells.
- To avoid carryover or contamination, change the pipette tip between samples and different kit controls.
- Wash microwells thoroughly and remove the last droplets of wash buffer.
- All incubation steps must be accurately timed.
- Do not re-use microplate wells.

## PREPARATION OF REAGENTS

### WASH

Dilute the contents of one vial of the buffered wash solution concentrate (50x) with distilled or deionised water to a final volume of 1000 ml prior to use.

### DILUENT

Sample buffer STP is ready to use.

## Preparation of samples

Use undiluted sample. Note: Calibrators / Controls are ready to use and need no dilution.

## TEST PROCEDURE

Prepare enough microplate modules for all calibrators / controls and samples.

- Pipette 50 µl of calibrators, controls and samples into the wells.  
**Calibrators and controls: add 50 µl sample buffer**  
**Samples: add 50µl samples buffer (unspiked) / add 50µl RECOVERY (spiked)**  
 Incubate for **60 minutes** at room temperature (20-28 °C).  
 Discard the contents of the microwells and wash 3 times with 300 µl of wash solution.
- Dispense 100 µl of enzyme conjugate into each well.  
 Incubate for **60 minutes** at room temperature.  
 Discard the contents of the microwells and wash 3 times with 300 µl of wash solution.
- Dispense 100 µl of TMB substrate solution into each well.  
 Incubate for 15 minutes at room temperature
- Add 100 µl of stop solution to each well of the modules  
 Incubate for 5 minutes at room temperature.  
 Read the optical density at 450 nm (reference 600-690nm) and calculate the results.  
 The developed colour is stable for at least 30 minutes. Read during this time.

Example for a pipetting scheme:

	1	2	3	4	5	6	7	8	9	10	11	12
A	A	P1	P1+R									
B	B	P2	P2+R									
C	C	P3	P3+R									
D	D	P4	P4+R									
E	E	P5	P5+R									
F	F	P6	P6+R									
G	C+	P7	P7+R									
H	C-	P8	P8+R									

P1, ... sample (unspiked)    P1+R, ... sample + RECOVERY    A-F calibrators, C+, C- controls

## RECOVERY Test

The presence of autoantibodies against thyroglobulin (anti-TG) can interfere with the determination of human thyroglobulin (hTG) in samples: anti-TG can attach to epitopes of hTG molecules and thus cause false negative results in the determination of hTG. Therefore, it is necessary to prove the presence of anti-TG autoantibodies in samples. This can be done either by direct quantitative measurement with an anti-TG test (e.g. ORG 503) or indirectly by recovery experiments in combination with the quantitative thyroglobulin determination.

In this Thyroglobulin assay a recovery test is included:

A sample is determined twice, unspiked and spiked with exogenous hTG called RECOVERY which contains exactly 50 ng/ml hTG. The recovery test provides evidence as to the presence of anti-TG autoantibodies. Neither the correct anti-TG concentration nor the exact thyroglobulin concentration in presence of anti-TG can be calculated with this measurement.

## VALIDATION

Test results are valid if the optical densities at 450 nm for calibrators / controls and the results for controls comply with the reference ranges indicated on the Certificate of Analysis enclosed in each test kit.

If these quality control criteria are not met the assay run is invalid and should be repeated.

## CALCULATION OF RESULTS

For quantitative results plot the optical density of each calibrator versus the calibrator concentration to create a calibration curve. The concentration of samples may then be estimated from the calibration curve by interpolation. Using data reduction software a 4-Parameter-Fit with lin-log coordinates for optical density and concentration is the data reduction method of choice.

The percentage recovery is calculated:

$$\% \text{ recovery} = (\text{ng/ml hTG spiked} / \text{ng/ml hTG non-spiked} + 50 \text{ ng/ml}) * 100$$

Recovery should be expected in the range of 80-120 %.

If percentage of thyroglobulin recovery is below or above this range, thyroglobulin values for the respective sample should be excluded for further assessment.

## ASSAY CHARACTERISTICS

### CALIBRATION

The assay system is calibrated against the international Certified Reference Material CRM 457 from BCR, Brussels for human Thyroglobulin.

### Measuring range

The calculation range of this ELISA assay is 0 - 300 ng/ml

### Interfering substances

No interference has been observed with haemolytic (up to 1000 mg/dl) or lipemic (up to 3 g/dl triglycerides) sera or plasma, or bilirubin (up to 40 mg/dl) containing sera or plasma. Nor have any interfering effects been observed with the use of anticoagulants (Citrate, EDTA, Heparine). However for practical reasons it is recommended that grossly hemolyzed or lipemic samples should be avoided.

### LIMITATIONS OF THE PROCEDURE

For research use only. Not for diagnostic procedures.

## REFERENCES

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Change Control

Former version: -

Reason for revision: *first edition*