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for better bioassays

Thyroid Hormones

Shanghai Bowei Biotechnology

Thyroid Hormones

Introduction

Thyroid dysfunction is one of the most common endocrine disorders, with a reported prevalence of 10-25% for general population in different regions of the world. Accurate diagnosis of thyroid dysfunction strongly depends on accurate determination of thyroid hormones, since the signs and symptoms of thyroid diseases are often nonspecific, subtle, or absent. Over the past decades, immunoassay plays an important role for diagnosis of thyroid diseases, and evaluation of the effect of treatment, remission and relapse of the disease.

We have concentrated on immunoanalysis of thyroid hormones for more than 30 years, and now provide a group of high-quality conjugates and antibodies for immunoassay of the three main thyroid hormones, including T3 (3,3',5-Triiodo-L-thyronine), T4 (L-thyroxine) and rT3 (3,3’,5’-L-Triiodothyronine).

Products

Thyroid Hormones	Conjugate	Antibody
Thyroxine (T4)	√	√
3,3',5-Triiodo-L-Thyronine (T3)	√	√
3,3’,5’-L-Triiodothyronine (rT3)	√	√

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Thyroxine (T4)

Thyroxine (tetra-iodothyronine) is an iodine-containing hormone produced by the thyroid gland, that increases the rate of cell metabolism and regulates metabolism by controlling the rate of oxidation in cells. Abnormal T4 levels are closely associated with thyroid dysfunction, including both hyper- and hypothyroidism. T4 concentration in blood provides important information about thyroid function, and is commonly used as a biomarker for evaluation of thyroid disorders. Our anti-T4 McAb and T4-protein conjugates can be used for establishing highly sensitive and accurate immunoassay for determination of both of total and free T4.

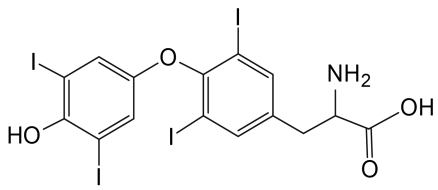

Fig. 1. The chemical structures of T4

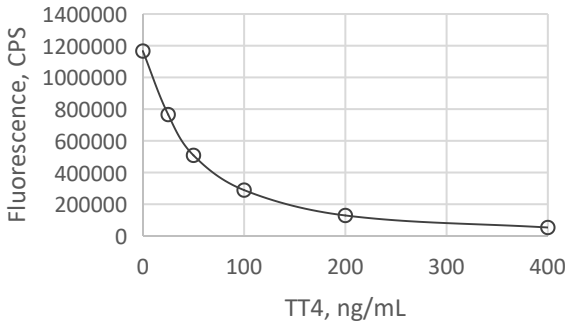

Fig. 2. Typical calibration curve of TT4-DELFIA

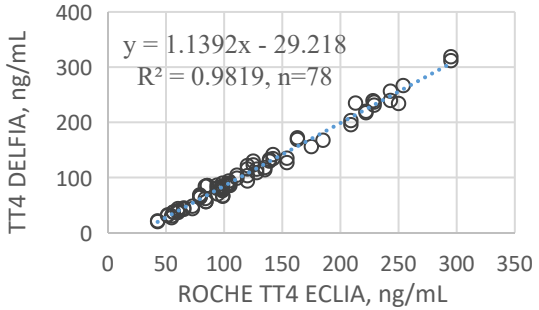

Fig. 3. The correlation between TT4 concentrations obtained by ROCHE ECLIA and DELFIA using McAb-9MD

Product Type	Catalog #	Description
Mouse monoclonal antibody	• Anti-T4 McAb-9MD	Used for developing T4 immunoassay with LOD < 2.5ng/mL by TT4-DELFIA; the cross-reactivities with T3 and rT3 is insignificant. The key performances of the immunoassay using McAb-9MD are shown in Fig. 2 and Fig. 3.
Conjugate	• T4-Bovine γ-Globulin • T4-BSA • T4-HRP • T4-ALP	Paired with the anti-T4 antibodies for testing of total T4 or free T4 .

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3,3',5-Triiodo-L-Thyronine (T3)

3,3',5-Triiodo-L-thyronine (triiodothyronine, T3) is a thyroid hormone that affects almost every physiological process in human body, including growth and development, metabolism, body temperature, and heart rate. T3 effects on target tissues about four times more potent than those of T4. The concentration of T3 in the human blood is about one-fortieth that of T4. Accurate determination of T3 blood level is critical for thyroid disease diagnosis and management. Our anti-T3 McAb and T3-protein conjugate can be used for establishing highly sensitive and accurate immunoassay for determination of both of total and free T3.

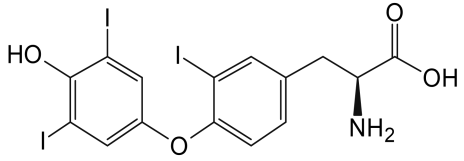

Fig. 1. The chemical structures of T3

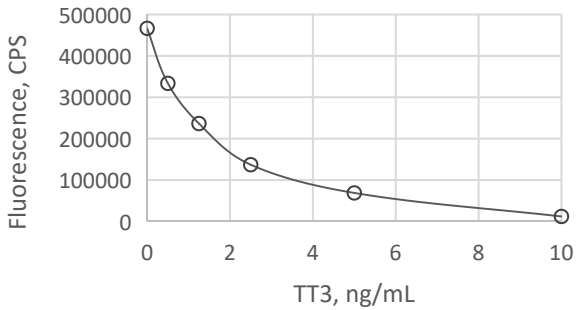

Fig. 2. Typical calibration curve of TT3-DELFIA using McAb-27

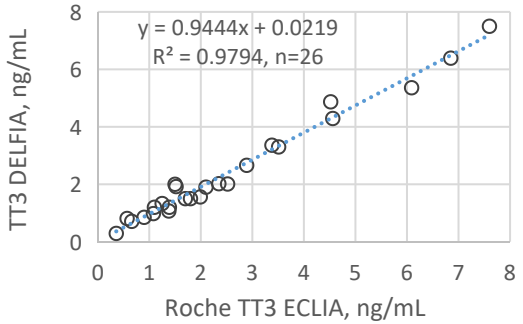

Fig. 3. The correlation between TT3 concentrations obtained by ROCHE ECLIA and DELFIA using McAb-27

Product Type	Catalog #	Description
Mouse monoclonal antibody	• Anti-T3 McAb-27	Used for developing T3 immunoassay, with LOD <0.1ng/mL by DELFIA; the cross-reactivities with blood T4 and rT3 is insignificant. The key performances of the McAb-27 based immunoassay are shown in Fig. 2 and Fig. 3.
Conjugate	• T3-Bovine γ-Globulin • T3-BSA • T3-HRP • T3-ALP	Paired with the anti-T3 antibodies for testing of total T3 or free T3.

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3,3’,5’-L-Triiodothyronine (rT3)

The majority of circulatory 3,3’,5’-L-Triiodothyronine (rT3) is synthesized by peripheral deiodination of thyroxine (T4) by deiodinases. As the third most abundant iodothyronine circulating in human blood, the rT3 level reflects the rate of peripheral conversion of T4 to T3. rT3 test is reliable in differentiating between Central Hypothyroidism and “Euthyroid Sick Syndrome” in subjects with low free T4 and low/normal TSH levels [*Open Journal of Endocrine and Metabolic Diseases, 2021, 11, 137-143*]. Complete thyroid function investigation (TSH, T4, T3 and reverse T3) is helpful for male pediatric patients presenting with developmental delay and/or neuromotor abnormalities, to facilitate early diagnosis of MCT8 deficiency, a “rare” genetic condition with new treatment. Also, determination of rT3 levels may be a valuable and simple aid to improve identification of patients with myocardial infarction who are at high risk of subsequent mortality [*The American Journal of Medicine, 2001, 111, 699-703*]. Our anti-rT3 McAb and rT3-protein conjugates can be used for establishing sensitive and accurate rT3-immunoassay.

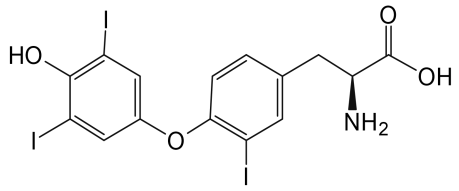

Fig. 1. The chemical structures of rT3

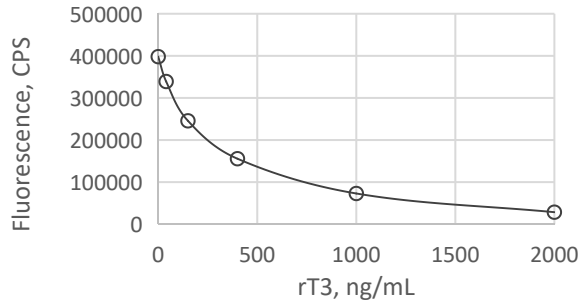

Fig. 2. Typical calibration curve of rT3-DELFIA using McAb-3

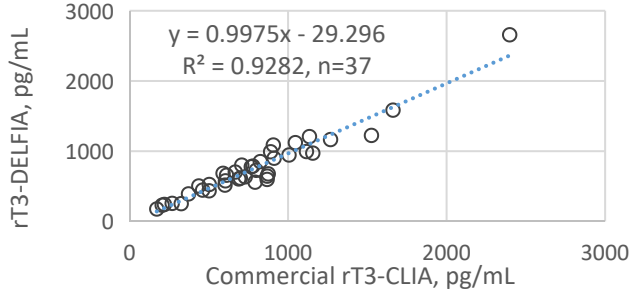

Fig. 3. The correlation between rT3 concentrations obtained by a licensed CLIA and DELFIA using McAb-3

Product Type	Catalog #	Description
Mouse monoclonal antibody	• Anti-rT3 McAb-3	Used for developing rT3 immunoassay, with LOD < 20pg/mL by rT3-DELFIA; the cross-reactivity with blood T4 and T3 is insignificant. The key performances of the McAb-3 based immunoassay are shown in Fig. 2 and Fig. 3.
Conjugate	• rT3-BIGG • rT3-BSA	Paired with the anti-rT3 antibodies for rT3 testing.