SANTA CRUZ BIOTECHNOLOGY, INC.

Thyroperoxidase (H-140): sc-134486

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The Power to Question

BACKGROUND

The synthesis of thyroid hormones is an oxidative process that produces reactive oxygen species and requires Thyroperoxidase (TPO), a hemoprotein that is one of the major autoantigens involved in autoimmune thyroid diseases. Thyroperoxidase is a 933 amino acid, type I transmembrane glycoprotein that plays a key role in thyroid hormone synthesis and autoimmunity. TPO catalyzes the iodination of proteins, therefore causing iodide retention within thyroid cells. The ecto-domain of Thyroperoxidase includes a large N-terminal myeloperoxidase-like domain, followed by a complement control protein domain and an epidermal growth factor-like domain. Thyroperoxidase also mediates the organification and intracellular retention of radioiodide, which may lead to rapid tumor cell death. Mutations of the Thyroperoxidase gene commonly lead to goitrous congenital hypothyroidism, the most severe and frequent abnormality in thyroid iodide organification defect (IOD), in which iodide in the thyroid gland cannot be oxidized and/or bound to the protein.

REFERENCES

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2. Fayadat, L., et al. 2000. Degradation of human Thyroperoxidase in the endoplasmic reticulum involves two different pathways depending on the folding state of the protein. J. Biol. Chem. 275: 15948-15954.
3. Huang, M., et al. 2001. Ectopic expression of the Thyroperoxidase gene augments radioiodide uptake and retention mediated by the sodium iodide symporter in non-small cell lung cancer. Cancer Gene Ther. 8: 612-618.
4. Blanchin, S., et al. 2003. Complement activation by direct C4 binding to Thyroperoxidase in Hashimoto's thyroiditis. Endocrinology 144: 5422-5429.
5. Ferrand, M., et al. 2003. Increasing diversity of human Thyroperoxidase generated by alternative splicing. Characterized by molecular cloning of new transcripts with single- and multispliced mRNAs. J. Biol. Chem. 278: 3793-3800.
6. Guo, J., et al. 2005. Relationship between thyroid peroxidase T cell epitope restriction and antibody recognition of the autoantibody immunodominant region in human leukocyte antigen DR3 transgenic mice. Endocrinology 146: 4961-4967.
7. Fernandez Romero, D.S. and Malbran, A. 2005. Chronic urticaria with alterations of the thyroid function and thyroid peroxidase antibodies. Medicina 65: 231-234.
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CHROMOSOMAL LOCATION

Genetic locus: TPO (human) mapping to 2p25.3.

SOURCE

Thyroperoxidase (H-140) is a rabbit polyclonal antibody raised against amino acids 21-160 mapping within an N-terminal extracellular domain of Thyroperoxidase of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Thyroperoxidase (H-140) is recommended for detection of Thyroperoxidase of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Thyroperoxidase siRNA (h): sc-61684, Thyroperoxidase shRNA Plasmid (h): sc-61684-SH and Thyroperoxidase shRNA (h) Lentiviral Particles: sc-61684-V.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.