

Thyroperoxidase (C-20): sc-48951

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. Thyroperoxidase 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

1. Fayadat, L., et al. 1998. Human Thyroperoxidase is largely retained and rapidly degraded in the endoplasmic reticulum. Its N-glycans are required for folding and intracellular trafficking. *Endocrinology* 139: 4277-4285.
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.

CHROMOSOMAL LOCATION

Genetic locus: TPO (human) mapping to 2p25.3; Tpo (mouse) mapping to 12 A2.

SOURCE

Thyroperoxidase (C-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region 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.

Blocking peptide available for competition studies, sc-48951 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

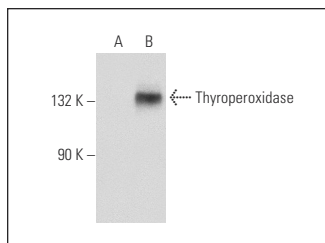
Thyroperoxidase (C-20) is recommended for detection of Thyroperoxidase isoforms 1, 2, 2-3, 2-4, 3, 4 and 5 of human and, to a lesser extent, mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (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 siRNA (m): sc-61685, Thyroperoxidase shRNA Plasmid (h): sc-61684-SH, Thyroperoxidase shRNA Plasmid (m): sc-61685-SH, Thyroperoxidase shRNA (h) Lentiviral Particles: sc-61684-V and Thyroperoxidase shRNA (m) Lentiviral Particles: sc-61685-V.

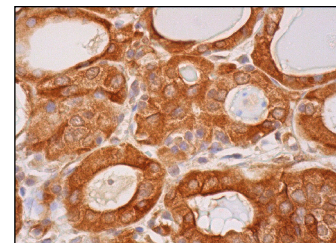
Molecular Weight of Thyroperoxidase: 100 kDa.

Positive Controls: Thyroperoxidase (m): 293 Lysate: sc-179600 or human thyroid extract: sc-363782.

DATA



Thyroperoxidase (C-20): sc-48951. Western blot analysis of Thyroperoxidase expression in non-transfected: sc-110760 (A) and mouse Thyroperoxidase transfected: sc-179600 (B) 293 whole cell lysates.



Thyroperoxidase (C-20): sc-48951. Immunoperoxidase staining of formalin fixed, paraffin-embedded human thyroid gland tissue showing cytoplasmic and membrane staining of glandular cells.

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.



Try **Thyroperoxidase (A-5): sc-376876** or **Thyroperoxidase (MoAb47): sc-58432**, our highly recommended monoclonal alternatives to Thyroperoxidase (C-20). Also, for AC, HRP, FITC, PE, Alexa Fluor[®] 488 and Alexa Fluor[®] 647 conjugates, see **Thyroperoxidase (A-5): sc-376876**.