SANTA CRUZ BIOTECHNOLOGY, INC.

Thyroperoxidase (A-5): sc-376876

SANTA CRUZ BIOTECHNOLOGY

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

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.

CHROMOSOMAL LOCATION

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

SOURCE

Thyroperoxidase (A-5) is a mouse monoclonal 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_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Thyroperoxidase (A-5) is available conjugated to agarose (sc-376876 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376876 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376876 PE), fluorescein (sc-376876 FITC), Alexa Fluor® 488 (sc-376876 AF488), Alexa Fluor® 546 (sc-376876 AF546), Alexa Fluor® 594 (sc-376876 AF594) or Alexa Fluor® 647 (sc-376876 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376876 AF680) or Alexa Fluor® 790 (sc-376876 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

STORAGE

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

APPLICATIONS

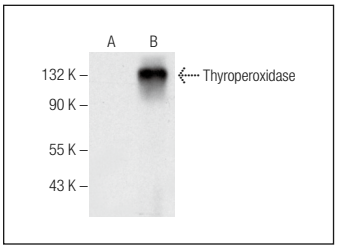
Thyroperoxidase (A-5) is recommended for detection of Thyroperoxidase of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, 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.

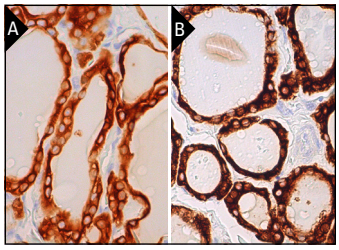
Molecular Weight of Thyroperoxidase: 100 kDa.

Positive Controls: Thyroperoxidase (m): 293 Lysate: sc-179600.

DATA



Thyroperoxidase (A-5): sc-376876. Western blot analysis of Thyroperoxidase expression in non-transfected: sc-110760 (**A**) and mouse Thyroperoxidase transfected: sc-179600 (**B**) 293 whole cell lysates.



Thyroperoxidase (A-5): sc-376876. Immunoperoxidase staining of formalin fixed, paraffin-embedded human thyroid tissue showing membrane and cytoplasmic staining of glandular cells (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human thyroid gland tissue showing cytoplasmic staining of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Lv, P.P., et al. 2016. Maternal high estradiol exposure is associated with elevated thyroxine and Pax8 in mouse offspring. Sci. Rep. 6: 36805.
2. Miler, M., et al. 2020. Citrus flavanones upregulate thyrotroph Sirt1 and differently affect thyroid Nrf2 expressions in old-aged Wistar rats. J. Agric. Food Chem. 68: 8242-8254.
3. Liu, Y., et al. 2021. Danggui buxue decoction enhances the anticancer activity of gemcitabine and alleviates gemcitabine-induced myelosuppression. J. Ethnopharmacol. 273: 113965.
4. Šošic-Jurjevic, B., et al. 2022. Vitamin D_3 treatment alters thyroid functional morphology in orchidectomized rat model of osteoporosis. Int. J. Mol. Sci. 23: 791.

RESEARCH USE

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