

DHODH (D-6): sc-166377

BACKGROUND

DHODH (dihydroorotate dehydrogenase), also known as DHodehase, is a 395 amino acid mitochondrial protein located on the outer surface of the inner mitochondrial membrane. It catalyzes the fourth enzymatic step in *de novo* pyrimidine biosynthesis. *De novo* pyrimidine synthesis is a critical metabolic pathway for nucleic acid synthesis and is a target for various cancer chemo-therapy agents. Additionally, DHODH is functionally connected to the respiratory chain, delivering electrons to ubiquinone. DHODH contains a bipartite signal at the N-terminus that regulates passage into the mitochondrial inner membrane. The inhibition of Cox (cytochrome c oxidase) by nitric oxide (NO) indirectly inhibits DHODH activity. The inhibition of DHODH has an immunosuppressive and an antiproliferative effect on diseases such as rheumatoid arthritis.

REFERENCES

1. Barnes, T., et al. 1993. Regional mapping of the gene encoding dihydroorotate dehydrogenase, an enzyme involved in UMP synthesis, electron transport, and superoxide generation, to human chromosome region 16q22.2. *Somat. Cell Mol. Genet.* 19: 405-411.
2. Copeland, R.A., et al. 1995. Recombinant human dihydroorotate dehydrogenase: expression, purification, and characterization of a catalytically functional truncated enzyme. *Arch. Biochem. Biophys.* 323: 79-86.
3. Knecht, W., et al. 1996. Functional expression of a fragment of human dihydroorotate dehydrogenase by means of the baculovirus expression vector system, and kinetic investigation of the purified recombinant enzyme. *Eur. J. Biochem.* 240: 292-301.
4. Beuneu, C., et al. 2000. Indirect inhibition of mitochondrial dihydroorotate dehydrogenase activity by nitric oxide. *Free Radic. Biol. Med.* 28: 1206-1213.
5. Dietz, C., et al. 2000. Immunocytochemical detection of mitochondrial dihydroorotate dehydrogenase in human spermatozoa. *Int. J. Androl.* 23: 294-299.
6. Rawls, J., et al. 2000. Requirements for the mitochondrial import and localization of dihydroorotate dehydrogenase. *Eur. J. Biochem.* 267: 2079-2087.
7. Small, Y.A., et al. 2006. Hydrogen bonding pathways in human dihydroorotate dehydrogenase. *J. Phys. Chem. B* 110: 19704-19710.
8. Baumgartner, R., et al. 2006. Dual binding mode of a novel series of DHODH inhibitors. *J. Med. Chem.* 49: 1239-1247.

CHROMOSOMAL LOCATION

Genetic locus: DHODH (human) mapping to 16q22.2; Dhodh (mouse) mapping to 8 D3.

SOURCE

DHODH (D-6) is a mouse monoclonal antibody raised against amino acids 1-300 mapping at the N-terminus of DHODH of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 200 µg IgG₁ in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

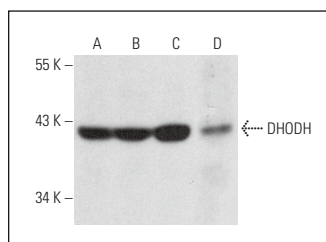
DHODH (D-6) is recommended for detection of DHODH of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for DHODH siRNA (h): sc-77141, DHODH siRNA (m): sc-77142, DHODH shRNA Plasmid (h): sc-77141-SH, DHODH shRNA Plasmid (m): sc-77142-SH, DHODH shRNA (h) Lentiviral Particles: sc-77141-V and DHODH shRNA (m) Lentiviral Particles: sc-77142-V.

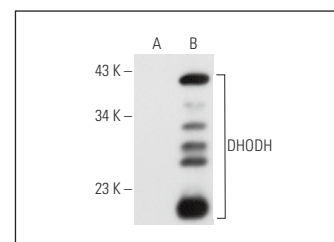
Molecular Weight of DHODH: 43 kDa.

Positive Controls: DHODH (h): 293T Lysate: sc-116990, Jurkat whole cell lysate: sc-2204 or Hep G2 cell lysate: sc-2227.

DATA



DHODH (D-6): sc-166377. Western blot analysis of DHODH expression in Jurkat (A), MCF7 (B), Hep G2 (C) and C6 (D) whole cell lysates.



DHODH (D-6): sc-166377. Western blot analysis of DHODH expression in non-transfected: sc-117752 (A) and human DHODH transfected: sc-116990 (B) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Zhu, S., et al. 2013. Leflunomide reduces proliferation and induces apoptosis in neuroblastoma cells *in vitro* and *in vivo*. *PLoS ONE* 8: e71555.
2. Ren, A., et al. 2017. Leflunomide inhibits proliferation and tumorigenesis of oral squamous cell carcinoma. *Mol. Med. Rep.* 16: 9125-9130.
3. Gaidano, V., et al. 2021. The synergism between DHODH inhibitors and dipyradamole leads to metabolic lethality in acute myeloid leukemia. *Cancers* 13: 1003.

STORAGE

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

PROTOCOLS

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