SANTA CRUZ BIOTECHNOLOGY, INC.

MDHC (A-4): sc-166880

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Cytosolic malate dehydrogenase (MDHC or cMDH) is an important NAD-dependent enzyme involved in glycometabolism that catalyzes the formation of oxaloacetate and NADH from L-malate and NAD. MDHC is highly expressed in brain, heart and skeletal muscle and plays a role in aerobic energy production for muscle contraction, transmission of neuronal signals, absorption/resorption pathways, collagen-supporting functions, dead cell phagocytosis, as well as pathways involved in gas exchange and cell division. Furthermore, MDHC is a regulatory subunit of the nucleic acid-conducting channel (NACh). MDHC functions as a homodimer and is highly conserved in plants, animals and bacteria. The activity of MDHC is controlled by the sesquiterpenoid juvenile hormone (JH) and the steroid hormone ecdysone.

REFERENCES

1. Drmota, T., et al. 1997. Isolation and characterization of cytosolic malate dehydrogenase from *Trichomonas vaginalis*. Folia Parasitol. 44: 103-108.
2. Farkas, R. and Knopp, J. 1998. Genetic and hormonal control of cytosolic malate dehydrogenase activity in *Drosophila melanogaster*. Gen. Physiol. Biophys. 17: 37-50.
3. Fahien, L.A., et al. 1999. Ability of cytosolic malate dehydrogenase and lactate dehydrogenase to increase the ratio of NADPH to NADH oxidation by cytosolic glycerol-3-phosphate dehydrogenase. Arch. Biochem. Biophys. 364: 185-194.
4. Hanss, B., et al. 2002. Cytosolic malate dehydrogenase confers selectivity of the nucleic acid-conducting channel. Proc. Natl. Acad. Sci. USA 99: 1707-1712.
5. Merrit, T.J., et al. 2003. Evolution of the vertebrate cytosolic malate dehydrogenase gene family: duplication and divergence in actinopterygian fish. J. Mol. Evol. 56: 265-276.
6. Krzakowa, M., et al. 2005. Genetic variability among beech *(Fagus sylvatica L.)* populations from the Sudety Mountains, in respect of peroxidase and malate dehydrogenase loci. J. Appl. Genet. 46: 271-277.

CHROMOSOMAL LOCATION

Genetic locus: MDH1 (human) mapping to 2p15; Mdh1 (mouse) mapping to 11 A3.1.

SOURCE

MDHC (A-4) is a mouse monoclonal antibody raised against amino acids 255-320 mapping near the C-terminus of MDHC of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

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

APPLICATIONS

MDHC (A-4) is recommended for detection of MDHC (malate dehydrogenase, cytoplasmic) 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 MDHC siRNA (h): sc-61012, MDHC siRNA (m): sc-61013, MDHC shRNA Plasmid (h): sc-61012-SH, MDHC shRNA Plasmid (m): sc-61013-SH, MDHC shRNA (h) Lentiviral Particles: sc-61012-V and MDHC shRNA (m) Lentiviral Particles: sc-61013-V.

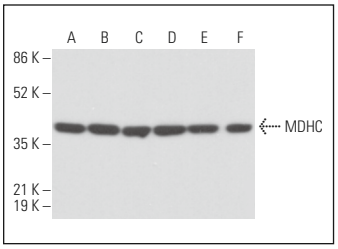
Molecular Weight of MDHC: 36 kDa.

Positive Controls: SUP-T1 whole cell lysate: sc-364796, ALL-SIL whole cell lysate: sc-364356 or EOC 20 whole cell lysate: sc-364187.

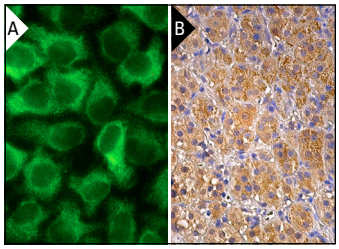
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 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 m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



MDHC (A-4): sc-166880. Western blot analysis of MDHC expression in SUP-T1 (**A**), ALL-SIL (**B**), EOC 20 (**C**), NIH/3T3 (**D**), Sol8 (**E**) and L6 (**F**) whole cell lysates.



MDHC (A-4): sc-166880. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human adrenal gland tissue showing cytoplasmic staining of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Igelmann, S., et al. 2021. A hydride transfer complex reprograms NAD metabolism and bypasses senescence. Mol. Cell 81: 3848-3865.e19.

RESEARCH USE

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