SANTA CRUZ BIOTECHNOLOGY, INC.

MTHFD2 (L-17): sc-74984

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The Power to Question

BACKGROUND

MTHFD2 (Methylenetetrahydrofolate dehydrogenase 2), also known as NMDMC, is a 350 amino acid bifunctional protein that is responsible for the consecutive interconversion of tetrahydrofolate derivatives which drive the synthesis of purine, methionine and thymidylate. MTHFD2 is bifunctional in that it has methylenetetrahydrofolate dehydrogenase and methenyltetrahydrofolate cyclohydrolase activity. MTHFD2 requires either NADP or NAD as a cofactor for interconversion. Activity of these cofactors is affected by intracellular magnesium and phosphate concentrations. MTHFD2 functions as a homodimer and is localized to the mitochondria where it is expressed during the development of normal tissue.

REFERENCES

1. Shannon, K.W. and Rabinowitz, J.C. 1986. Purification and characterization of a mitochondrial isozyme of C1-tetrahydrofolate synthase from *Saccharomyces cerevisiae*. J. Biol. Chem. 261: 12266-12271.
2. Peri, K.G., et al. 1989. Nucleotide sequence of the human NAD-dependent methylene tetrahydrofolate dehydrogenase-cyclohydrolase. Nucleic Acids Res. 17: 8853.
3. Schild, D., et al. 1990. Cloning of three human multifunctional *de novo* purine biosynthetic genes by functional complementation of yeast mutations. Proc. Natl. Acad. Sci. USA 87: 2916-2920.
4. Yang, X.M. and MacKenzie, R.E. 1993. NAD-dependent methylenetetrahydrofolate dehydrogenase-methenyltetrahydrofolate cyclohydrolase is the mammalian homolog of the mitochondrial enzyme encoded by the yeast MIS1 gene. Biochemistry 32: 11118-11123.
5. Di Pietro, E., et al. 2002. Mitochondrial NAD-dependent methylenetetrahydrofolate dehydrogenase-methenyltetrahydrofolate cyclohydrolase is essential for embryonic development. Mol. Cell. Biol. 22: 4158-4166.

CHROMOSOMAL LOCATION

Genetic locus: MTHFD2 (human) mapping to 2p13.1, MTHFD2L (human) mapping to 4q13.3; Mthfd2 (mouse) mapping to 6 C3, Mthfd2l (mouse) mapping to 5 E1.

SOURCE

MTHFD2 (L-17) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of MTHFD2 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-74984 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

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

APPLICATIONS

MTHFD2 (L-17) is recommended for detection of MTHFD2 and MTHFD2L of mouse, rat and 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).

MTHFD2 (L-17) is also recommended for detection of MTHFD2 and MTHFD2L in additional species, including equine, canine, bovine, porcine and avian.

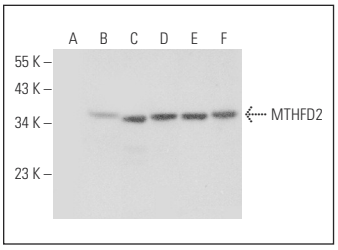
Molecular Weight of MTHFD2: 38 kDa.

Positive Controls: MTHFD2 (h): 293T Lysate: sc-112798, SW480 cell lysate: sc-2219 or U-937 cell lysate: sc-2239.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (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 donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



MTHFD2 (L-17): sc-74984. Western blot analysis of MTHFD2 expression in non-transfected: sc-117750 (**A**), human MTHFD2 transfected: sc-112798 (**B**), SW480 (**C**), U-937 (**D**), A431 (**E**) and NCI-H1299 (**F**) whole cell lysates.

RESEARCH USE

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