SANTA CRUZ BIOTECHNOLOGY, INC.

DHFR (A-4): sc-74593

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Dihydrofolate reductase (DHFR) catalyzes the NADPH-dependent reduction of dihydrofolate to tetrahydrofolate, and is a crucial enzyme for the synthesis of purines, pyrimidines and some amino acids. Inhibition of the activity of this enzyme leads to arrest of DNA synthesis and cell death. Gene expression of methotrexate (MTX)-resistant variants of DHFR in normal hematopoietic cells is a potential strategy to permit administration of larger doses of MTX by alleviating drug toxicity in normal cells and tissues that are drug sensitive.

REFERENCES

1. Walker, V.K., et al. 2000. Tobacco budworm dihydrofolate reductase is a promising target for insecticide discovery. Eur. J. Biochem. 267: 394-403.
2. Li, R., et al. 2000. Three-dimensional structure of *M. tuberculosis* dihydrofolate reductase reveals opportunities for the design of novel tuberculosis drugs. J. Mol. Biol. 295: 307-323.

CHROMOSOMAL LOCATION

Genetic locus: DHFR (human) mapping to 5q14.1; Dhfr (mouse) mapping to 13 C3.

SOURCE

DHFR (A-4) is a mouse monoclonal antibody raised against amino acids 1-187 representing full length DHFR 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.

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.

APPLICATIONS

DHFR (A-4) is recommended for detection of DHFR 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 DHFR siRNA (h): sc-37078, DHFR siRNA (m): sc-37079, DHFR shRNA Plasmid (h): sc-37078-SH, DHFR shRNA Plasmid (m): sc-37079-SH, DHFR shRNA (h) Lentiviral Particles: sc-37078-V and DHFR shRNA (m) Lentiviral Particles: sc-37079-V.

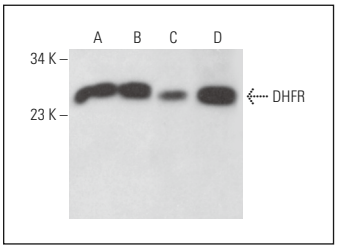
Molecular Weight of DHFR: 25 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, DHFR (h2): 293T Lysate: sc-170387 or Jurkat whole cell lysate: sc-2204.

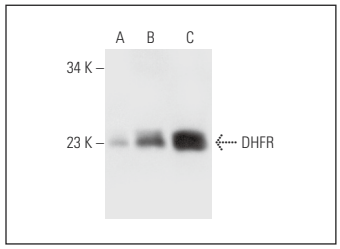
RECOMMENDED SUPPORT REAGENTS

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.

DATA



DHFR (A-4): sc-74593. Western blot analysis of DHFR expression in Jurkat (**A**), HeLa (**B**), 3T3-L1 (**C**) and NIH/3T3 (**D**) whole cell lysates.



DHFR (A-4): sc-74593. Western blot analysis of DHFR expression in non-transfected 293T: sc-117752 (**A**), human DHFR transfected 293T: sc-170387 (**B**) and HeLa (**C**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Fonsato, V., et al. 2012. Human liver stem cell-derived microvesicles inhibit hepatoma growth in SCID mice by delivering antitumor microRNAs. Stem Cells 30: 1985-1998.
2. Pelà, M., et al. 2014. Optimization of peptides that target human thymidylate synthase to inhibit ovarian cancer cell growth. J. Med. Chem. 57: 1355-1367.
3. Genovese, F., et al. 2014. Mass spectrometric/bioinformatic identification of a protein subset that characterizes the cellular activity of anticancer peptides. J. Proteome Res. 13: 5250-5261.
4. Faden, F., et al. 2016. Phenotypes on demand via switchable target protein degradation in multicellular organisms. Nat. Commun. 7: 12202.
5. Marverti, G., et al. 2021. Folic acid-peptide conjugates combine selective cancer cell internalization with thymidylate synthase dimer interface targeting. J. Med. Chem. 64: 3204-3221.

PROTOCOLS

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

CONJUGATES

See **DHFR (A-9): sc-377091** for DHFR antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.