SANTA CRUZ BIOTECHNOLOGY, INC.

DHFR (A-9): sc-377091

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.

CHROMOSOMAL LOCATION

Genetic locus: DHFR (human) mapping to 5q14.1, DHFRL1 (human) mapping to 3q11.1; Dhfr (mouse) mapping to 13 C3.

SOURCE

DHFR (A-9) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 125-165 near the C-terminus of DHFR 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.

DHFR (A-9) is available conjugated to agarose (sc-377091 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-377091 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377091 PE), fluorescein (sc-377091 FITC), Alexa Fluor® 488 (sc-377091 AF488), Alexa Fluor® 546 (sc-377091 AF546), Alexa Fluor® 594 (sc-377091 AF594) or Alexa Fluor® 647 (sc-377091 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377091 AF680) or Alexa Fluor® 790 (sc-377091 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-377091 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

APPLICATIONS

DHFR (A-9) is recommended for detection of DHFR and DHFRL1 of human origin and DHFR of mouse and rat 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 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.

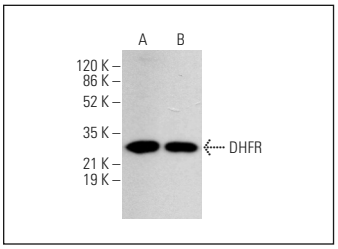
Molecular Weight of DHFR: 25 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, Jurkat whole cell lysate: sc-2204 or Hep G2 cell lysate: sc-2227.

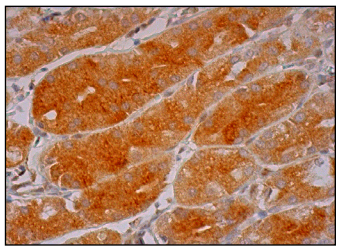
STORAGE

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

DATA



DHFR (A-9): sc-377091. Western blot analysis of DHFR expression in HeLa (**A**) and Jurkat (**B**) whole cell lysates.



DHFR (A-9): sc-377091. Immunoperoxidase staining of formalin fixed, paraffin-embedded human lower stomach tissue showing cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

1. Martinez Molina, D., et al. 2013. Monitoring drug target engagement in cells and tissues using the cellular thermal shift assay. Science 341: 84-87.
2. Huber, K.V., et al. 2015. Proteome-wide drug and metabolite interaction mapping by thermal-stability profiling. Nat. Methods 12: 1055-1057.
3. Zheng, Y., et al. 2018. Mitochondrial one-carbon pathway supports cytosolic folate integrity in cancer cells. Cell 175: 1546-1560.e17.
4. Chen, L., et al. 2019. NADPH production by the oxidative pentose-phosphate pathway supports folate metabolism. Nat. Metab. 1: 404-415.
5. Pavlovic Djuranovic, S., et al. 2020. *Plasmodium falciparum* translational machinery condones polyadenosine repeats. Elife 9: e57799.
6. Cheng, K.W., et al. 2021. Evaluation of artificial signal peptides for secretion of two lysosomal enzymes in CHO cells. Biochem. J. 478: 2309-2319.
7. Spizzichino, S., et al. 2022. Cytosolic localization and *in vitro* assembly of human *de novo* thymidylate synthesis complex. FEBS J. 289: 1625-1649.
8. Heppler, L.N., et al. 2022. The antimicrobial drug pyrimethamine inhibits STAT3 transcriptional activity by targeting the enzyme dihydrofolate reductase. J. Biol. Chem. 298: 101531.
9. Min, H., et al. 2022. Hybrid cell line development system utilizing site-specific integration and methotrexate-mediated gene amplification in Chinese hamster ovary cells. Front. Bioeng. Biotechnol. 10: 977193.
10. Hariharan, A., et al. 2022. Heterogeneous RNA editing and influence of ADAR2 on mesothelioma chemoresistance and the tumor microenvironment. Mol. Oncol. 16: 3949-3974.
11. Winska, P., et al. 2023. Phosphorylation of thymidylate synthase and dihydrofolate reductase in cancer cells and the effect of CK2α silencing. Int. J. Mol. Sci. 24: 3023.

RESEARCH USE

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