

dUTPase (A-13): sc-68069

BACKGROUND

dUTPase (deoxyuridine 5'-triphosphate nucleotidohydrolase), also known as DUT or dUTP pyrophosphatase, is a preventive DNA repair enzyme that functions in nucleotide metabolism. dUTPase is expressed in a variety of tissues and, depending on the isoform (DUT-N or DUT-M), localizes to the nucleus or the mitochondrion. The nuclear isoform, DUT-N, is the most abundant of the two isoforms. dUTPase, in the presence of magnesium ions, is responsible for hydrolyzing dUTP to dUMP and diphosphate. This reaction is important for keeping the intracellular dUTP concentration low so that uracil does not become incorporated into DNA. Extensive incorporation of uracil into DNA can ultimately lead to cell death. This suggests that dUTPase is essential for cell viability, further implying that dUTPase is a potential target for anticancer therapy. In addition, dUMP, the product of the hydrolysis reaction, is a precursor of thymidine nucleotides which are essential for DNA replication.

REFERENCES

1. Canman, C.E., et al. 1992. Variations in patterns of DNA damage induced in human colorectal tumor cells by 5-fluorodeoxyuridine: implications for mechanisms of resistance and cytotoxicity. *Proc. Natl. Acad. Sci. USA* 89: 10474-10478.
2. Ladner, R.D., et al. 1996. Characterization of distinct nuclear and mitochondrial forms of human deoxyuridine triphosphate nucleotidohydrolase. *J. Biol. Chem.* 271: 7745-7751.
3. Online Mendelian Inheritance in Man, OMIM[™]. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 601266. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
4. Jiang, Y.L., et al. 2006. Synthesis and high-throughput evaluation of tri-skelion uracil libraries for inhibition of human dUTPase and UNG2. *Bioorg. Med. Chem.* 14: 5666-5672.
5. Samal, A., et al. 2007. Structures of vaccinia virus dUTPase and its nucleotide complexes. *Acta Crystallogr. D Biol. Crystallogr.* 63: 571-580.
6. Varga, B., et al. 2007. Active site closure facilitates juxtaposition of reactant atoms for initiation of catalysis by human dUTPase. *FEBS Lett.* 581: 4783-4788.
7. Tóth, J., et al. 2007. Kinetic mechanism of human dUTPase, an essential nucleotide pyrophosphatase enzyme. *J. Biol. Chem.* 282: 33572-33582.
8. Thymark, M., et al. 2008. Mutational analysis of the nucleotide binding site of *Escherichia coli* dCTP deaminase. *Arch. Biochem. Biophys.* 470: 20-26.

CHROMOSOMAL LOCATION

Genetic locus: DUT (human) mapping to 15q15-q21.1.

SOURCE

dUTPase (A-13) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of dUTPase of human origin.

RESEARCH USE

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

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-68069 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

dUTPase (A-13) is recommended for detection of dUTPase of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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 dUTPase siRNA (h): sc-62242, dUTPase shRNA Plasmid (h): sc-62242-SH and dUTPase shRNA (h) Lentiviral Particles: sc-62242-V.

Molecular Weight of dUTPase nuclear isoform: 22 kDa.

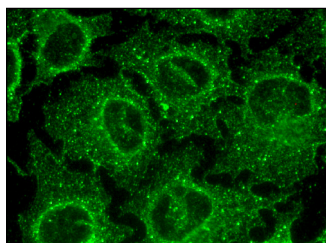
Molecular Weight of dUTPase mitochondrial isoform: 23 kDa.

Positive Controls: Ramos cell lysate: sc-2216 or HeLa whole cell lysate: sc-2200.

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) 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



dUTPase (A-13): sc-68069. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

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 or our catalog for detailed protocols and support products.