SANTA CRUZ BIOTECHNOLOGY, INC.

MSR (N-18): sc-48889

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The methylation of homocysteine to methionine, an essential amino acid in humans, is catalyzed by a cobalamin-dependent enzyme, methionine synthase (MS), for which MSR (methionine synthase reductase) acts as a chaperone protein. Over time, the cob(I)alamin cofactor of MS becomes oxidized to cob(II)alamin, thus inactivating MS. Regeneration of active MS requires reductive methylation catalyzed by MSR, in which SAM is used as a methyl donor. MSR maintains MS activity at a 1:1 stoichiometric ratio. In the presence of MSR and NADPH, holoenzyme formation from apoMS and methylcobalamin is significantly heightened due to stabilization of apoMS in the presence of MSR. In addition, MSR is able to decrease aquacobalamin to cob(II)alamin in the presence of NADPH, which stimulates conversion of apoMS and aquacobalamin to holoMS.

REFERENCES

1. Wilson, A., et al. 1999. Molecular basis for methionine synthase reductase deficiency in patients belonging to the cblE complementation group of disorders in folate/cobalamin metabolism. Hum. Mol. Genet. 8: 2009-2016.
2. Gaughan, D.J., et al. 2001. The methionine synthase reductasee (MTRR) A66G polymorphism is a novel genetic determinant of plasma homocysteine concentrations. Atherosclerosis 157: 451-456.
3. Olteanu, H., et al. 2002. Differences in the efficiency of reductive activation of methionine synthase and exogenous electron acceptors between the common polymorphic variants of human methionine synthase reductase. Biochemistry 41: 13378-13385.
4. Vaughn, J.D., et al. 2004. Methionine synthase reductase 66A→G polymorphism is associated with increased plasma homocysteine concentration when combined with the homozygous methylenetetrahydrofolate reductase 677C→T variant. J. Nutr. 134: 2985-2990.
5. Shi, Q., et al. 2005. Polymorphisms of methionine synthase and methionine synthase reductase and risk of lung cancer: a case-control analysis. Pharmacogenet. Genomics 15: 547-555.
6. Zavadáková, P., et al. 2005. cblE type of homocystinuria due to methionine synthase reductase deficiency: functional correction by minigene expression. Hum. Mutat. 25: 239-247.
7. Ishikawa, H., et al. 2006. A polymorphism of the methionine synthase reductase gene increases chromosomal damage in peripheral lymphocytes in smokers. Mutat. Res. 599: 135-143.

CHROMOSOMAL LOCATION

Genetic locus: MTRR (human) mapping to 5p15.31; Mtrr (mouse) mapping to 13 B3.

SOURCE

MSR (N-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of MSR 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-48889 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

MSR (N-18) is recommended for detection of MSR isoforms A and B of mouse, rat and 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), 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).

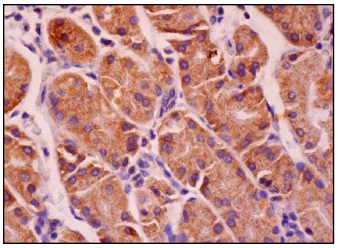
MSR (N-18) is also recommended for detection of MSR isoforms A and B in additional species, including canine, bovine, porcine and avian.

Suitable for use as control antibody for MSR siRNA (h): sc-61078, MSR siRNA (m): sc-61079, MSR shRNA Plasmid (h): sc-61078-SH, MSR shRNA Plasmid (m): sc-61079-SH, MSR shRNA (h) Lentiviral Particles: sc-61078-V and MSR shRNA (m) Lentiviral Particles: sc-61079-V.

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. 3) Immunohistochemistry: use ImmunoCruz™: sc-2053 or ABC: sc-2023 goat IgG Staining Systems.

DATA



MSR (N-18): sc-48889. Immunoperoxidase staining of formalin fixed, paraffin-embedded human lower stomach tissue showing cytoplasmic staining of glandular cells.

STORAGE

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