SANTA CRUZ BIOTECHNOLOGY, INC.

CTH (A-2): sc-365381

BACKGROUND

CTH (cystathionine γ-lyase), also known as CSE or γ-cystathionase, is a member of the *trans*-sulfuration enzyme family and participates in the *trans*-sulfuration pathway. CTH is a cytoplasmic enzyme produced in the cytosol and is responsible for catalyzing the pyridoxal phosphate-dependent β-disulfide elimination reaction resulting in ammonium, pyruvate and thiocysteine. The thiocysteine that is produced may then react with other thiols (or cysteine) and form hydrogen sulfide (H_2S). Thus, CTH is the major H_2S-producing enzyme in kidney, liver, vascular smooth muscle cells and enterocytes. The endogenous production of H_2S plays a significant role in the regulation of cellular functions, including cell growth, hyperpolarization of cell membranes, modulation of neuronal excitability and relaxation of smooth muscle cells. Mutations in the gene encoding CTH can result in the autosomal recessive disease cystathioninuria; a disorder characterized by the unusual accumulation of plasma cystathionine causing increased urinary excretion.

CHROMOSOMAL LOCATION

Genetic locus: CTH (human) mapping to 1p31.1; Cth (mouse) mapping to 3 H4.

SOURCE

CTH (A-2) is a mouse monoclonal antibody raised against amino acids 61-227 mapping within an internal region of CTH 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.

APPLICATIONS

CTH (A-2) is recommended for detection of CTH isoforms 1 and 2 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), 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 CTH siRNA (h): sc-78973, CTH siRNA (m): sc-142618, CTH siRNA (r): sc-270000, CTH shRNA Plasmid (h): sc-78973-SH, CTH shRNA Plasmid (m): sc-142618-SH, CTH shRNA Plasmid (r): sc-270000-SH, CTH shRNA (h) Lentiviral Particles: sc-78973-V, CTH shRNA (m) Lentiviral Particles: sc-142618-V and CTH shRNA (r) Lentiviral Particles: sc-270000-V.

Molecular Weight of CTH: 45 kDa.

Positive Controls: F9 cell lysate: sc-2245, K-562 whole cell lysate: sc-2203 or rat kidney extract: sc-2394.

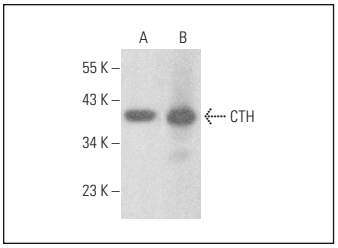
STORAGE

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

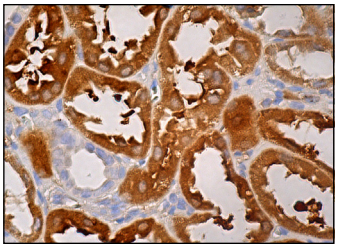
RESEARCH USE

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

DATA



CTH (A-2): sc-365381. Western blot analysis of CTH expression in F9 whole cell lysate (**A**) and rat kidney tissue extract (**B**).



CTH (A-2): sc-365381. Immunoperoxidase staining of formalin fixed, paraffin-embedded human kidney tissue showing cytoplasmic staining of cells in tubules.

SELECT PRODUCT CITATIONS

1. Cheng, Z., et al. 2016. Restoration of hydrogen sulfide production in diabetic mice improves reparative function of bone marrow cells. Circulation 134: 1467-1483.
2. Zuhra, K., et al. 2019. N-acetylcysteine serves as substrate of 3-mercaptopyruvate sulfurtransferase and stimulates sulfide metabolism in colon cancer cells. Cells 8: 828.
3. Ying, J., et al. 2020. Hydrogen sulfide promotes cell proliferation and melanin synthesis in primary human epidermal melanocytes. Skin Pharmacol. Physiol. 33: 61-68.
4. Huang, Y., et al. 2021. Endogenous hydrogen sulfide is an important factor in maintaining arterial oxygen saturation. Front. Pharmacol. 12: 677110.
5. Chen, Z., et al. 2021. Hydrogen sulfide contributes to uterine quiescence through inhibition of NLRP3 inflammasome activation by suppressing the TLR4/NFκB signalling pathway. J. Inflamm. Res. 14: 2753-2768.
6. Kim, M., et al. 2021. MiR-154-5p-MCP1 axis regulates allergic inflammation by mediating cellular interactions. Front. Immunol. 12: 663726.
7. López-Preza, F.I., et al. 2022. Hydrogen sulfide prevents the vascular dysfunction induced by severe traumatic brain injury in rats by reducing reactive oxygen species and modulating eNOS and H_2S-synthesizing enzyme expression. Life Sci. 312: 121218.
8. Huerta de la Cruz, S., et al. 2022. Exogenous hydrogen sulfide restores CSE and CBS but no 3-MST protein expression in the hypothalamus and brainstem after severe traumatic brain injury. Metab. Brain Dis. 37: 1863-1874.
9. Meinert, M., et al. 2024. Thiol starvation triggers melanoma state switching in an ATF4 and NRF2-dependent manner. Redox Biol. 70: 103011.

CONJUGATES

See **CTH (F-1): sc-374249** for CTH antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.