SANTA CRUZ BIOTECHNOLOGY, INC.

γ-GCSc (F-9): sc-166356



BACKGROUND

The GCLC gene consists of 16 exons and encodes the 636 amino acid protein γ -GCSc (γ -glutamylcysteine synthetase heavy subunit), also designated γ -L-glutamate-L-cysteine ligase catalytic subunit (GLCLC). γ -GCSc is expressed in hemocytes, brain, liver and kidney. γ -GCSc associates with a regulatory or modifier subunit, γ -GCSm (γ -glutamylcysteine synthetase light subunit), to form a heterodimer, γ -GCS. γ -GCS is the first enzyme involved and the rate determining step in glutathione biosynthesis. Oxidants, cadium and methyl mercury upregulate the transcription of γ -GCS. H₂O₂ regulation depends on the Yap1 protein and the presence of glutamate, glutamine and lysine. Cadium regulates transcription through proteins Met-4, Met-31 and Met-32. Cbf1, a DNA binding protein, inhibits transcription of γ -GCS. Chemopreventive compounds cause increased levels of γ -GCSc in kidney tissues, which may protect against chemically-induced carcinogenesis. A His370Leu amino acid change in γ -GCSc causes deficiencies in activity, which are responsible for hemolytic anemia and low red blood cell glutathione levels.

REFERENCES

- 1. Lunn, G., et al. 1979. Transport accounts for glutathione turnover in human erythrocytes. Blood 54: 238.
- Sierra-Rivera, E., et al. 1995. Assignment of the gene (GLCLC) that encodes the heavy subunit of γ-glutamylcysteine synthetase to human chromosome 6. Cytogenet. Cell Genet. 70: 278-279.
- Walsh, A.C., et al. 1996. Genetic mapping of GLCLC, the human gene encoding the catalytic subunit of γ-glutamylcysteine synthetase, to chromosome band 6p12 and characterization of a polymorphic trinucleotide repeat within its 5' untranslated region. Cytogenet. Cell Genet. 75: 14-16.

CHROMOSOMAL LOCATION

Genetic locus: GCLC (human) mapping to 6p12.1; Gclc (mouse) mapping to 9 E1.

SOURCE

 γ -GCSc (F-9) is a mouse monoclonal antibody raised against amino acids 338-637 mapping at the C-terminus of γ -GCSc of human origin.

PRODUCT

Each vial contains 200 μg lgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

 γ -GCSc (F-9) is available conjugated to agarose (sc-166356 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-166356 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166356 PE), fluorescein (sc-166356 FITC), Alexa Fluor[®] 488 (sc-166356 AF488), Alexa Fluor[®] 546 (sc-166356 AF546), Alexa Fluor[®] 594 (sc-166356 AF594) or Alexa Fluor[®] 647 (sc-166356 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-166356 AF680) or Alexa Fluor[®] 790 (sc-166356 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

RESEARCH USE

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

APPLICATIONS

 γ -GCSc (F-9) is recommended for detection of γ -GCSc 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 γ -GCSc siRNA (h): sc-41978, γ -GCSc siRNA (m): sc-41979, γ -GCSc shRNA Plasmid (h): sc-41978-SH, γ -GCSc shRNA Plasmid (m): sc-41979-SH, γ -GCSc shRNA (h) Lentiviral Particles: sc-41978-V and γ -GCSc shRNA (m) Lentiviral Particles: sc-41979-V.

Molecular Weight of y-GCSc: 73 kDa.

Positive Controls: AMJ2-C8 whole cell lysate: sc-364366, c4 whole cell lysate: sc-364186 or A549 cell lysate: sc-2413.

DATA





 $\gamma\text{-GCSc}$ (F-9): sc-166356. Western blot analysis of $\gamma\text{-GCSc}$ expression in c4 (A) and AMJ2-C8 (B) whole cell lysates.

γ-GCSc (F-9): sc-166356. Immunoperoxidase staining of formalin fixed, parafin-embedded human oral mucosa tissue showing cytoplasmic staining of squamous epithelial cells.

SELECT PRODUCT CITATIONS

- Lee, H.M., et al. 2014. Defensive mechanism in cholangiocarcinoma cells against oxidative stress induced by chlorin e6-based photodynamic therapy. Drug Des. Devel. Ther. 8: 1451-1462.
- Rosales-Cruz, P., et al. 2018. Cadmium exposure exacerbates hyperlipidemia in cholesterol-overloaded hepatocytes via autophagy dysregulation. Toxicology 398-399: 41-51.
- Zhang, X.N., et al. 2021. Diallyl disulfide suppresses the lipopolysaccharidedriven inflammatory response of macrophages by activating the Nrf2 pathway. Food Chem. Toxicol. 159: 112760.
- Tyagi, R., et al. 2023. Inositol polyphosphate multikinase modulates redox signaling through nuclear factor erythroid 2-related factor 2 and glutathione metabolism. iScience 26: 107199.

STORAGE

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

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