

GCAT (N-20): sc-86466

BACKGROUND

GCAT (glycine C-acetyltransferase) is also known as KBL, aminoacetone synthase or 2-amino-3-ketobutyrate coenzyme A ligase and is a 419 amino acid protein. GCAT is localized to mitochondria in various tissues, including heart, brain, liver, pancreas and lungs. In mitochondria, two enzymes function in catalyzing the reaction that converts L-Threonine into glycine, the second of which is GCAT. L-Threonine is first converted into 2-amino-3-ketobutyrate by TDH, a reaction that is preceded by the CoA- and GCAT-dependent formation of glycine and acetyl-CoA. Defects in the gene encoding GCAT may result in elevated levels of aminoacetone and carbon dioxide, both of which are products of the 2-amino-3-ketobutyrate intermediate and can further breakdown to form methylglyoxal, hydrogen peroxide and ammonia. Excess blood levels of methylglyoxal may cause kidney damage and are thought to be associated with diabetic complications.

REFERENCES

1. Tressel, T., et al. 1986. Interaction between L-Threonine dehydrogenase and aminoacetone synthetase and mechanism of aminoacetone production. *J. Biol. Chem.* 261: 16428-16437.
2. Marcus, J.P. and Dekker, E.E. 1993. Threonine formation via the coupled activity of 2-amino-3-ketobutyrate coenzyme A lyase and threonine dehydrogenase. *J. Bacteriol.* 175: 6505-6511.
3. Tong, H. and Davis, L. 1994. 2-Amino-3-ketobutyrate-CoA ligase from beef liver mitochondria. Purification and partial sequence. *J. Biol. Chem.* 269: 4057-4064.
4. Tong, H. and Davis, L. 1995. 2-Amino-3-ketobutyrate-CoA ligase from beef liver mitochondria: an NMR spectroscopic study of low-barrier hydrogen bonds of a pyridoxal 5'-phosphate-dependent enzyme. *Biochemistry* 34: 3362-3367.
5. Edgar, A.J. and Polak, J.M. 2000. Molecular cloning of the human and murine 2-amino-3-ketobutyrate coenzyme A ligase cDNAs. *Eur. J. Biochem.* 267: 1805-1812.

CHROMOSOMAL LOCATION

Genetic locus: GCAT (human) mapping to 22q13.1; Gcat (mouse) mapping to 15 E1.

SOURCE

GCAT (N-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of GCAT of human origin.

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-86466 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

RESEARCH USE

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

APPLICATIONS

GCAT (N-20) is recommended for detection of GCAT of mouse, rat and human origin by Western Blotting (starting dilution 1:200, 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

GCAT (N-20) is also recommended for detection of GCAT in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for GCAT siRNA (h): sc-75116, GCAT siRNA (m): sc-145356, GCAT shRNA Plasmid (h): sc-75116-SH, GCAT shRNA Plasmid (m): sc-145356-SH, GCAT shRNA (h) Lentiviral Particles: sc-75116-V and GCAT shRNA (m) Lentiviral Particles: sc-145356-V.

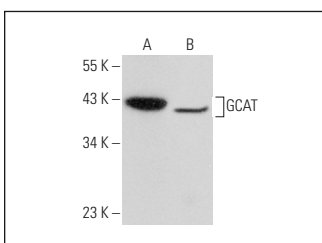
Molecular Weight of GCAT: 45 kDa.

Positive Controls: rat heart extract: sc-2393 or mouse pancreas extract: sc-364244.

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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) 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



GCAT (N-20): sc-86466. Western blot analysis of GCAT expression in rat heart (A) and mouse pancreas (B) tissue extracts.

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.