

p-PTPS (Ser 19): sc-16319

BACKGROUND

The tetrahydrobiopterin (BH4) cofactor is essential for hepatic hydroxylase, which is involved in phenylalanine degradation and catecholamine and serotonin biosynthesis. In addition, BH4 is an essential and limiting cofactor for all types of nitric oxide synthase. Therefore, BH4 deficiency results in hyperphenylalaninemia and monoamine neurotransmitter depletion and is most commonly due to autosomal recessive mutation in 6-pyruvoyltetrahydropterin synthase (PTPS), the second enzyme for BH4 biosynthesis. The gene encoding PTPS (also designated PTS) is located on human chromosome 11q22.3-q23.3. The active site of PTPS consists of the pterin-anchoring Glu A107 neighbored by two catalytic motifs: a Zn(II) binding site and an intersubunit catalytic triad formed by Cys A42, Asp B88 and His B89. The active site of PTPS undergoes a Zn and Mg-dependent reaction includes a triphosphate elimination, a stereospecific reduction and the oxidation of both side hydroxyl groups. The catalytic triad of PTPS is involved in the deprotonation of the side-chain carbons of substrates. In addition, Ser 19 of human PTPS may be a substrate for cGMP-dependent protein kinase type II phosphorylation *in vivo* that is essential for normal activity of PTPS.

REFERENCES

1. Thony, B., et al. 1992. Human 6-pyruvoyltetrahydropterin synthase: cDNA cloning and heterologous expression of the recombinant enzyme. *Biochem. Biophys. Res. Commun.* 189: 1437-1443.
2. Thony, B., et al. 1994. Chromosomal location of two human genes encoding tetrahydrobiopterin-metabolizing enzymes: 6-pyruvoyltetrahydropterin synthase maps to 11q22.3-q23.3, and pterin-4 α -carbinolamine dehydratase maps to 10q22. *Genomics* 19: 365-368.
3. Kluge, C., et al. 1996. Chromosomal localization, genomic structure and characterization of the human gene and a retropseudogene for 6-pyruvoyltetrahydropterin synthase. *Eur. J. Biochem.* 240: 477-484.
4. Laufs, S., et al. 1998. Retrovirus-mediated double transduction of the GTPCH and PTPS genes allows 6-pyruvoyltetrahydropterin synthase-deficient human fibroblasts to synthesize and release tetrahydrobiopterin. *J. Neurochem.* 71: 33-40.
5. Linscheid, P., et al. 1998. Regulation of 6-pyruvoyltetrahydropterin synthase activity and messenger RNA abundance in human vascular endothelial cells. *Circulation* 98: 1703-1706.
6. Ploom, T., et al. 1999. Crystallographic and kinetic investigation on the mechanism of 6-pyruvoyl tetrahydropterin synthase. *J. Mol. Biol.* 286: 851-860.
7. Scherer-Oppliger, T., et al. 1999. Serine 19 of human 6-pyruvoyltetrahydropterin synthase is phosphorylated by cGMP protein kinase II. *J. Biol. Chem.* 274: 31341-31348.

CHROMOSOMAL LOCATION

Genetic locus: PTS (human) mapping to 11q23.3; Pts (mouse) mapping to 9 A5.3.

RESEARCH USE

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

SOURCE

p-PTPS (Ser 19) is available as either goat (sc-16319) or rabbit (sc-16319-R) polyclonal affinity purified antibody raised against a short amino acid sequence containing phosphorylated Ser 19 of PTPS of human origin.

PRODUCT

Each vial contains 200 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-16319 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-PTPS (Ser 19) is recommended for detection of Ser 19 phosphorylated PTPS 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).

p-PTPS (Ser 19) is also recommended for detection of Ser 19 phosphorylated PTPS in additional species, including bovine and porcine.

Suitable for use as control antibody for PTP σ siRNA (h): sc-44056, PTPs shRNA Plasmid (h): sc-44056-SH and PTP σ shRNA (h) Lentiviral Particles: sc-44056-V.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: for goat primary antibody (sc-16319): use donkey anti-goat IgG-HRP: sc-2020 (range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (range: 1:2000-1:5000), for rabbit primary antibody (sc-16319-R): use goat anti-rabbit IgG-HRP: sc-2004 (range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (range: 1:2000-1:5000); Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent) and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: for goat primary antibody (sc-16319): use donkey anti-goat IgG-FITC: sc-2024 (range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (range: 1:100-1:400), for rabbit primary antibody (sc-16319-R): use goat anti-rabbit IgG-FITC: sc-2012 (range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

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.