SANTA CRUZ BIOTECHNOLOGY, INC.

p-GSK-3α (8.Ser 21): sc-293134

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Glycogen synthase kinase-3α (GSK-3α) and GSK-3β are highly similar isoforms of serine/threonine kinases that regulate metabolic enzymes and transcription factors, which are responsible for coordinating processes such as glycogen synthesis and cell adhesion. GSK-3β activity is also required for nuclear activity of Rel dimers, which mediate an anti-apoptotic response to TNFα in mice. GSK-3 catalytic kinase activity is controlled through differential phosphorylation of serine/threonine residues, which have an inhibitory effect, and tyrosine residues, which have an activating effect. Growth factor stimulation of mammalian cells expressing GSK-3α and GSK-3β induces phosphorylation of Ser 21 and Ser 9, respectively, through a phosphatidylinositol 3-kinase (PI 3-K)-protein kinase B (PKB)-dependent pathway, thereby enhancing proliferative signals. Additionally, GSK-3 physically associates with cAMP-dependent protein kinase A (PKA), which phosphorylates Ser 21 of GSK-3α or Ser 9 of GSK-3β and inactivates both forms. GSK-3α/β is positively regulated by phosphorylation on Tyr 279 and Tyr 216, respectively. Activated GSK-3α/β participates in energy metabolism, neuronal cell development, and body pattern formation. Tyrosine dephosphorylation of GSK-3 is involved in its extracellular signal-dependent inactivation.

REFERENCES

1. Plyte, S.E., et al. 1992. Glycogen synthase kinase-3: functions in oncogenesis and development. Biochim. Biophys. Acta 1114: 147-162.
2. Stambolic, V., et al. 1994. Mitogen inactivation of glycogen synthase kinase-3 β in intact cells via serine 9 phosphorylation. Biochem. J. 303: 701-704.
3. Wang, Q.M., et al. 1994. Glycogen synthase kinase-3 β is a dual specificity kinase differentially regulated by tyrosine and serine/threonine phosphoryl-ation. J. Biol. Chem. 269: 14566-14574.
4. Murai, H., et al. 1996. Tyrosine dephosphorylation of glycogen synthase kinase-3 is involved in its extracellular signal-dependent inactivation. FEBS Lett. 392: 153-160.

CHROMOSOMAL LOCATION

Genetic locus: GSK3A (human) mapping to 19q13.2.

SOURCE

p-GSK-3α (8.Ser 21) is a mouse monoclonal antibody raised against a short amino acid sequence containing Ser 21 phosphorylated GSK-3α of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

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

APPLICATIONS

p-GSK-3α (8.Ser 21) is recommended for detection of Ser 21 phosphorylated GSK-3α of 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)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for GSK-3α siRNA (h): sc-29339, GSK-3α shRNA Plasmid (h): sc-29339-SH and GSK-3α shRNA (h) Lentiviral Particles: sc-29339-V.

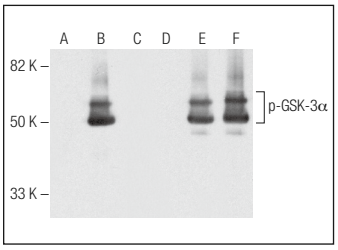
Molecular Weight of p-GSK-3α: 51 kDa.

Positive Controls: GSK-3α (h): 293T Lysate: sc-114699, HeLa whole cell lysate: sc-2200 or Jurkat whole cell lysate: sc-2204.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Lambda Phosphatase: sc-200312A and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



Western blot analysis of GSK-3α phosphorylation in non-transfected: sc-117752 (**A**,**D**), untreated human GSK-3α transfected: sc-114699 (**B**,**E**) and lambda protein phosphatase (sc-200312A) treated human GSK-3α transfected: sc-114699 (**C**,**F**) 293T whole cell lysates. Antibodies tested include p-GSK-3α (8.Ser 21): sc-293134 (**A**,**B**,**C**) and GSK-3α (C-20): sc-1844 (**D**,**E**,**F**).

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.