

GSK3 alpha (Human), Active

Full-length recombinant protein expressed in Sf9 cells

Cat# CY-SPG08

Lot No. U278-1
5 µg 0.1 µg/µl

Background:

GSK3 α is a multifunctional protein serine kinase, homologous to *Drosophila* 'shaggy' (zeste-white3) and implicated in the control of several regulatory proteins including glycogen synthase and transcription factors (e.g., JUN) (1). GSK3 α also plays a role in the WNT and PI3K signaling pathways. Alzheimer disease is associated with increased production and aggregation of amyloid-beta-40 and -42 peptides into plaques. GSK3 α is required for maximal production of the beta-amyloid-40 and -42 peptides generated from the amyloid precursor protein by presenilin-dependent gamma-secretase cleavage. In vitro, lithium, a GSK3 α inhibitor, blocks the production of the beta-amyloid peptides by interfering with the gamma-secretase step (2).

Product Description:

Recombinant full-length human GSK3 α was expressed by baculovirus in Sf9 insect cells using an N-terminal GST tag. The gene accession number is NM_019884.

Gene Aliases:

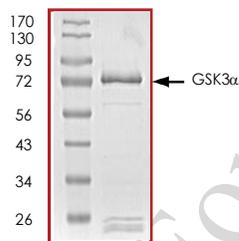
GSK3 α

Formulation:

Recombinant protein stored in 50mM Tris-HCl, pH 7.5, 150mM NaCl, 0.25mM DTT, 0.1mM EGTA, 0.1mM EDTA, 0.1mM PMSF, 25% glycerol.

Purity & Molecular Weight:

The purity was determined to be >90% by densitometry. Approx. MW 81kDa.



Storage:

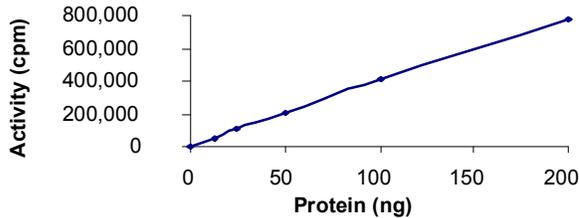
Store product at -70°C . For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, avoid repeated handling and multiple freeze/thaw cycles.

Stability:

1 year at -70°C from date of shipment.

**Specific Activity:**

The specific activity was determined to be 190 nmol /min/mg as per Activity Assay Protocol.

**Activity Assay Protocol:**

Assay activity of the kinase in a 25 μ L reaction consisting of 5 μ L of 5 X Kinase Assay Buffer, 5 μ L of 1 mg/ml the Substrate Solution, 10 μ L of diluted kinase and 5 μ L of 250 μ M ATP solution containing [γ - 32 P] ATP (0.167 μ Ci/ μ L). Start the reaction by adding the ATP solution. Incubate for 15 minutes at 30°C. Terminate the reaction by spotting 20 μ L of the reaction mixture onto phosphocellulose P81 paper. Air-dry the P81 paper and sequentially wash 4 times for approximately 10 minutes each in 1% phosphoric acid with constant gentle stirring. Count the P81 paper in a liquid scintillation counter.

Substrate Solution:

GSK3 peptide substrate (YRRAAVPPSPSLSRHSSPHQ(pS)EDEEE) diluted in distilled H₂O to a final concentration of 1mg/ml.

5 X Kinase Assay Buffer:

25mM MOPS, pH 7.2, 12.5mM β -glycerol-phosphate, 25mM MgCl₂, 5mM EGTA, 2mM EDTA. Add 0.25mM DTT to Kinase Assay Buffer prior to use.

References:

- 1.Ali, A. et al: Glycogen synthase kinase-3 : properties, functions, and regulation. Chem. Rev. 101: 2527-2540, 2001.
- 2.Phiel, C J. et al: GSK-3-alpha regulates production of Alzheimer's disease amyloid-beta peptides. Nature 423: 435-439, 2003.

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