SIK3, Active
Human recombinant protein expressed in Sf9 cells

Catalog # S12-11G
Lot # L2077-3

Product Description
Recombinant human SIK3 (1-307) was expressed by baculovirus in Sf9 insect cells using an N-terminal GST tag. The gene accession number is BC128510.

Gene Aliases
QSK; SIK-3; L19; FLJ12240; KIAA0999

Formulation
Recombinant protein stored in 50mM Tris-HCl, pH 7.5, 150mM NaCl, 10mM glutathione, 0.1mM EDTA, 0.25mM DTT, 0.1mM PMSF, and 25% glycerol.

Storage and Stability
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.

Scientific Background
SIK3 (QSK) is a serine/threonine-protein kinase, belongs to QIK subfamily. The phosphorylation of SIK3 by LKB1 through the 14-3-3 binding enhances its catalytic activity and leads its localization to punctate structures within the cytoplasm (1). Overexpression of SIK3 promotes G1/S cell cycle progression with ovarian cancer (2). There are two sites (H331L and A1103V) were mutated at significant frequency in breast cancer (3). SIK3 is a novel tumor-associated antigen (TAA).

References

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Specific Activity 120 nmol/min/mg
Lot # L2077-3
Purity >90%
Concentration 0.1 µg/µl
Stability 1yr at −70°C from date of shipment
Storage & Shipping 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. Product shipped on dry ice.

Specific Activity
The specific activity of SIK3 was determined to be 120 nmol/min/mg as per activity assay protocol.

Purity
The purity of SIK3 was determined to be >90% by densitometry, approx. MW 62kDa.

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**Activity Assay Protocol**

**Reaction Components**

**Active Kinase (Catalog #: S12-11G)**
Active SIK3 (0.1 mg/µl) was diluted with Kinase Dilution Buffer III (Catalog #: K23-09) and assayed as outlined in sample activity plot. (Note: these are suggested working dilutions and it is recommended that the researcher perform a serial dilution of Active SIK3 for optimal results).

**Kinase Dilution Buffer III (Catalog #: K23-09)**
Kinase Assay Buffer I (Catalog #: K01-09) diluted at a 1:4 ratio (5X dilution) with 50ng/µl BSA solution.

**Kinase Assay Buffer I (Catalog #: K01-09)**
Buffer components: 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.

**[33P]-ATP Assay Cocktail**
Prepare 250µM [33P]-ATP Assay Cocktail in a designated radioactive working area by adding the following components: 150µl of 10mM ATP Stock Solution (Catalog #: A50-09), 100µl [33P]-ATP (1mCi/100µl), 5.75ml of Kinase Assay Buffer I (Catalog #: K01-09). Store 1ml aliquots at -20°C.

**10mM ATP Stock Solution (Catalog #: A50-09)**
Prepare ATP stock solution by dissolving 55mg of ATP in 10ml of Kinase Assay Buffer I (Catalog #: K01-09). Store 200µl aliquots at -20°C.

**Substrate (Catalog #: A11-58)**
AMARA Peptide substrate (AMARAASAAALARRR) diluted in distilled H2O to a final concentration of 1mg/ml.

**Assay Protocol**

Step 1. Thaw [33P]-ATP Assay Cocktail in shielded container in a designated radioactive working area.

Step 2. Thaw the Active SIK3, Kinase Assay Buffer, Substrate and Kinase Dilution Buffer on ice.

Step 3. In a pre-cooled microfuge tube, add the following reaction components bringing the initial reaction volume up to 20µl:

- Component 1. 10µl of diluted Active SIK3 (Catalog #S12-11G)
- Component 2. 5µl of 1mg/ml stock solution of substrate (Catalog #A11-58)
- Component 3. 5µl distilled H2O (4°C)

Step 4. Set up the blank control as outlined in step 3, excluding the addition of the substrate. Replace the substrate with an equal volume of distilled H2O.

Step 5. Initiate the reaction by the addition of 5 µl [33P]-ATP Assay Cocktail bringing the final volume up to 25µl and incubate the mixture in a water bath at 30°C for 15 minutes.

Step 6. After the 15 minute incubation period, terminate the reaction by spotting 20 µl of the reaction mixture onto individual pre-cut strips of phosphocellulose P81 paper.

Step 7. Air dry the pre-cut P81 strip and sequentially wash in a 1% phosphoric acid solution (dilute 10ml of phosphoric acid and make a 1L solution with distilled H2O) with constant gentle stirring. It is recommended that the strips be washed a total of 3 intervals for approximately 10 minutes each.

Step 8. Count the radioactivity on the P81 paper in the presence of scintillation fluid in a scintillation counter.

Step 9. Determine the corrected cpm by removing the blank control value (see Step 4) for each sample and calculate the kinase specific activity as outlined below.

**Calculation of [P33]-ATP Specific Activity (SA) (cpm/pmol)**

Specific activity (SA) = cpm for 5 µl [33P]-ATP / pmoles of ATP (in 5 µl of a 250 µM ATP stock solution, i.e., 1250 pmoles)

**Kinase Specific Activity (SA) (pmol/min/µg or nmol/min/mg)**

Corrected cpm from reaction / [(SA of 33P-ATP in cpm/pmol)*([Reaction time in min]*[Enzyme amount in µg or mg])*([(Reaction Volume) / (Spot Volume)])

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