TPR-TRKA (TRK-T1), Active

Human recombinant protein expressed in Sf9 cells

Catalog # N16-19BG
Lot # A1278-3

Product Description

Recombinant human fusion protein TPR (1-191)-TRKA (399-end) was expressed by baculovirus in Sf9 insect cells using an N-terminal GST tag. The TPM3 gene accession number is NM_003292 and TRKA is NM_002529.

Gene Aliases

TPR: (None)
TRKA: NTRK1, MTC, TRK, p140-TrkA

Formulation

Recombinant protein stored in 50mM Tris-HCl, pH 7.5, 150mM NaCl, 10mM glutathione, 0.1mM EDTA, 0.25mM DTT, 0.1mM PMSF, 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

TRKA is a member of the neurotrophic tyrosine kinase receptor (NTKR) family which is a membrane-bound receptor that, upon neurotrophin binding, phosphorylates itself and members of the MAPK pathway. TRKA has a crucial role in the development and function of the nociceptive reception system as well as establishment of thermoregulation via sweating in humans (1). As one of the thyroid TRK oncogenes, TRK-T1 is created by an intrachromosomal rearrangement that juxtaposes the 5’ end of the TPR gene to the TRK tyrosine kinase domain and shows frequent activation of the TRK in human papillary thyroid carcinoma (2).

References


Specific Activity

The specific activity of TPR-TRKA (TRK-T1) was determined to be 16 nmol/min/mg as per activity assay protocol.

Purity

The purity of TPR-TRKA (TRK-T1) was determined to be >70% by densitometry, approx. MW 96 kDa.

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Catalog # N16-19BG
Specific Activity 16 nmol/min/mg
Lot # A1278-3
Purity >70%
Concentration 0.05 µg/µl
Stability 1 yr at –70°C from date of shipment
Storage & Shipping

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Activity Assay Protocol

Reaction Components

Active Kinase (Catalog #: N16-19BG)
Active TPR-TRKA (TRK-T1) (0.1µg/µl) diluted with Kinase Dilution Buffer IV (Catalog #: K24-09) 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 TPR-TRKA (TRK-T1) for optimal results).

Kinase Dilution Buffer IV (Catalog #: K24-09)
Kinase Assay Buffer II (Catalog #: K02-09) diluted at a 1:4 ratio (SX dilution) with final 50ng/µl BSA solution.

Kinase Assay Buffer I (Catalog #: K02-09)
Buffer components: 25mM MOPS, pH 7.2, 12.5mM β-glycerol-phosphate, 20mM MgCl₂, 12.5mM MnCl₂, 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 II (Catalog #: K02-09). 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 #: P61-58)
Poly (Glu₄, Tyr₁) synthetic peptide substrate 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 TPR-TRKA (TRK-T1), 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 TPR-TRKA (TRK-T1) (Catalog # N16-19BG)
- Component 2. 5µl of 1 mg/ml stock solution of substrate (Catalog #P61-58)
- 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 5µl [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 20µl 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 (cpm) 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 [³³P]-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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