Recombinant SC5A3 protein (His tag)

Catalog Number	547072
Synonyms	Na(+)/myo-inositol cotransporter; Sodium/myo-inositol transporter 1; SMIT1; Solute carrier family 5 member 3
Species	Human
Expression System	E. coli
Accession	P53794
Molecular Weight	Predictes a molecular mass of 12.48 kDa. In SDS-PAGE under reducing conditions, it migrates as an approximately 12 kDa band.

Product Information

Sequence Region	206-303
Form	Lyophilized powder
Formulation	Lyophilized from sterile PBS, pH 7.4
Purity	>89%, by SDS-PAGE with Coomassie Brilliant Blue staining.
Endotoxin	Not tested.
Activity	Not tested.
Stability	Samples are stable for up to twelve months from date of receipt at -70℃
Protein Construction	DNA encoding 206-303 aa (P53794) were fused with 6His tag.

Storage & Handling

Reconstitution	Reconstitute at 0.25 μg/μl in sterile water for short-term storage. Reconstitution with 50% glycerol solution is recommended for longer term storage (see Stability and Storage for more details). If a different concentration is needed for your purposes please adjust the reconstitution volume as required (please note: the ion concentration of the final solution will vary according to the volume used). Note: Centrifuge vial before opening. When reconstituting, gently pipet and wash down the sides of the vial to ensure full recovery of the protein into solution.
Storage	Store it under sterile conditions at -20℃ to -80℃. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.
Shipping	In general, recombinant proteins are provided as lyophilized powder which are shipped at ambient temperature. Bulk packages of recombinant proteins are provided as frozen liquid. They are shipped out with blue ice unless customers require otherwise.

Description

Description	Recombinant Human SLC5A3 (Sodium/myo-inositol cotransporter) Fragment (aa 206-303) is a high-purity, stable protein fragment designed for structural and biochemical studies. This 98-amino acid region offers a soluble and functional unit ideal for investigating the molecular mechanisms of myo-inositol transport and its regulatory interactions with ion channels. The full-length Sodium/myo-inositol cotransporter (SLC5A3/SMIT1) is an electrogenic Na+-coupled symporter that actively transports myo-inositol and scyllo-inositol across plasma membranes with a 2:1 Na+ to sugar coupling ratio. It plays a critical role in maintaining cellular osmotic balance, particularly in the fetoplacental unit and central nervous system, by establishing myo-inositol concentration gradients that regulate cell volume and fluid homeostasis. The protein forms coregulatory complexes with voltage-gated K+ channels (including KCNQ1-KCNE2 and KCNQ2-KCNQ3), where it allosterically modulates ion selectivity, voltage dependence, and gating kinetics while the resulting K+ efflux creates local electrical gradients that enhance electrogenic myo-inositol uptake. Additionally, it provides myo-inositol precursors for phosphoinositide biosynthesis, indirectly influencing phosphoinositide-dependent ion channel activity and Ca2+ signaling during osmotic stress. The transporter localizes to both apical and basolateral membranes in various tissues and specifically colocalizes with KCNQ1 at the apical membrane of choroid plexus epithelium, regulating myo-inositol gradients between blood and cerebrospinal fluid that impact neuronal excitability.