ITK Protein, Mouse (sf9, His-GST)

Cat. No.:	HY-P74795
Synonyms:	Tyrosine-protein kinase ITK/TSK; IL-2-inducible T-cell kinase; ITK; EMT; LYK
Species:	Mouse
Source:	Sf9 insect cells
Accession:	Q03526 (R351-L619)
Gene ID:	16428
Molecular Weight:	Approximately 58 kDa

PROPERTIES

Biological Activity	1.The enzyme activity of this recombinant protein is testing in progress, we cannot offer a guarantee yet. 2.The specific activity of ITK was determined to be 54.33 nmol/min/mg using a myelin basic protein (MBP) substrate.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 μm filtered solution of 50 mM Tris, 100 mM NaCl, pH 7.5, 10% Glycerol, 0.5 mM GSH. Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween 80 are added as protectants before lyophilization.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	ITK protein, a tyrosine kinase, assumes a critical role in orchestrating the adaptive immune response by governing the development, function, and differentiation of both conventional T-cells and nonconventional NKT-cells. Upon activation of the T-cell receptor (TCR) by antigen-presenting cells (APC), ITK is recruited to the cell membrane in close proximity to the stimulated TCR receptor, where it undergoes phosphorylation by LCK. This phosphorylation initiates ITK autophosphorylation, culminating in its full activation. Once activated, ITK phosphorylates PLCG1, activating this lipase and triggering the subsequent cleavage of its substrates. Consequently, calcium is released from the endoplasmic reticulum into the cytoplasm, facilitating the translocation of the nuclear activator of activated T-cells (NFAT) into the nucleus to execute its transcriptional functions. ITK also phosphorylates two essential adapter proteins, the linker for activation of T-cells/LAT protein and LCP2, leading to the recruitment of various signaling molecules, such as VAV1. This intricate signaling cascade ultimately results in lymphokine production, T-cell proliferation, and differentiation. Moreover, ITK is indispensable for TCR-mediated calcium response in gamma-delta T-cells, potentially influencing the transcriptomic signature in the Vgamma2-positive subset of immature gamma-delta T-cells. Additionally, ITK phosphorylates TBX21 at 'Tyr-525,' mediating its

interaction with GATA3. The multifaceted functions of ITK underscore its pivotal role in shaping the adaptive immune response.

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