CAMK2D Protein, Human (Sf9, GST)

Cat. No.:	HY-P701720
Synonyms:	CAMK2D; Calcium/calmodulin-dependent protein kinase type II subunit delta; CaM kinase II subunit delta; CaMK-II subunit delta
Species:	Human
Source:	Sf9 insect cells
Accession:	Q13557 (A2-I499)
Gene ID:	817
Molecular Weight:	

PROPERTIES

Appearance	Solution.
Formulation	Supplied as a 0.22 μm filtered solution of 50 mM Tris-HCl, pH7.5, 200 mM NaCl, 20% glycerol.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	Please use rapid thawing with running water to thaw the protein.
Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice.

DESCRIPTION

Background	CAMK2D protein, a calcium/calmodulin-dependent protein kinase, intricately regulates Ca(2+) homeostasis and excitation-contraction coupling (ECC) in the heart by targeting a spectrum of ion channels, transporters, and accessory proteins involved in various facets of Ca(2+) dynamics within the myocyte. It plays a pivotal role in Ca(2+) influx, release from the sarcoplasmic reticulum (SR), SR Ca(2+) uptake, and the transport of Na(+) and K(+) channels. Additionally, CAMK2D targets transcription factors and signaling molecules to finely regulate heart function. In its activated form, it is implicated in the pathogenesis of dilated cardiomyopathy and heart failure, contributing to cardiac decompensation by directly phosphorylating the RYR2 Ca(2+) channel on 'Ser-2808' to regulate SR Ca(2+) release. In the nucleus, CAMK2D phosphorylates the MEF2 repressor HDAC4, promoting nuclear export and binding to 14-3-3 protein, thus influencing the expression of MEF2 and hypertrophic program-related genes. Essential for left ventricular remodeling responses to myocardial infarction, CAMK2D acts downstream of the beta-adrenergic receptor signaling cascade to regulate key proteins involved in ECC during pathological myocardial remodeling. It also targets and regulates the cardiac sarcolemmal Na(+) channel Nav1.5/SCN5A and the K(+) channel Kv4.3/KCND3, contributing to arrhythmogenesis in heart failure. Moreover, CAMK2D phosphorylates phospholamban (PLN/PLB), enhancing SR Ca(2+) uptake, and may participate in the modulation of skeletal muscle function in response to exercise. Additionally, in response to interferon-gamma (IFN-gamma) stimulation, CAMK2D catalyzes the phosphorylation of STAT1, thereby stimulating the JAK-STAT signaling pathway.

Caution: Product has not been fully validated for medical applications. For research use only.

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