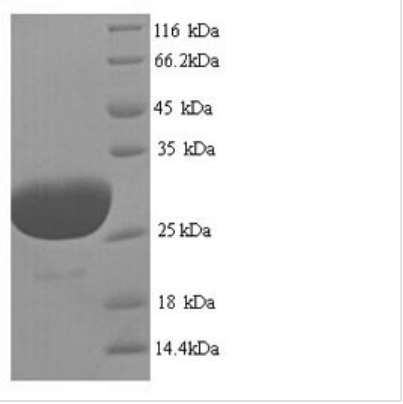
Recombinant Human Cardiac phospholamban (PLN)

Product Code	CSB-YP018198HU
Relevance	Reversibly inhibits the activity of ATP2A2 in cardiac sarcoplasmic reticulum by decreasing the apparent affinity of the ATPase for Ca2+. Modulates the contractility of the heart muscle in response to physiological stimuli via its effects on ATP2A2. Modulates calcium re-uptake during muscle relaxation and plays an important role in calcium homeostasis in the heart muscle. The degree of ATP2A2 inhibition depends on the oligomeric state of PLN. ATP2A2 inhibition is alleviated by PLN phosphorylation
Abbreviation	Recombinant Human PLN protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P26678
Product Type	Recombinant Proteins
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MEKVQYLTRSAIRRASTIEMPQQARQKLQNLFINFCLILICLLLICIIVMLL
Research Area	Cardiovascular
Source	Yeast
Target Names	PLN
Protein Names	Recommended name: Cardiac phospholamban Short name= PLB
Expression Region	1-52aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal GST-tagged
Mol. Weight	33.1kDa
Protein Length	Full Length
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

The pipeline for the recombinant human Cardiac phospholamban (PLN) production in yeast cells consists of the following consecutive steps: construction of the expression vector encoding the human PLN protein (1-52aa) fused with the N-terminal GST-tag, its transformation into yeast cells, high-density cultivation and induction of the positive cells, cell lysis, and expression analysis. The resulting recombinant human PLN protein is purified from the cell lysate through affinity purification, and its purity is greater than 90% as determined by the SDS-PAGE.

PLN is a crucial protein regulating calcium homeostasis in cardiac muscle cells. It acts as the principal regulator of the Ca2+-ATPase of the cardiac sarcoplasmic reticulum [1]. PLN is an integral membrane protein that modulates cardiac muscle contractility by maintaining calcium balance within cardiomyocytes [2]. It is known to control the activity of the sarcoplasmic reticulum Ca2+ pump, which is essential for calcium-mediated muscle relaxation [3].

Structurally, phospholamban is a 52-amino acid membrane protein that can assemble into a pentamer within the sarcoplasmic reticulum membranes [4]. It contains an α-helical transmembrane segment and a cytoplasmic domain that exhibits structural disorder [5]. Phospholamban is phosphorylated in response to β-adrenergic stimulation, which affects its inhibitory effect on the Ca2+ ATPase [6]. The phosphorylation of phospholamban is important in regulating cardiac contraction and relaxation [7].

Phospholamban also modulates cardiac function. Studies have shown that phospholamban knockout mice exhibit altered intracellular calcium transients and myocardial contractility [8]. Furthermore, phospholamban regulates the cardiac Ca-ATPase (SERCA2) as an inhibitory cofactor [9].

References:
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Shelf Life

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