

Datasheet for ABIN1686673
HSPD1 Protein (His tag)



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Overview

Quantity:	100 µg
Target:	HSPD1
Origin:	Human
Source:	Escherichia coli (E. coli)
Protein Type:	Recombinant
Biological Activity:	Active
Purification tag / Conjugate:	This HSPD1 protein is labelled with His tag.
Application:	Western Blotting (WB), SDS-PAGE (SDS), ELISA, Functional Studies (Func), Activity Assay (AcA)

Product Details

Specificity:	~60 kDa
Characteristics:	The protein has ATPase activity at the time of manufacture of 3.6 µM phosphate liberated/hr/µg protein in a 200 µL reaction at 37 °C (pH 7.5) in the presence of 20 µL of 1 mM ATP using a Malachite Green assay.
Purification:	Affinity Purified
Purity:	>90%
Biological Activity Comment:	ATPase active

Target Details

Target:	HSPD1
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Target Details

Alternative Name: Hsp60 ([HSPD1 Products](#))

Background: In both prokaryotic and eukaryotic cells, the misfolding and aggregation of proteins during biogenesis and under conditions of cellular stress are prevented by molecular chaperones. Members of the HSP60 family of heat shock proteins are some of the best characterized chaperones. HSP60, also known as Cpn60 or GroEL, is an abundant protein synthesized constitutively in the cell that is induced to a higher concentration after brief cell shock. It is present in many species and exhibits a remarkable sequence homology among various counterparts in bacteria, plants, and mammals with more than half of the residues identical between bacterial and mammalian HSP60 (1-3). Whereas mammalian HSP60 is localized within the mitochondria, plant HSP60, or otherwise known as Rubisco-binding protein, is located in plant chloroplasts. It has been indicated that these proteins carry out a very important biological function due to the fact that HSP60 is present in so many different species. The common characteristics of the HSP60s from the divergent species are i) high abundance, ii) induction with environmental stress such as heat shock, iii) homo-oligomeric structures of either 7 or 14 subunits which reversibly dissociate in the presence of Mg^{2+} and ATP, iv) ATPase activity and v) a role in folding and assembly of oligomeric protein structures (4). These similarities are supported by recent studies where the single-ring human mitochondrial homolog, HSP60 with its co-chaperonin, HSP10 were expressed in a *E. coli* strain, engineered so that the *groE* operon is under strict regulatory control. This study has demonstrated that expression of HSP60-HSP10 was able to carry out all essential *in vivo* functions of GroEL and its co-chaperonin, GroES (5). Another important function of HSP60 and HSP10 is their protective functions against infection and cellular stress. HSP60 has however been linked to a number of autoimmune diseases, as well as Alzheimer's, coronary artery diseases, MS, and diabetes (6-9).

Molecular Weight: approx. 60 kDa

Gene ID: 3329

UniProt: [P10809](#)

Pathways: [Activation of Innate immune Response](#), [Regulation of Leukocyte Mediated Immunity](#), [Positive Regulation of Immune Effector Process](#), [Production of Molecular Mediator of Immune Response](#), [Positive Regulation of Endopeptidase Activity](#)

Application Details

Application Notes: Optimal working dilution should be determined by the investigator.

Application Details

Comment: This product has been certified >90% pure using SDS-PAGE analysis. The protein has ATPase activity at the time of manufacture of 3.6µM phosphate liberated/hr/µg protein in a 200µl reaction at 37°C (pH7.5) in the presence of 20ul of 1mM ATP using a Malachite Green assay.

Restrictions: For Research Use only

Handling

Concentration: Lot specific

Buffer: 20 mM Phosphate Buffer, 150 mM NaCl, 10 % glycerol

Storage: -20 °C

Publications

Product cited in: Kaiser, Steptoe, Thompson, Henderson: "Monocyte cytokine synthesis in response to extracellular cell stress proteins suggests these proteins exhibit network behaviour." in: **Cell stress & chaperones**, Vol. 19, Issue 1, pp. 135-44, (2013) ([PubMed](#)).

Adamus, Bonnah, Brown, David: "Detection of autoantibodies against heat shock proteins and collapsin response mediator proteins in autoimmune retinopathy." in: **BMC ophthalmology**, Vol. 13, pp. 48, (2013) ([PubMed](#)).

Dieudé, Correa, Neville, Pineau, Levine, Subang, Landolt-Marticorena, Su, Kassis, Solymoss, Fortin, Rauch: "Association of autoantibodies to heat-shock protein 60 with arterial vascular events in patients with antiphospholipid antibodies." in: **Arthritis and rheumatism**, Vol. 63, Issue 8, pp. 2416-24, (2011) ([PubMed](#)).