

HSP70/HSPA1B Protein, Human (SF9, His)

Cat. No.:	HY-P73105
Synonyms:	Heat shock 70 kDa protein 1B; HSP70-2; HSPA1B; HSP72
Species:	Human
Source:	Sf9 insect cells
Accession:	P0DMV9 (A2-D641)
Gene ID:	3303
Molecular Weight:	Approximately 72.2 kDa

PROPERTIES

AA Sequence

A K A A A I G I D L	G T T Y S C V G V F	Q H G K V E I I A N	D Q G N R T T P S Y
V A F T D T E R L I	G D A A K N Q V A L	N P Q N T V F D A K	R L I G R K F G D P
V V Q S D M K H W P	F Q V I N D G D K P	K V Q V S Y K G E T	K A F Y P E E I S S
M V L T K M K E I A	E A Y L G Y P V T N	A v i T V P A Y F N	D S Q R Q A T K D A
G V I A G L N V L R	I I N E P T A A A I	A Y G L D R T G K G	E R N V L I F D L G
G G T F D V S I L T	I D D G I F E V K A	T A G D T H L G G E	D F D N R L V N H F
V E E F K R K H K K	D I S Q N K R A V R	R L R T A C E R A K	R T L S S S T Q A S
L E I D S L F E G I	D F Y T S I T R A R	F E E L C S D L F R	S T L E P V E K A L
R D A K L D K A Q I	H D L V L V G G S T	R I P K V Q K L L Q	D F F N G R D L N K
S I N P D E A V A Y	G A A V Q A A I L M	G D K S E N V Q D L	L L L D V A P L S L
G L E T A G G V M T	A L I K R N S T I P	T K Q T Q I F T T Y	S D N Q P G V L I Q
V Y E G E R A M T K	D N N L L G R F E L	S G I P P A P R G V	P Q I E V T F D I D
A N G I L N V T A T	D K S T G K A N K I	T I T N D K G R L S	K E E I E R M V Q E
A E K Y K A E D E V	Q R E R V S A K N A	L E S Y A F N M K S	A V E D E G L K G K
I S E A D K K K V L	D K C Q E V I S W L	D A N T L A E K D E	F E H K R K E L E Q
V C N P I I S G L Y	Q G A G G P G P G G	F G A Q G P K G G S	G S G P T I E E V D

Biological Activity	Measured by its ability to bind human PARP1 in a functional ELISA.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 µm filtered solution of 20 mM Tris, 500 mM NaCl, pH 7.4, 10% Glycerol. 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.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH ₂ O.
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**

HSP70/HSPA1B protein, a molecular chaperone, plays a central role in diverse cellular processes crucial for proteome maintenance, encompassing protection from stress, facilitation of the folding and transport of newly synthesized polypeptides, activation of proteolysis of misfolded proteins, and the assembly and dissociation of protein complexes. As a key component of the protein quality control system, HSP70 ensures the accurate folding of proteins, refolding of misfolded counterparts, and the targeted degradation of proteins, achieved through cycles of ATP binding, ATP hydrolysis, and ADP release mediated by co-chaperones. These co-chaperones exhibit individual specificity, regulating distinct steps of the ATPase cycle, and influencing substrate folding or degradation. The nucleotide-bound state of HSP70 modulates its affinity for polypeptides, with the ATP-bound form displaying low substrate protein affinity, undergoing a conformational change upon ATP hydrolysis to ADP that increases its affinity for substrate proteins. This dynamic process involves repeated cycles of ATP hydrolysis and nucleotide exchange, permitting cycles of substrate binding and release. Three types of co-chaperones include J-domain co-chaperones (e.g., HSP40s), nucleotide exchange factors (e.g., BAG1/2/3), and TPR domain chaperones (e.g., HOPX and STUB1). HSP70 maintains protein homeostasis during cellular stress by orchestrating protein refolding or degradation, with its acetylation/deacetylation state determining the competitive binding of co-chaperones HOPX and STUB1. During the early stress response, the acetylated form engages in chaperone-mediated protein refolding, transitioning to deacetylation and subsequent binding to ubiquitin ligase STUB1 for ubiquitin-mediated protein degradation. Beyond its role in protein homeostasis, HSP70 regulates centrosome integrity during mitosis and is essential for maintaining a functional mitotic centrosome supporting the assembly of a bipolar mitotic spindle. Additionally, it enhances STUB1-mediated SMAD3 ubiquitination and degradation, facilitates STUB1-mediated inhibition of TGF-beta signaling, and is indispensable for STUB1-mediated ubiquitination and degradation of FOXP3 in regulatory T-cells during inflammation. In the context of microbial infection, particularly in rotavirus A infection, HSP70 serves as a post-attachment receptor facilitating the virus's entry into the cell.

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

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