

HSP70 Protein (active)

Catalog# SPR-103A/B/C

Size: 50/100/200µg

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This product is for *in vitro* research use only and is not intended for use in humans or animals

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Product	Recombinant Human Hsp70 Protein with ATPase activity, his-tagged
Source	Recombinant Hsp70 cloned from a human cDNA library and expressed in E.coli
Cited Applications	ATPase Assay, WB control, Binding Assays, ELISA reference standard, Lipid Interaction Assays
Purity	This protein is >90% pure as determined by SDS-PAGE analysis
Format	Affinity Purified human Hsp70 in Na-Phosphate, pH7.5 (20mM), 150mM NaCl, 10% glycerol, 200mM Imidazole
Concentration	0.47 mg/mL
Storage and stability	-20°C; 1 year+; shipped on cold packs

Scientific Background

Hsp70 genes encode abundant heat-inducible 70-kDa hsps (hsp70s). In most eukaryotes hsp70 genes exist as part of a multigene family. They are found in most cellular compartments of eukaryotes including nuclei, mitochondria, chloroplasts, the endoplasmic reticulum and the cytosol, as well as in bacteria. The genes show a high degree of conservation, having at least 50% identity (2). The N-terminal two thirds of hsp70s are more conserved than the C-terminal third. Hsp70 binds ATP with high affinity and possesses a weak ATPase activity which can be stimulated by binding to unfolded proteins and synthetic peptides (3). When hsc70 (constitutively expressed) present in mammalian cells was truncated, ATP binding activity was found to reside in an N-terminal fragment of 44kDa which lacked peptide binding capacity. Polypeptide binding ability therefore resided within the C-terminal half (4). The structure of this ATP binding domain displays multiple features of nucleotide binding proteins (5). All hsp70s, regardless of location, bind proteins, particularly unfolded ones. The molecular

chaperones of the hsp70 family recognize and bind to nascent polypeptide chains as well as partially folded intermediates of proteins preventing their aggregation and misfolding. The binding of ATP triggers a critical conformational change leading to the release of the bound substrate protein (6). The universal ability of hsp70s to undergo cycles of binding to and release from hydrophobic stretches of partially unfolded proteins determines their role in a great variety of vital intracellular functions such as protein synthesis, protein folding and oligomerization and protein transport.

Selected References

1. Zho, J. (1998). *Cell* 94: 471-480
2. Boorstein, W. R., Ziegelhoffer, T. & Craig, E. A. (1993), *J. Mol. Evol.* 38 (1) 1-17.
3. Rothman, J. (1989), *Cell* 59, 591 -601.
4. DeLuca-Flaherty *et al.* (1990), *Cell* 62, 875-887.
5. Bork, P., Sander, C. & Valencia, A. (1992), *Proc. Natl Acad. Sci. USA* 89, 7290-7294.
6. Fink, A.L. (1999) *Physiol. Rev.* 79: 425-449.
7. Smith, D.F., *et al.*, (1993) *Mol. Cell. Biol.* 13(2):869-876.
8. Prapapanich, V., *et al.*, (1996) *Mol. Cell. Biol.* 16(11):6200-6207.
9. Fernandez-Funez *et al.*, (2000) *Nature* 408(6808):101-106

Certificate of Analysis

This product has been certified >90% pure using SDS-PAGE analysis.

The protein has ATPase activity at the time of manufacture of 3.3µM 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.

Material Safety Data Sheet

HSP70 Protein SPR-103

This product is for *in vitro* research use only and is not intended for use in humans or animals

The below information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. StressMarq shall not be held liable for any damage resulting from handling or from contact with the above product. See the Technical Specification, Packing Slip, Invoice, and Product Catalogue for additional terms and conditions of sale.

Hazardous Ingredients

The physical, chemical and toxicological properties of these components have not been fully investigated. It is recommended that all laboratory personnel follow standard laboratory safety procedures when handling this product. Safety procedures should include wearing OSHA approved safety glasses, gloves and protective clothing. Direct physical contact with this product should be avoided.

<u>Known Hazardous Components</u>	<u>CAS Number</u>	<u>Percent</u>
None		

Physical Data

This product consists of purified protein in Tris buffer shipped on gel packs. The physical properties of this product have not been investigated thoroughly.

Fire and Explosion Hazard and Reactivity Data

NOT APPLICABLE

Toxicological Properties

May be harmful by inhalation, ingestion, or skin absorption. The toxicological properties of this product have not been investigated thoroughly. Exercise due caution.

Preventative Measures

Wear chemical safety goggles and compatible chemical-resistant gloves. Avoid inhalation, contact with eyes, skin or clothing.

Spill and Leak Procedures

Observe all federal, state and local environmental regulations.

- Wear protective equipment.
- Absorb on sand or vermiculite and place in closed containers for disposal.
- Dispose or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

First Aid Measures

- If swallowed, wash out mouth with water, provided person is conscious. Call a physician.
- In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. If a rash or other irritation develops, call a physician.
- If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.
- In case of eye contact, flush with copious amounts of water for at least 15 minutes while separating the eyelids with fingers. Call a physician.

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