Hsp60 Protein (active)

Catalog# SPR-104A/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

Product	**Recombinant human Hsp60 Protein with ATPase activity, his-tagged**
Source	**Recombinant Hsp60 expressed in *E.coli***
Cited Applications	**ATPase Assay, WB control, Binding Assays, ELISA reference standard**
Purity	**This protein is >90% pure as determined by SDS-PAGE analysis**
Format	**Affinity Purified human Hsp60 in Na-Phosphate, pH7.5 (20mM), 150mM NaCl, 10% glycerol, 200mM Imidazole**
Concentration	**0.3mg/mL**
Storage and stability	**-20°C; 1 year+; shipped on cold packs**

Scientific 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 Mg2+ 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).

Selected References

1. Hartl, F.U. (1996) *Nature* 381: 571-579.
2. Bukau, B. and Horwich, A.L. (1998) *Cell* 92: 351-366.
3.Hartl, F.U. and Hayer-Hartl, M. (2002) *Science* 295: 1852-1858.
4. Jindal, S., et al. (1989) *Molecular and Cellular Biology* 9: 2279-2283.
5. La Verda, D., et al (1999) *Infect Dis. Obstet. Gynecol*. 7: 64-71.
6. Itoh, H. et al. (2002) *Eur. J. Biochem.* 269: 5931-5938.
7.Gupta, S. and Knowlton, A.A. *J. Cell Mol, Med.* 9: 51-58.
8. Deocaris, C.C. et al. (2006) *Cell Stress Chaperones* 11: 116-128.
9. Lai, H.C. et al. (2007) *Am. J. Physiol. Endocrinol. Metab.* 292: E292-E297.

Certificate of Analysis

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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.

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Material Safety Data Sheet

HSP60 Protein SPR-104

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.

Known Hazardous Components	CAS Number	Percent
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.

Authorized: StressMarq Biosciences
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