

# Hsp60 Protein–Low Endotoxin



## TECHNICAL SPECIFICATIONS

350 – 4243 Glanford Ave., Victoria, BC Canada V8Z 4B9 Toll free 1.800.661.4978 Fax 250.744.2877 www.stressgenbioreagents.com support@stressgen.com

## Recombinant Mouse Hsp60 Protein–Low Endotoxin Product #: ESP-741

### Scientific Background

The mouse Hsp60 is a member of a highly conserved family which includes molecular chaperones from several species such as plant Hsp60 (known as Rubisco binding protein), GroEL, the E.coli Hsp60 and 65 kDa, a major antigen of mycobacteria. In eukaryotes, Hsp60 is localized in the mitochondrion matrix and the plant Hsp60, is localized in the chloroplast. Mitochondria, chloroplasts and bacteria have a common ancestry (>1 billion years) and this fact together with the high degree of homology between the divergent Hsp60s would indicate that these proteins carry out a primitive but important function which is similar to all of these 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 (1). 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 (2). Consistent with their functions as chaperones, Hsp60 and Hsp10 have been suggested to act as docking molecules with a passive role in the maturation of caspase processing. Data demonstrates that recombinant Hsp60 and Hsp10 have been shown to accelerate the activation of procaspase-3 by cytochrome C and dATP in an ATP-dependent manner (3). Hsps are intracellular proteins which are thought to serve protective functions against infection and cellular stress, however several recent studies indicate that members of the Hsp60 family are linked to a number of autoimmune diseases, arteriosclerosis and chlamydial disease.

### Application Note

This protein does not contain GroEL as demonstrated by Western blot analysis using Stressgen's monoclonal antibody SPS-870, which identifies GroEL.

### References

1. *Molecular and Cellular Biology* 9: 2279-2283.
2. Nielsen, K.L., Mclellan, N., Masters, M and Cowan, N.J. (1999) *J. Bacteriol.* 181: 5871-5875.
3. Samali, A., Cia, J.Y., Zhivotovsky, B., Jones, D.P., and Orrenius, S. (1999) *EMBO J.* 18: 2040-2048.

Rev: 02/10/05

## CERTIFICATE OF ANALYSIS

### Hsp60 Protein–Low Endotoxin

**Product #:** ESP-741

**Size:** 100 µg

**Lot #:** B501594

**Format:** Purified mouse Hsp60 in 1 x DPBS (2.7mM KCl, 1.5mM  $KH_2PO_4$ , 137mM NaCl and 8.1mM  $Na_2HPO_4$ ) containing 10mM glutathione.

**Purity:** This protein is >90% pure as determined by SDS-PAGE analysis.

**Protein Concentration:** 0.95 mg/mL

**Endotoxin Concentration:** <50 EU/mg as determined by Limulus Amebocyte Lysate (LAL) PYROCHROME (Kinetic Assay).

**STORAGE & SHIPPING:** Store frozen product at or below  $-70^{\circ}C$ . Thawed product may be stored for 2-4 weeks at  $4^{\circ}C$ . For optimal storage, aliquot to smaller portions and store at  $-70^{\circ}C$ . Avoid repeated freeze/thaw cycles. For maximum product recovery, after thawing, centrifuge the product vial before removing cap. Shipped on gel packs.



**FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES:** This product is not to be used for diagnostic nor therapeutic purposes. By accepting this product, the user confirms that it will be used for research purposes only. Stressgen warrants that its products conform to the information published by Stressgen. Purchaser must determine the suitability of the product for their particular use. Please refer to the MSDS for product safety information.