PRODUCT INFORMATION

Hsp60 (human, recombinant)

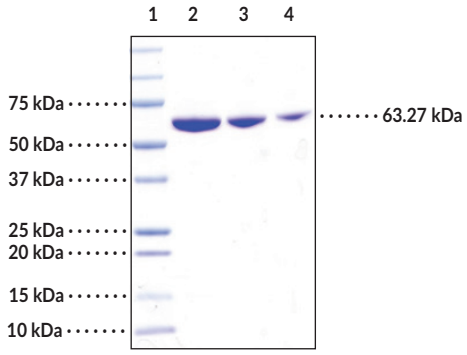
Item No. 22738

Overview and Properties

Synonyms:	Chaperonin 60, Cpn60, Heat Shock Protein 60, HSPD1, Mitochondrial Matrix Protein P1
Source:	Active N-terminal Histidine-tagged human Hsp60 protein (full length) expressed in *E. coli*
Amino Acids:	2-573 (full length)
Uniprot No.:	P10809
Molecular Weight:	63.27 kDa
Storage:	-80°C (as supplied); avoid freeze/thaw cycles by storing protein in aliquots
Stability:	≥1 year
Purity:	≥90% estimated by SDS-PAGE
Supplied in:	50 mM HEPES, pH 8.0, with 150 mM sodium chloride
Protein Concentration:	***batch specific*** mg/ml
Activity:	ATPase activity confirmed by ADP detection assay

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

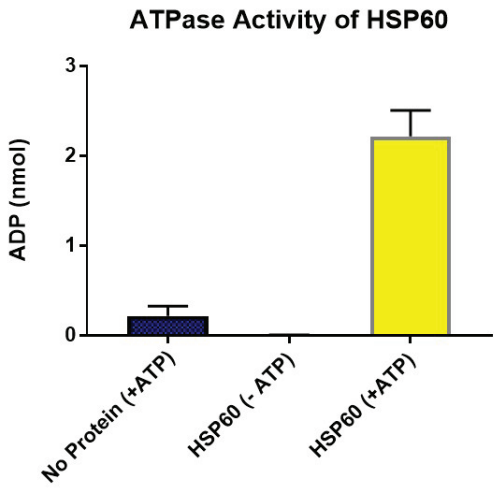
Images



Lane 1: MW Markers
Lane 2: Hsp60 (4 µg)
Lane 3: Hsp60 (2 µg)
Lane 4: Hsp60 (1 µg)

SDS-PAGE Analysis of Hsp60.

Representative gel image shown; actual purity may vary between each batch.



CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

Heat shock protein 60 (Hsp60), also known as heat shock protein family D member 1 (HspD1), is an approximately 60 kDa protein that functions as a molecular chaperone.[1] It belongs to the type I subclass of chaperonins and is found in eubacteria, mitochondria, and chloroplasts where its expression is induced by stress. Hsp60 primarily exists as a heptameric ring that it is converted to a tetradecameric double-ring structure in the presence of ATP.[2] Within mitochondria, it associates with its co-chaperone, Hsp10, to form a barrel-like structure and refold proteins that have been shuttled to the mitochondria in an ATP-dependent manner.[2,3] Hsp60 also has extramitochondrial functions such as the production of proinflammatory cytokines in human leukocytes and activation of innate immune receptors.[4,5] Hsp60 expression is increased in the serum and saliva of patients with type 2 diabetes mellitus and mutations in *HSPD1* lead to neurodegenerative diseases.[5,6]

References

1. Levy-Rimler, G., Bell, R.E., Ben-Tal, N., *et al.* Type I chaperonins: Not all are created equal. *FEBES Lett.* **529(1)**, 1-5 (2002).
2. Okamoto, T., Yamamoto, H., Kudo, I., *et al.* HSP60 possesses a GTPase activity and mediates protein folding with HSP10. *Sci. Rep.* **7(1)**, 16931 (2017).
3. Nisemblat, S., Parnas, A., Azem, A., *et al.* Crystallization and structure determination of a symmetrical 'football' complex of the mammalian mitochondrial Hsp60-Hsp10 chaperonins. *Acta Crystallogr. F Struct. Biol. Commun.* **70(Pt 1)**, 116-119 (2014).
4. Osterloh, A., Meier-Stiegen, F., Veit, A., *et al.* Lipopolysaccharide-free heat shock protein 60 activates T cells. *J. Biol. Chem.* **279(46)**, 47906-47911 (2004).
5. Juwono, J. and Martinus, R.D. Does Hsp60 provide a link between mitochondrial stress and inflammation in diabetes mellitus? *J. Diabetes Res.* **2016:8017571** (2016).
6. Bross, P. and Fernandez-Guerra, P. Disease-associated mutations in the HSPD1 gene encoding the large subunit of the mitochondrial HSP60/HSP10 chaperonin complex. *Front. Mol. Biosci.* **3(49)**, 1-7 (2016).

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FAX: [734] 971-3640
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WWW.CAYMANCHEM.COM