PRODUCT INFORMATION

Citrullinated Hsp70 (human recombinant)

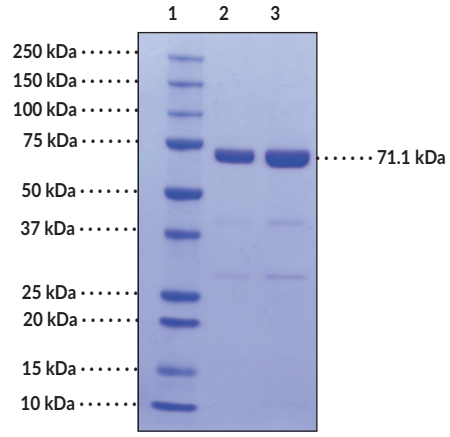
Item No. 25108

Overview and Properties

Synonyms:	Heat Shock Protein 70, HspA1A
Source:	N-Terminal histidine-tagged human Hsp70 purified from *E. coli*, citrullinated by PAD2
Amino Acids:	2-641
Uniprot No.:	P0DMV8
Molecular Weight:	71.7 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	***batch specific***
Supplied in:	PBS, pH 7.4, with 10% glycerol
Protein Concentration:	***batch specific*** mg/ml

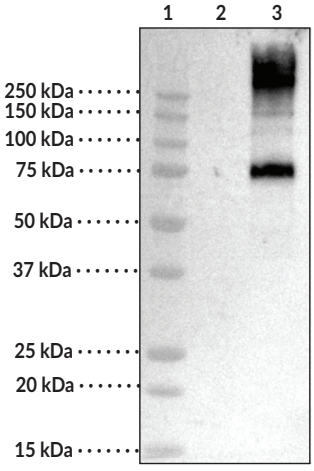
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: Citrullinated Hsp70 (2 µg)
Lane 3: Citrullinated Hsp70 (4 µg)

Western blot analysis of citrullinated Hsp70. Citrullinated Hsp70 at 2 µg (Lane 2) and 4 µg (Lane 3) stained with Coomassie on 4-20% SDS-PAGE.



Lane 1: MW Markers
Lane 2: Hsp70
Lane 3: Citrullinated Hsp70

Western blot analysis of Hsp70 citrullination. Hsp70 and citrullinated Hsp70 were reacted with Cayman's Citrulline-specific Probe-biotin (Item No. 17450) and detected using Streptavidin-HRP (Item No. 16747).

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Description

Heat shock protein 70s (Hsp70s) are abundant and stress-inducible 70 kDa molecular chaperone proteins encoded by a highly conserved, multigene family.[1] They are monomeric proteins that can be divided into two functional domains: an N-terminal ATPase domain and a substrate binding domain that contains a highly conserved EEVD motif at its C-terminus. Hsp70s are found in the cytosol, nuclei, endoplasmic reticulum, mitochondria, and chloroplasts of eukaryotes, as well as in bacteria. They function as molecular chaperones that assist in a wide range of cellular processes, including refolding of aggregated or misfolded proteins, co- and post-translational folding and assembly of nascent peptides, membrane translocation of secretory and organellar proteins, controlling activity of regulatory nuclear receptors, kinases and transcription factors, as well as cooperativity with the Hsp90 chaperone system in eukaryotes.[2] The Hsp70 chaperone cycle is ATP-dependent and initiated by transient interaction of the Hsp70 substrate binding domain with hydrophobic regions within a peptide or protein. It consists of an alteration between the low-affinity ATP-bound state with fast rates of substrate exchange and the high-affinity ADP bound state with slow rates of substrate exchange. Hsp70s are subject to a variety of post-translational modifications and their expression is upregulated under conditions of cellular stress and in a variety of disease states. Specifically, Hsp70 is subject to citrullination by peptidyl arginine deiminases (PADs) and citrullinated Hsp70 peptides have been found in the synovial fluid of patients with rheumatoid arthritis.[3]

References

1. Boorstein, W.R., Ziegelhoffer, T., and Craig, E.A. Molecular evolution of the HSP70 multigene family. *J. Mol. Evol.* **38(1)**, 1-17 (1994).
2. Mayer, M.P. and Bukau, B. Hsp70 chaperones: Cellular functions and molecular mechanism. *Cell Mol. Life Sci.* **62(6)**, 670-684 (2005).
3. Wang, F., Chen, F.F., Gao, W.B., *et al.* Identification of citrullinated peptides in the synovial fluid of patients with rheumatoid arthritis using LC-MALDI-TOF/TOF. *Clin. Rheumatol.* **35(9)**, 2185-2194 (2016).

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