

HSP 27 (32-108): sc-4706

BACKGROUND

The heat shock proteins (HSPs) comprise a group of highly conserved, abundantly expressed proteins with diverse functions, including the assembly and sequestering of multiprotein complexes, transportation of nascent polypeptide chains across cellular membranes and regulation of protein folding. Heat shock proteins (also known as molecular chaperones) fall into six general families: HSP 90, HSP 70, HSP 60, the low molecular weight HSPs, the immunophilins and the HSP 110 family. The low molecular weight family includes HSP 10, HSP 20, HSP 27, HSP 32 and HSP 40. HSP 27 is a constitutively expressed cytoplasmic protein that co-localizes to the nucleus upon stress induced by insult. Heat, cytokines and hormones are among the factors that stimulate the synthesis of HSP 27. *In vitro*, HSP 27 becomes highly phosphorylated following exposure to stress. The discovery that HSP 27 is regulated by hormones such as estrogen has led to studies establishing a relationship between HSP 27 and breast cancer.

REFERENCES

1. Ritossa, F. 1962. A new puffing pattern induced by temperature shock and DNP in *Drosophila*. *Experientia* 18: 571-573.
2. Lemeaux, P.G., Herendeen, S.L., Bloch, P.L. and Neidhardt, F.C. 1978. Transient rates of synthesis of individual polypeptides in *E. coli* following temperature shifts. *Cell* 13: 427-434.
3. Kelley, P. and Schlesinger, M.J. 1978. The effect of amino acid analogues and heat shock on gene expression in chicken embryo fibroblasts. *Cell* 15: 1277-1286.
4. Schlesinger, M.J., Ashburner, M. and Tissieres, A. 1982. Heat Shock: from Bacteria to Man. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory.
5. Todd, M.J., Viitanen, P.V. and Lorimer, G.H. 1994. Dynamics of the chaperonin ATPase cycle: implications for facilitated protein folding. *Science* 265: 659-666.
6. Ciocca, D.R., Oesterreich, S., Chamness, G.C., McGuire, W.L. and Fuqua, S.A. 1993. Biological and clinical implications of heat shock protein 27,000 (HSP 27): a review. *J. Natl. Cancer Inst.* 85: 1558-1570.
7. Freshney, N.W., Rawlinson, L., Guesdon, F., Jones, E., Cowley, S., Hsuan, J. and Saklatvala, J. 1994. Interleukin-1 activates a novel protein kinase cascade that results in the phosphorylation of HSP 27. *Cell* 78: 1039-1049.
8. Mehlen, P., Mehlen, A., Guillet, D., Preville, X. and Arrigo, A.P. 1995. Tumor necrosis factor-alpha induces change in the phosphorylation, cellular localization, and oligomerization of human HSP 27, a stress protein that confers cellular resistance to this cytokine. *J. Cell. Biochem.* 58: 248-259.
9. Satoh, J. and Kim, S.U. 1995. Cytokines and growth factors induce HSP 27 phosphorylation in human astrocytes. *J. Neuropathol. Exp. Neurol.* 54: 504-512.

CHROMOSOMAL LOCATION

Genetic locus: HSPB1 (human) mapping to 7q11.23; Hspb1 (mouse) mapping to 5 G2.

SOURCE

HSP 27 (32-108) is expressed in *E. coli* as a 35 kDa tagged fusion protein corresponding to amino acids 32-108 of HSP 27 of human origin.

PRODUCT

HSP 27 (32-108) is purified from bacterial lysates (>98%) by glutathione agarose affinity chromatography; supplied as 50 µg purified protein in PBS containing 5 mM DTT and 50% glycerol.

APPLICATIONS

HSP 27 (32-108) is suitable as a substrate for PKC α : sc-4820 and as a Western blotting control for sc-9012 and sc-13132.

STORAGE

Store at -20° C. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.