

Hsp47 (Colligin) Protein



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 Human Hsp47 (Colligin) Protein Product #: NSP-535

Scientific Background

Hsp47 is a novel 47-kDa stress glycoprotein. The expression of Hsp47 is highly tissue as well as cell-specific and restricted to mostly phenotypically altered collagen-producing cells (1). Prior to secretion, procollagen molecules are correctly folded to triple helices in the ER where Hsp47 specifically associates with procollagen during its folding and/or modification processes and is thought to function as a collagen-specific molecular chaperone (2). Although the structural requirements for structural recognition and regulation of the binding have not yet been elucidated, it has been proposed that Hsp47 dissociates from procollagen during the process of proly 4-hydroxylation in the ER (3). The expression of Hsp47 is always noted during the process of fibrosis especially around the fibrotic lesions in both humans and experimental animals. These observations suggest that upregulation of Hsp47 may play an important role in the subsequent fibrotic process, possibly by regulation increased synthesis/assembly of collagens (4). Analysis of the amino acid sequence reveals that Hsp47 is a unique member of the serpin superfamily but unlike other members of the serpin family, such as α 1-antitrypsin, antithrombin and ovalbumin which are all exported from the ER, Hsp47 is retained in the ER by its COOH-terminus RDEL peptide sequence (5). Although Hsp47 is a resident of the ER, this chaperone is exported from the ER into pre-Golgi vesicles. Hsp47 remains associated with procollagen up to the cis-Golgi compartment where it dissociates from its substrate in a pH-independent but concentration dependent manner and is recycled back to the ER (6). No specific receptor has been delineated for the RDEL COOH-terminal retention sequence of Hsp47. However, recent studies have demonstrated that the Hsp47 is distributed, coprecipitates with and binds to the KDEL receptor (erd2 gene product). It has also been shown that under conditions of stress and alterations of intra-cellular pH (pHi), significant levels of hsp47 eludes erd2P retention and escape to the cell surface where it potentially may function as a serpin protein which may modulate cell migration during development and invasion and metastasis in cancer (7).

Application Note

If NSP-535 is to be used for Western blot analysis we recommend that the material be diluted in an appropriate volume of an SDS containing sample buffer (e.g. Laemmli, U.K., (1970) *Nature* **227**: 680-685) and heated at 100°C for 5 min. prior to use. On a 15-well minigel system, **10ng** of protein per lane should be sufficient when used with Stressgen antibodies SPA-470.

References

1. Shroff, B., Smith, T., Norris, K., Pileggi, R. and Sauk, J.J. (1993) *Connective Tissue Research* **29**: 273-286.
2. Nagata, K. (1996) *Trends Biochem.Sci.* **21**: 23-26.
3. Koide, T., Asada, S. and Nagata, K. (1999) *J. Biol. Chem.* **274**: 34523-6.
4. Razzaque, M.S. and Taguchi, T. (1999) *Histol. Histopathol.* **14**: 1199-1212.
5. Jain, N., Brickenden, A., Ball, E.H. and SanWal, B.D. (1994) *Archives of Biochemistry and Biophysics* **314**: 23-30.
6. Satoh, M., Hirayoshi, K., Yokota, S., Horokawa, N. and Hagata, K. (1996) *J. Cell Biology* **133**: 469-483.
7. Sauk, J.J., Norris, K., Herbert, C., Ordenez and Reynolds, M. (1998) *Connective Tissue Res.* **37**: 105-119.

Rev: 08/09/05

CERTIFICATE OF ANALYSIS

Hsp47 (Colligin) Protein

Product #: NSP-535

Size: 20 μ g

Lot #: B508411

Format: Recombinant human Hsp47 in 30mM Tris, pH 8.0, 100mM NaCl, 1mM DTT, 0.4M arginine. This protein is expressed in *E. coli* and purified under denaturing conditions from the inclusion body fraction.

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

Protein Concentration: 0.9 mg/mL

Concentration:

STORAGE & SHIPPING: Store frozen product at or below -70°C. Thawed product may be stored for 2-4 weeks at 4°C. For optimal storage, aliquot to smaller portions and store at -70°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.