

DESCRIPTION

Source Mouse myeloma cell line, NS0-derived
Asp16-Asn354, with a C-terminal 10-His tag
Accession # P10915

N-terminal Sequence Analysis Asp16

Predicted Molecular Mass 39.8 kDa

SPECIFICATIONS

SDS-PAGE 45-52 kDa, reducing conditions

Activity Measured by its ability to bind biotinylated hyaluronan in a functional ELISA.

Endotoxin Level <1.0 EU per 1 µg of the protein by the LAL method.

Purity >95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

Formulation Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 100 µg/mL in sterile PBS.

Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

HAPLN1 (also known as link protein and CRT11) is a member of the hyaladherin family of hyaluronic acid (HA) binding proteins. Hyaluronan binding proteins are of two types; those with link modules, and those without. Link modules are 100 amino acid (aa) HA and protein-binding sequences that contain two α-helices and two antiparallel β-sheets (1, 3). There are three categories of link module-containing proteins. "A" domain-type proteins contain one link module; "B" domain-type proteins contain one link module with an N- and C-terminal flanking region; and "C" domain-type proteins have an extended structure with one N-terminal V-type Ig-like domain followed by two link modules (2). The HAPLN family is a group of four C domain-type proteins that share approximately 50% aa identity (4). HAPLN1 is synthesized as a 354 aa precursor that contains a 15 aa signal sequence and a 339 aa mature region (4 - 6). It contains one Ig-like domain and two 95 aa link modules (6). It is variably glycosylated with a native molecular weight between 41 - 48 kDa (7, 8). Mature human HAPLN1 is 97%, 96%, 96%, 96%, and 96% aa identical to equine, porcine, rat, mouse and bovine HAPLN1, respectively. HAPLN1 contributes to extracellular matrix stability and flexibility (9). In cartilage, HAPLN1 forms a ternary complex with HA and aggrecan. This creates a gel-like substance with remarkable resistance to deformation (3). In this complex, HA forms a linear backbone with perpendicularly attached aggrecan and HAPLN1. Aggrecan and HAPLN1 lie parallel to each other, while HA runs between the two HAPLN1 link modules (2, 3, 10). The Ig domain of HAPLN1 binds to aggrecan, while the two link modules of HAPLN1 bind to HA. Although HA and aggrecan will associate, the tendency is towards dissociation (2, 3, 8). HAPLN1 provides a stabilizing influence on HA-aggrecan associations, thus creating a long-lived ternary functional complex.

References:

1. Day, A.J. and G.D. Prestwich (2002) *J. Biol. Chem.* **277**:4585.
2. Seyfried, N.T. *et al.* (2005) *J. Biol. Chem.* **280**:5435.
3. Matsumoto, K. *et al.* (2003) *J. Biol. Chem.* **278**:41205.
4. Spicer, A.P. *et al.* (2003) *J. Biol. Chem.* **278**:21083.
5. Dudhia, J. and T.E. Hardingham (1990) *Nucleic Acids Res.* **18**:1292.
6. Osborne-Lawrence, S.L. *et al.* (1990) *Genomics* **8**:562.
7. Roughley, P.J. *et al.* (1982) *J. Biol. Chem.* **257**:11908.
8. Shi, S. *et al.* (2004) *J. Biol. Chem.* **279**:12060.
9. Binette, F. *et al.* (1994) *J. Biol. Chem.* **269**:19116.
10. Perkins, S.J. *et al.* (1992) *Biochem. J.* **285**:263.