

DESCRIPTION

Source Mouse myeloma cell line, NS0-derived human Aggrecan protein
Val20-Gly675, with a C-terminal 10-His tag
Accession # NP_037359

N-terminal Sequence Analysis Val20

Predicted Molecular Mass 74 kDa

SPECIFICATIONS

SDS-PAGE 120 kDa, reducing conditions

Activity Can also be used as a protein substrate for proteases such as MMPs and ADAMTSs.
The cleavage products can be analyzed by either SDS-PAGE or western blot using anti-human aggrecan antibodies (Catalog # [AF1220](#) and [MAB1220](#)).

Measured by its binding ability in a functional ELISA.

Biotinylated hyaluronan immobilized on an EvenCoat™ Streptavidin Microplate (Catalog # [CP003](#)) at 0.1 µg/mL (100 µL/well) can bind recombinant human Aggrecan with a linear range of 8-500 ng/mL.

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 Tris and NaCl. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution For hyaluronan-binding assay, reconstitute at 100 µg/mL in PBS. For use as a metalloprotease substrate, reconstitute at 250 µg/mL in 50 mM Tris, 10 mM CaCl₂, 150 mM NaCl and 0.05% Brij-35, pH 7.5.

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

Aggrecan, also known as aggrecan 1, chondroitin sulfate proteoglycan, and large aggregating proteoglycan, is encoded by the AGC1 gene with gene aliases of SEDK; CSPG1; MSK16; CSPGCP. As the key component of the cartilage extracellular matrix, aggrecan hydrates the collagen network and provides cartilage with its properties of compressibility and elasticity. Maintenance of aggrecan content is therefore critical to the function of the tissue and aggrecan degradation is an important factor in the erosion of articular cartilage in arthritic diseases (2). The deduced amino acid sequence of human aggrecan core protein consists of 2415 residues and predicts a signal peptide and domains of G1, IGD, G2, KS, CS-1, CS-2 and G3 (3). Two globular domains, G1 and G2, comprise the N-terminus of the proteoglycan and also contain link domains. The third globular domain, G3, corresponds to the C-terminus. The keratan sulfate (KS) and the chondroitin sulfate (CS) attachment domains are between G2 and G3. With KS and CS attached to the 250 kDa core protein, aggrecan monomers exist as a 1,000 to 2,000 kDa molecule. In addition, aggrecan monomers interact with hyaluronan through their G1 domain, resulting in larger aggregates containing 10 to 100 aggrecan monomers on a hyaluronan backbone (2).

Aggrecan can be cleaved by MMPs and ADAMTSs at the Asn360-Phe361 and Glu392-Ala393 bond in the IGD (residues are numbered based on Accession # NP_037359), respectively (2). Inhibition of ADAMTS4 and ADAMTS5 cleavage prevents aggrecan degradation in osteoarthritic cartilage, while mice with aggrecan resistant to MMP cleavage do not accumulate aggrecan and develop normally (2,4). Consisting of the G1, IGD and G2 domains, recombinant human Aggrecan can be used as a protein substrate for MMPs and ADAMTSs and in binding assays involving hyaluronan.

References:

1. Doege, K.J. *et al.* (1991) J. Biol. Chem. **266**:894.
2. Malfait, A.-M. *et al.* (2002) J. Biol. Chem. **277**:22201.
3. Caterson, B. *et al.* (2000) Matrix Biol. **19**:333.
4. Little, C.B. *et al.* (2005) Mol. Cell. Biol. **25**:3388.