

DESCRIPTION

Source Mouse myeloma cell line, NS0-derived
Gln21-Ile423, with a C-terminal 6-His tag
Accession # O35103

N-terminal Sequence Analysis No results obtained: Gln21 predicted

Structure / Form Monomer

Predicted Molecular Mass 48.2 kDa

SPECIFICATIONS

SDS-PAGE 66-76 kDa, reducing conditions

Activity Measured by its ability to modulate collagen fibrillogenesis. Ge, G. *et al.* (2004) *J. Biol. Chem.* **279**:41626.
At 5 µg/mL, rmOSAD can significantly enhance the rate of type I collagen fibrillogenesis.

Endotoxin Level <0.10 EU per 1 µg of the protein by the LAL method.

Purity >95%, by SDS-PAGE under reducing conditions and visualized by silver stain.

Formulation Supplied as a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Shipping The product is shipped with dry ice or equivalent. 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 opening.

BACKGROUND

Osteoadherin (OSAD), also known as Osteomodulin, is an extracellular matrix keratan sulfate proteoglycan that belongs to the class II subfamily of small leucine-rich proteoglycans (SLRP). LRR motifs consist of approximately 20 - 30 amino acids (aa) with conserved leucine spacing, folded into a structure with one β-sheet and one α-helix (1, 2). The mouse OSAD cDNA encodes a 423 aa precursor that contains a 20 aa signal sequence and twelve tandem leucine rich repeats (3). Mouse OSAD shares 75%, 79%, and 91% aa sequence identity with bovine, human, and rat OSAD, respectively. Mouse OSAD shares 32 - 35% aa sequence identity with mouse class II SLRPs Fibromodulin, Keratocan, Lumican, and PRELP. Bovine, mouse, and rat OSAD are expressed as 60 - 85 kDa molecules, even though the amino acid sequence for each predicts a size of 46 - 47 kDa. The primary difference is due to the presence of extensive N-linked glycosylation that can vary between tissues of the same species (4, 5). Human OSAD is expressed as an even larger 110 kDa molecule in teeth (6). OSAD contains eight sulfated tyrosine residues (4, 7) and is distinguished from other class II SLRPs by the presence of an approximately 70 aa C-terminal acidic domain (3). OSAD is expressed by fetal and adult osteoblasts but is not detectable in cartilage or tendon (3, 4, 8). In dental tissue, OSAD is expressed by odontoblasts and ameloblasts (5, 9 - 11) and is involved in the mineralization of bone and teeth (5, 11,12). OSAD promotes the adhesion of osteoblasts and odontoblasts to the surrounding matrix, an interaction that is mediated by Integrin α_vβ₃ (4, 6).

References:

1. Matsushima, N. *et al.* (2000) *Proteins* **38**:210.
2. Kobe, B. and A.V. Kajava (2001) *Curr. Opin. Struct. Biol.* **11**:725.
3. Sommarin, Y. *et al.* (1998) *J. Biol. Chem.* **273**:16723.
4. Wendel, M. *et al.* (1998) *J. Cell Biol.* **141**:839.
5. Hultenby, P.U. *et al.* (2003) *Eur. J. Oral Sci.* **111**:128.
6. Lucchini, M. *et al.* (2004) *J. Dent. Res.* **83**:552.
7. Onnerfjord, P. *et al.* (2004) *J. Biol. Chem.* **279**:26.
8. Shen, Z. *et al.* (1999) *Matrix Biol.* **18**:533.
9. Buchaille, R. *et al.* (2000) *Bone* **27**:265.
10. Buchaille, R. *et al.* (2000) *Matrix Biol.* **19**:421.
11. Couble, M.L. *et al.* (2004) *Histochem. Cell Biol.* **121**:47.
12. Ramstad, V.E. *et al.* (2003) *Calcif. Tissue Int.* **72**:57.