Recombinant Human IBSP/Sialoprotein II

Catalog Number: 4014-SP

DESCRIPTION

Source	Chinese Hamster Ovary cell line, CHO-derived Phe17-Gln317, with a C-terminal 10-His tag Accession # AAC95490
N-terminal Sequence Analysis	Phe17
Predicted Molecular Mass	34.7 kDa

SPECIFICATIONS

SDS-PAGE	75-90 kDa, reducing conditions
Activity	Measured by the ability of the immobilized protein to support the adhesion of the MCF-7 human breast cancer cells. When 5 x10 ^{4} cells/well are added to recombinant human IBSP-coated plates (3 µg/mL with 100 µL/well), approximately 60-80% will adhere after 30 minutes at 37° C. **Optimal concentration depends on cell type as well as the application or research objectives.**
Endotoxin Level	<1.0 EU per 1 µg of the protein by the LAL method.
Purity	>90%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in MES and NaCl. 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

IBSP (integrin-binding sialoprotein; also BSP or bone sialoprotein (II)) is a 55 - 75 kDa, secreted, variably glycosylated, monomeric noncollagenous member of the SIBLING family of extracellular matrix (ECM) proteins (1 - 3). It is principally associated with the early stages of bone mineralization. BSP is synthesized as a 317 amino acid (aa) precursor that contains a 16 aa signal sequence and a 301 aa mature region (4 - 6). The mature segment is divided into a basic N-terminus (aa 17 - 62), a central region (aa 63 - 233), and an acidic C-terminus (aa 234 - 317) (7).

Functional segments associated with the mature molecule include a type I collagen binding domain (aa 19 - 46), two non-RGD cell binding sites (aa 30 - 57 and 261 - 281), an RGD $\alpha_v\beta_3$ integrin-binding site (aa 286 - 288) and two potential hydroxyapatite (HAp) nucleation domains (aa 76 - 83 and 151 - 158) (3, 4, 8 - 11). HAp formation requires a BSP nucleation site composed of at least eight consecutive glutamic acid residues and, likely, a contribution from a BSP-associated co-nucleator (10, 12). BSP is highly glycosylated, sulfated, and phosphorylated. Phosphorylation may impact HAp growth, while carbohydrate may regulate cell adhesion (1, 3, 13). Mature human BSP is 70%, 72%, 78%, and 72% aa identical to porcine, rat, canine, and mouse BSP, respectively. BSP is synthesized by megakaryocytes/platelets, osteoblasts, osteocytes, odontoblasts, osteoclasts, and bone marrow stromal cells (14 - 17).

References:

1. Qin, C. *et al.* (2004) Crit. Rev. Oral Biol. Med. **15**:126.
2. Alford, A.I. and K.D. Hankenson (2006) Bone **38**:749.
3. Ganss, B. *et al.* (1999) Crit. Rev. Oral Biol. Med. **10**:79.
4. Fisher, L.W. *et al.* (1990) J. Biol. Chem. **265**:2347.
5. Kerr, J.M. *et al.* (1993) Genomics **17**:408.
6. Kim, R.H. *et al.* (1994) Matrix Biol. **14**:31.
7. Zaia, J. *et al.* (2001) Biochemistry **40**:12983.
8. Tye, C.E. *et al.* (2005) J. Biol. Chem. **280**:13487.
9. Stubbs, J.T. *et al.* (1997) J. Bone Miner. Res. **12**:1210.
10. Tye, C.E. *et al.* (2003) J. Biol. Chem. **278**:7949.
11. Miyauchi, A. *et al.* (1991) J. Biol. Chem. **266**:20369.
12. Hakki, S.S. *et al.* (2006) J. Periodontol. **77**:167.
13. Wazen, R.M. *et al.* (2007) J. Histochem. Cytochem. **55**:35.
14. Kacena, M.A. et al. (2006) Bone **39**:978.
15. Bianco, P. *et al.* (1991) Calcif. Tissue Int. **49**:421.
16. Chen, J. *et al.* (1992) J. Bone Miner. Res. **7**:987.
17. Kreke, M.R. *et al.* (2005) Bone **36**:1047.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449