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ProductInformation

OSTEOPONTIN (OPN)
Mouse, Recombinant
Expressed in mouse NSO cells

Product Number **O 2260**

Product Description

Osteopontin (OPN) is produced from a DNA sequence encoding mature mouse osteopontin with six histidine residues added at the C-terminus, expressed in mouse myeloma NSO cells.[1] The 284 amino acid residue recombinant mature protein has a calculated molecular mass of approximately 31.5 kDa. As a result of glycosylation, recombinant OPN migrates as a doublet (65 kDa) and another band (30 kDa) in SDS-PAGE under reducing conditions. Upon prolonged storage, lower molecular mass fragments can be present. At the amino acid level, human, mouse, rat, pig, and bovine OPN are approximately 40 % identical.

Osteopontin (OPN), also known as transformation-associated secreted phosphoprotein, bone sialoprotein I, 2ar, 2B7, early T lymphocyte activation protein-1 (Eta-1), minopotin, and calcium oxalate crystal growth inhibitor, is a secreted, highly acidic, calcium binding, phosphorylated glycoprotein. Native mouse OPN cDNA encodes a 294 amino acid residue precursor protein with a 16 amino acid residue predicted signal peptide that is cleaved to yield a 278 amino acid residue mature protein with an intergrin binding sequence (RGD), a thrombin cleavage site, and N- and O-glycosylation sites. OPN binds various cell types through RGD-mediated interaction with the integrins $\alpha_v\beta_1$, $\alpha_v\beta_3$, $\alpha_v\beta_5$, and non-RGF-mediated interaction with CD44 and intergrins ($\alpha_8\beta_1$ or $\alpha_9\beta_1$).[2]

Osteopontin (OPN), originally isolated from bone matrix, is also found in kidney, placenta, blood vessels, and various tumor tissues. Many cell types (macrophages, osteoclasts, activated T-cells,[3] fibroblasts, epithelial cells, vascular smooth muscle cells, and natural killer cells) express osteopontin in response to activation by cytokines, growth factors, or inflammatory mediators. In activated macrophages, OPN inhibits nitric oxide production and cytotoxicity. Increased expression of OPN is associated with numerous pathobiological conditions such as atheroschlerotic plaques, renal tubulointerstitial fibrosis, granuloma formations in tuberculosis and silicosis,[4] neointimal formation associated with balloon catheterization, metastasizing tumors, and cerebral ischemia. OPN is chemotactic for macrophages, smooth muscle cells, endothelial cells, and glial cells.
The murine Eta-1 (identical to osteopontin) gene maps to chromosome 5.[5]

Reagent

Recombinant Mouse Osteopontin (OPN) is supplied as approximately 50 µg of protein lyophilized from a 0.2 µm filtered solution in phosphate buffered saline containing 2.5 mg of bovine serum albumin

Preparation Instructions

Reconstitute the contents of the vial using sterile phosphate-buffered saline (PBS). Prepare a stock solution of no less than 100 µg/ml.

Storage/Stability

Store at –20 °C. Upon reconstitution, store at 2 °C to 8 °C for one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Do not store in a frost-free freezer.

Product Profile

Recombinant Mouse Osteopontin (OPN) is measured by its ability to mediate 293 cell adhesion. Recombinant mouse osteopontin immobilized at 2 µg/ml (100 µl/well), will mediate > 25% 293 cell adhesion (100 µl/ well at 10^6 cells/ml).

Purity: >95 % as determined by SDS-PAGE, visualized by silver stain.
Endotoxin level is < 0.1 ng/µg cytokine as determined by the LAL (Limulus amebocyte lysate) method.

References

1. Miyazaki, Y., et al., J. Biol. Chem., **265**, 14432 (1990).
2. Ashkar, S., et al., Science, **287**, 860 (2000).

3. Weber, G.F., and Cantor, H., Cytokine Growth Factor Rev., **7**, 241 (1996).
4. Nau, G.J., et al., Proc. Natl. Acad. Sci. USA, **94**, 6414 (1997).
5. Patarca, R., et al., J. Exp. Med., **170**, 145 (1989).

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