Product Information

Osteopontin

Bovine milk

O3514

Product Description

Bovine Osteopontin (OPN) is purified from bovine milk. The natural form of bovine Osteopontin has molecular mass of approximately 60 kDa. Bovine osteopontin cDNA encodes a 278 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. Human, mouse, rat, pig, and bovine osteopontin share approximately 40% amino acid sequence identity.

Osteopontin (OPN), also known as secreted phosphoprotein1 (Spp1), bone sialoprotein-1, and early T lymphocyte activation protein-1 (ETA-1), is a secreted acidic phosphorylated glycoprotein. Osteopontin has important functions in bone metabolism and inflammatory processes.[1] OPN binds various cell types through RGD-mediated interaction with the integrins $\alpha_v\beta1$, $\alpha_v\beta3$, $\alpha_v\beta5$, and non-RGF-mediated interactions with CD44 variants and integrins ($\alpha_8\beta1$ or $\alpha_9\beta1$).[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. OPN inhibits nitric oxide production and cytotoxicity by activated macrophages.

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.

Reagent

Reagent Osteopontin, Bovine is supplied as approximately 50 µg of protein lyophilized from 100 µL of a 0.2 µm-filtered solution in PBS, pH 7.4 with 50 µg of BSA per 1 µg as carrier protein.

Storage/Stability

Prior to reconstitution, store at −10 to −25 °C. Reconstituted product under sterile conditions may be stored at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots. Avoid repeated freezing and thawing.

Preparation Instructions

Reconstitute at 10 µg/mL in sterile PBS containing at least 0.1% human or bovine serum albumin. Prepare a stock solution of no less than 50 µg/mL.

Product Profile

The biological activity of Bovine Osteopontin is measured by the ability of the immobilized protein to support the adhesion of HEK293 human embryonic kidney cells5. When 1 x 10^5 cells/well are added to a Bovine Osteopontin/OPN coated plate, cell adhesion is enhanced in a dose-dependent manner after 1 hour incubation at 37 °C. The ED_{50} for this effect is 0.06–0.36 µg/mL.

References

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