OSTEOPROTEGERIN (OPG)/Fc CHIMERA
Human, Recombinant
Expressed in *Sf* 21 cells

Product Number **O 9631**

ProductInformation

Product Description
Osteoprotegerin (OPG)/Fc Chimera is a chimeric protein expressed in *Sf* 21 insect cells. Human osteoprotegerin[1,2] is fused to the carboxy-terminal 6X histidine-tagged Fc portion of human IgG1 via a peptide linker. Mature recombinant osteoprotegerin/Fc is a disulfide-linked homodimeric protein. Each monomer contains 623 amino acid residues, including 380 residues from mature OPG and 243 residues from the Fc protein and linker. Mature OPG/Fc has a calculated molecular mass of 71 kDa. Due to glycosylation, recombinant human OPG/Fc migrates as a 77 kDa protein in SDS-PAGE under reducing conditions. Human and mouse OPG share approximately 84 % and 94 % homology, respectively, with rat OPG.

Osteoprotegrin (OPG), also known as osteoclasto-genesis inhibitory factor (OCIF), is a soluble secreted member of the TNFR superfamily that lacks cell attachment motifs. Like many other TNFRs, the amino-terminal portion contains four cysteine-rich repeats and the carboxy-terminal portion contains two death domain (DD) homologous motifs. The only two ligands currently known for OPG are RANKL (OPGL, ODF, TRANCE) and TRAIL (APO2-L, TNF-related apoptosis-inducing ligand/apoptosis-2 ligand). TRAIL, a membrane bound signaling receptor, is broadly expressed in a variety of tissues, but not in liver. TRAIL induces apoptosis independent of Fas. TRAIL can apparently neutralize the action of RANKL (OPGL) on OPG by competitive displacement.[3]

The roles of OPG and RANKL in osteoclastogenesis[4], apoptosis[5,6], and the functioning immune system[7] are under active investigation. Apparently the balance between OPG and RANKL is a key determinant in whether new bone tissue is formed or existing bone tissue is lost. In recent studies, daily injections of OPG into normal rats remarkably increased bone mineral density and bone volume and decreased the number of osteoclasts. Glucocorticoids, which can cause bone loss, inhibit gene expression for OPG and stimulate production of RANKL[8], whereas estrogen, which helps prevent osteoporesis in menopausal women, stimulates expression of the OPG gene.[9] Injections of OPG also prevented bone and cartilage destruction in mice treated to develop arthritis, while not preventing inflammation.[10]

Reagent
Osteoprotegerin (OPG)/Fc Chimera is supplied as 100 µg of protein lyophilized from a 0.2 µm filtered solution of phosphate buffered saline (PBS) containing 5 mg of bovine serum albumin.

Preparation Instructions
Reconstitute the contents of the vial using sterile phosphate buffered saline (PBS) containing at least 0.1 % human serum albumin or bovine serum albumin. Prepare a stock solution of no less than 100 µg/ml.

Storage/Stability
Store at –20 °C. Upon reconstitution, store at 2 ° to 8 °C for one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended.

Product Profile
The biological activity of osteoprotegerin/Fc chimera is measured by its ability to neutralize apoptosis of mouse L929 cells treated with 20 ng/ml cross-linked soluble recombinant human TRAIL.[11] The ED_{50} for this effect is generally 8 to 24 ng/ml. The ED_{50} is defined as the effective concentration of growth factor that elicits a 50 % increase in cell growth in a cell based bioassay.
Purity: >90 % as determined by SDS-PAGE, visualized by silver stain.
Endotoxin: < 0.1 ng/µg of protein, determined by the LAL method.

References

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