

Product Information

VEGF Receptor-2 (KDR, FLK-1)/Fc Chimera, human recombinant, expressed in mouse NSO cells

Catalog Number **V6758**

Storage Temperature -20°C

Product Description

Human Vascular Endothelial Growth Factor Receptor 2 (VEGF R2, KDR, Flk-1)/Fc Chimera is produced from a DNA sequence encoding amino acid residues 1–764 of the extracellular domain of human VEGF R2 (KDR) fused to the 6× histidine tagged Fc portion of human IgG1 by the peptide (EGF).¹ The disulfide-linked homodimeric protein contains two 988 amino acid residue subunits. Each monomer has a predicted molecular mass of ~110 kDa. As a result of glycosylation, the protein migrates to ~160 kDa in SDS-PAGE.

Mature native human VEGF R2 is composed of a 745 amino acid residue extracellular domain, a 25 amino acid residue transmembrane domain, and a 567 amino acid residue cytoplasmic domain.

Vascular endothelial growth factors (VEGFs) are a family of closely related growth factors having a conserved pattern of eight cysteine residues and sharing common VEGF receptors. VEGFs stimulate the proliferation of endothelial cells, induce angiogenesis, and increase vascular permeability in both large and small vessels.² The mitogenic activity of VEGFs appears to be mediated by specific VEGF receptors.

VEGF Receptor-2 (VEGF R2) is one of the five receptor tyrosine kinases (RTKs) (VEGF R1/Flt1, VEGF R2/KDR/Flk-1, VEGF R3/Flt-4, tie-1, and tek/tie-2) whose expression is almost exclusively restricted to endothelial cells. Tie-1 and tek/tie-2 are a class of RTKs containing two immunoglobulin-like domains, three EGF homology domains, and three fibronectin type III domains in their extracellular regions. VEGF R1/Flt-1, VEGF R2/KDR/Flk-1, and VEGF R3/Flt-4 are members of the class III subfamily of RTKs containing seven immunoglobulin-like repeats in their extracellular domains. All five of the receptor tyrosine kinases (RTKs) play central roles in vasculogenesis and angiogenesis.

VEGF R1 and VEGF R2 are both expressed in an endothelial cell-specific manner. They are detectable in virtually all tissues in adults and embryos. Monocytes express VEGF R1 and VEGF R2. VEGF R2 is also expressed in pancreatic duct cells, hematopoietic stem cells, megakaryocytes, specific tumor cell types such as malignant melanoma cells, and retinal progenitor cells.³ In the retina, two functional VEGF R2 forms are expressed as a result of alternative splicing.⁴ VEGF R2 is a key marker for pluripotent hematopoietic stem cells.⁵

VEGF R1 and VEGF R2 are closely related in their putative roles in angiogenesis. VEGF R2 is involved in commitment of endothelial-cell lineages and to cell proliferation, while VEGF R1 seems to be responsible for guiding endothelial cells into the proper spatial organization of the lumen-containing vessels. VEGF R1 binds both PlGF and VEGF with high affinity, whereas; VEGF R2 binds VEGF with high affinity but not PlGF. Recombinant soluble VEGF R2/Fc chimera binds VEGF with high affinity and is a potent VEGF antagonist.⁶

Reagent

Recombinant Human VEGF Receptor-2 (KDR, Flk-1)/Fc Chimera is supplied as ~50 µg of protein lyophilized from a 0.2 µm filtered solution in phosphate buffered saline (PBS) containing 2.5 mg of bovine serum albumin.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

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 ≥ 50 µg/ml.

Storage/Stability

Store the product at -20°C . Upon reconstitution, store at $2-8^{\circ}\text{C}$ 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 Human VEGF Receptor-2 (KDR) is measured by its ability to inhibit the VEGF-dependant proliferation of human umbilical vein endothelial cells.⁵

The ED_{50} for this effect is typically 10–40 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 % (SDS-Page, visualized by silver stain)

Endotoxin level: <0.1 ng/ μg protein [LAL (Limulus amoebocyte lysate) method]

References

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4. Wen, Y. et al., Two Functional forms of vascular endothelial growth factor receptor-2 Flk-1 mRNA are expressed in normal rat retina. *J. Biol. Chem.*, **273**, 2090-2097 (1998).
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7. Conn, G. et al., Purification of a glycoprotein vascular endothelial cell mitogen from a rat glioma-derived cell line. *Proc. Natl. Acad. Sci. USA*, **87**, 1323-1327 (1990).

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