

## Product Information

### VEGF Receptor-1 (FLT-1)/Fc Chimera human

recombinant, expressed in baculovirus infected Sf21 cells

Catalog Number **V1385**

#### Product Description

Human Vascular Endothelial Growth Factor Receptor 1 (VEGF R1, Flt-1)/Fc Chimera is produced from a DNA sequence encoding soluble VEGF R1<sup>1,2</sup> fused to the Fc region of human IgG1. Recombinant human VEGF R1 (Flt-1), a disulfide-linked dimeric protein with two 905 amino acid residue polypeptides, has a predicted monomeric molecular mass of 100 kDa. As a result of glycosylation, the protein migrates to ~123 kDa in SDS-PAGE.

Mature native human VEGF R1 is composed of a 736 amino acid residue extracellular domain, a 22 amino acid residue transmembrane domain, and a 558 amino acid residue cytoplasmic domain. As a result of alternative splicing of the mRNA, a truncated form of Flt-1 has been cloned. The recombinant soluble VEGF R1 (Flt-1)/Fc chimera binds VEGF and PlGF with high affinity and is a potent VEGF antagonist.

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.<sup>3</sup> The mitogenic activity of VEGFs appears to be mediated by specific VEGF receptors.

VEGF Receptor-1 (VEGF R1) 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. Hypoxia induces endothelial cell expression of VEGF R1 but not VEGF R2. VEGF R1 is responsible for guiding endothelial cells into the proper spatial organization of lumen-containing vessels. Alternative splicing of VEGF R1 pre-mRNA is important in the regulation of VEGF activity in angiogenesis.<sup>4</sup> Vascular endothelial growth factor B (VEGF-B) binds to VEGF R1 and regulates plasminogen activator activity in endothelial cells.<sup>5</sup> The human VEGF R1 (Flt-1) gene has been mapped to chromosome 13q12.

#### Reagent

Supplied as ~50 µg of protein lyophilized from a 0.2 µm filtered solution in 20 mM MOPS, 500 mM sodium chloride, 0.05% CHAPs, pH 7.0 containing 50 µg bovine serum albumin per 1 µg of cytokine.

#### Preparation Instructions

Reconstitute the contents of the vial using sterile phosphate buffered saline 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, the product may be stored at 2-8 °C for up to 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-1 is measured by its ability to inhibit the VEGF-dependant proliferation of human umbilical vein endothelial cells.<sup>6</sup>

The ED<sub>50</sub> 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 level is < 1.0 EU per 1 µg of the protein as determined by the LAL (Limulus amoebocyte lysate) method.

#### References

1. Shibuya, M., et al., Nucleotide sequence and expression of a novel human receptor-type tyrosine kinase gene (flt) closely related to the fms family. *Oncogene*, **5**, 519-524 (1990).
2. Kendall, R.L., and Thomas, K.A., Inhibition of vascular endothelial cell growth factor activity by an endogenously encoded soluble receptor. *Proc. Natl. Acad. Sci. USA*, **90**, 10705-10709 (1993).
3. Neufeld, G., et al., Vascular endothelial growth factor and its receptors. *Prog. Growth Factor Res.*, **5**, 89-97 (1994).
4. He, Y., et. al., Alternative splicing of vascular endothelial growth factor (VEGF)-R1 (FLT-1) pre-mRNA is important for the regulation of VEGF activity, *Mol. Endocrinol.*, **13**, 537-545 (1999).
5. Olofsson, B., et al., Vascular endothelial growth factor B (VEGF-B) binds to VEGF receptor-1 and regulates plasminogen activator activity in endothelial cells, *Proc. Natl. Acad. Sci. USA*, **95**, 11709-11714 (1998).
6. 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).

KCP,PHC 05/13-1