



**PLATELET-DERIVED GROWTH FACTOR SOLUBLE  
RECEPTOR  $\alpha$  (PDGF sR $\alpha$ )  
Human, Recombinant  
Expressed in mouse NSO cells**

Product Number **P 1985**

**Product Description**

Recombinant Human Platelet Growth Factor soluble Receptor  $\alpha$  (PDGF sR $\alpha$ ), a transmembrane-binding protein, is a member of the class III subfamily of receptor tyrosine kinases (RTK) that includes PDGF R $\beta$ , and also receptors for M-CSF, SCF, and Flt 3 ligand. Characteristic of the class III RTKs is the presence of five immunoglobulin-like regions in their extracellular domain, and a split kinase region in their intracellular domain. PDGF sR $\alpha$  is produced from a DNA sequence encoding the extracellular domain of human PDGF A type receptor (PDGF R $\alpha$ )<sup>1</sup>, expressed in a mouse myeloma NSO cells. Mature recombinant soluble human PDGF R $\alpha$ , a 501 amino acid residue, has a predicted molecular mass of approximately 56 kDa. PDGF R $\alpha$  and PDGF R $\beta$  share 44 % sequence identity. Within the extracellular domain, 30 % of the amino acid residues are identical.<sup>1</sup>

Platelet derived growth factor (PDGF), first identified in serum, is a major mitogen for cells of mesenchymal origin and is released from platelets during clot formation.<sup>2</sup> PDGF elicits multifunctional actions with a variety of cells, including mitogenesis of mesoderm-derived cells, increased extracellular matrix synthesis, and chemotaxis and activation of neutrophils, monocytes, and fibroblasts. PDGF is mitogenic for dermal and tendon fibroblasts, vascular smooth muscle cells, glial cells, and chondrocytes. PDGF appears to interact with TGF-1 in accelerating wound healing<sup>3</sup> and may also be pathogenic in arteriosclerosis and neoplasia.<sup>4</sup>

PDGF exists as a homodimeric or heterodimeric protein consisting of disulfide-linked PDGF-A and PDGF-B chains. PDGF exerts its actions via specific receptors on the cell surface. Two distinct human PDGF receptors have been identified, PDGF  $\alpha$  and PDGF  $\beta$ , which are structurally related, consist of an extracellular region, a single transmembrane region, and an intracellular region. The three different isoforms of PDGF (PDGF-AA, PDGF-AB, and PDGF-BB) bind with different affinities to two both receptors.<sup>5</sup> Ligand binding induces receptor dimerization. The A-subunit of PDGF binds to  $\alpha$ -receptors, whereas the B-subunit binds to both  $\alpha$ - and  $\beta$ -receptors. Binding of PDGF to its receptor activates the

## Product Information

tyrosine kinase domain and leads to enhanced phosphorylation of intracellular substrates as well as autophosphorylation of the receptor itself. Autophosphorylation is induced by allowing binding and activation of the cytoplasmic SH2-domain, which contains signal transduction molecules. Thereby, a number of different signaling pathways are initiated leading to cell growth, actin reorganization, migration and differentiation. Recent observations suggest that extensive cross talk occurs between the different signaling pathways and that stimulatory signals are modulated by inhibitory signals arising in parallel.<sup>6</sup>

PDGF R $\alpha$  is expressed in oligodendrocyte progenitor cells, mesothelial cells, and liver endothelial cells. It has also been detected in cell conditioned medium and human plasma.

**Reagent**

Recombinant Human Platelet Growth Factor soluble Receptor  $\alpha$  (PDGF sR $\alpha$ ) is supplied as approximately 50  $\mu$ g of protein lyophilized from a 0.2  $\mu$ m filtered solution in phosphate buffered saline (PBS) containing 2.5 mg 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 50  $\mu$ g/ml.

**Storage/Stability**

Prior to reconstitution, store at  $-20$  °C. Reconstituted product may be stored at 2 °C to 8 °C for at least one month. For prolonged storage, freeze in working aliquots at  $-20$  °C. Avoid repeated freezing and thawing.

**Product Profile**

Recombinant Human Platelet Growth Factor soluble Receptor  $\alpha$  (PDGF sR $\alpha$ ) is measured by its ability to inhibit the biological activity of human PDGF-AB or recombinant human PDGF-AA in quiescent NR6R-3T3 fibroblasts.<sup>7</sup>

The ED<sub>50</sub> for this effect is generally 5 to 10  $\mu$ g/ml in the presence of 10 ng/ml recombinant human PDGF-AA.

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: >97 % as determined by SDS-PAGE, visualized by silver stain.

Endotoxin: <0.1 ng/μg determined by the LAL method.

#### References

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