



Recombinant Human Vascular Endothelial Growth Factor₁₈₉

20180216BB



FOR RESEARCH ONLY! NOT FOR HUMAN USE!

Cat.-no:	300-095
Size:	20 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

Gene:	<i>vegf</i>
Synonyms:	VEGF-A, VPF

Human Vascular Endothelial Growth Factor VEGF₁₈₉, a 21 kDa protein consisting of 189 amino acid residues, is produced as a homodimer. VEGF is a polypeptide growth factor and a member of the platelet-derived growth factor family. It is a specific mitogen for vascular endothelial cells and a strong angiogenic factor *in vivo*. Two high-affinity tyrosine kinase receptors for VEGF₁₈₉ have been identified, VEGFR-1 (FLT-1), and VEGFR-2 (KDR). Consistent with the endothelial cell-specific action of VEGF₁₈₉, expression of both receptor genes has been found predominantly but not exclusively on endothelial cells. Expression of VEGFR-1 was also found on human monocytes, neutrophils (PMNs), bovine brain pericytes and villous and extravillous trophoblasts. In addition to its action as a mitogen it is a potent vascular permeability factor (VPF) *in vivo*. VEGF₁₆₅ is also a chemoattractant molecule for monocytes and endothelial cells. 5 different proteins are generated by differential splicing: VEGF₁₂₁, VEGF₁₄₅, VEGF₁₆₅, VEGF₁₈₉ and VEGF₂₀₆. The most abundant form is VEGF₁₆₅. Whereas VEGF₁₂₁ and VEGF₁₆₅ are secreted proteins, VEGF₁₄₅, VEGF₁₈₉ and VEGF₂₀₆ are strongly cell-associated. The isoforms VEGF₁₄₅, VEGF₁₆₅ and VEGF₁₈₉ bind to heparin with high affinity. All dimeric forms have similar biological activities but their bioavailability is very different. There is good evidence that there also exist heterodimeric molecules between the different isoforms and that different cells and tissues express different VEGF isoforms. The other members of this increasing growth factor family are VEGF-B, -C, -D and -E. Another member is the Placenta growth factor PlGF.

References

1. Breier et al., Dev 114:521, 1992
2. Fiebig et al., Eur J Biochem 211:19, 1993
3. Flamme et al., Dev Biol 162:699, 1995
4. Kremer et al., Cancer Res 57:3852, 1997

Sequence

APMAEGGGQNHHEVVKFMDVYQRSYCHPIETLVDIFQEYDPDEIEYIFKPCSV
PLMRCGGCCNDEGLECVPTTEESNITMQIMRIKPHQGGHI GEMSFLOHNKCEC
RPKKDRARQEKKSVRGKGGKQKRKRKKSRYKSWVPCGPCSERRKHLEFVQDP
QTCKCSCKNTDSRCKARQLELNERTCRCDKPRR

Database References

Protein RefSeq:	NP 001165095
Uniprot ID:	P15692-2
mRNA RefSeq:	NM 001171624

Product Specifications

Expressed in	E.coli
Purity	> 98% by SDS-PAGE & silver stain
Endotoxin level	< 0.1ng per µg of human VEGF ₁₈₉
Buffer	50 mM acetic acid
Stabilizer	None
Formulation	lyophilized
Length (aa):	189
MW:	~42 kDa
Result by N-terminal sequencing	APMAEGG

Stability: Lyophilized samples are stable for greater than six months at -20°C to -70°C. Reconstituted VEGF₁₈₉ should be stored in working aliquots at -20°C.

Reconstitution: Centrifuge the vial prior to opening! The lyophilized VEGF₁₈₉ should be reconstituted in water to a concentration not lower than 50 µg/ml. For long term storage we recommend to add at least 0.1% human or bovine serum albumin.



AVOID REPEATED FREEZE AND THAW CYCLES!

Biological Activity: Measured in a cell proliferation assay using primary human umbilical vein endothelial cells (HUVEC) and primary human dermal lymphatic endothelial cells (HDLEC). The ED₅₀ for this effect is typically 2 - 10ng/mL.

Sandwich ELISA: Can be used as standard in a Sandwich ELISA.



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Handling/Application

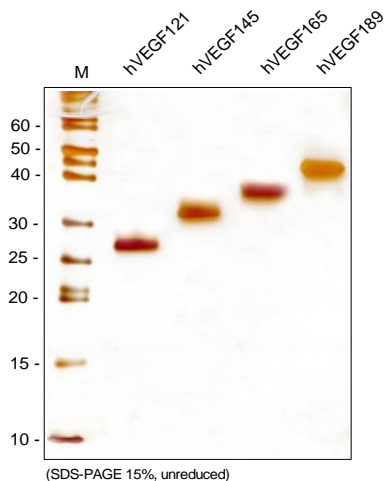


Fig. 1: SDS-PAGE analysis of recombinant human VEGF-A isoforms produced in *E. coli*. Samples were loaded under non-reducing conditions in 15% SDS-polyacrylamide gel and stained with Silver stain.

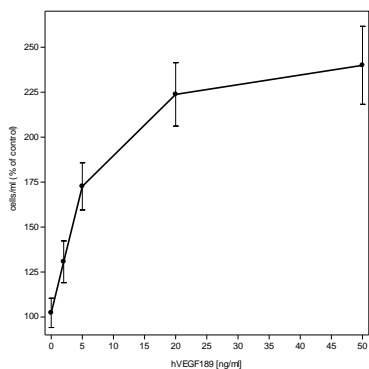


Fig. 2: VEGF₁₈₉-induced proliferation of primary human dermal lymphatic endothelial cells (HDLEC). HDLECs were stimulated with increasing amounts of recombinant human VEGF₁₈₉.

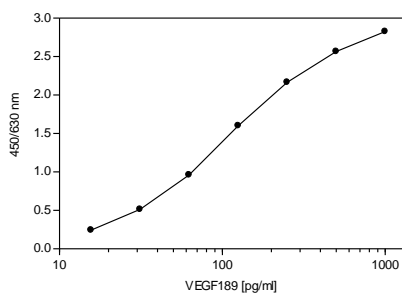


Fig. 3: VEGF-A Sandwich-ELISA using VEGF₁₈₉ as standard. Mouse anti-human VEGF-A (Cat# 101-M56) was used as capture antibody, Biotinylated mouse anti-human VEGF-A #339 was used for detection.