



# Recombinant Human Vascular Endothelial Growth Factor<sub>145</sub>

20131125BB



**FOR RESEARCH ONLY! NOT FOR HUMAN USE!**

Cat.-no:	300-033-E
Size:	5 µg
Lot. No.:	According to product label
Country of origin:	Germany

## Scientific Background

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

A vascular endothelial growth factor (VEGF) mRNA species containing exons 1–6 and 8 of the VEGF gene was found to be expressed as a major VEGF mRNA form in several cell lines derived from carcinomas of the female reproductive system. This mRNA is predicted to encode a VEGF form of 145 amino acids (VEGF<sub>145</sub>). VEGF<sub>145</sub> produced in insect cells is a homodimeric, 20,5 kDa protein belonging to the VEGF-A family.

Recombinant VEGF<sub>145</sub> induced the proliferation of vascular endothelial cells and promoted angiogenesis in vivo. VEGF<sub>145</sub> was compared with previously characterized VEGF species with respect to interaction with Heparin-like molecules, cellular distribution, VEGF receptor recognition, and extracellular matrix (ECM) binding ability. VEGF<sub>145</sub> shares with VEGF<sub>165</sub> the ability to bind to the KDR/flk-1 receptor of endothelial cells. It also binds to heparin with an affinity similar to that of VEGF<sub>165</sub>. However, VEGF<sub>145</sub> does not bind to two additional endothelial cell surface receptors that are recognized by VEGF<sub>165</sub> but not by VEGF<sub>121</sub>. VEGF<sub>145</sub> is secreted from producing cells as are VEGF<sub>121</sub> and VEGF<sub>165</sub>. However, VEGF<sub>121</sub> and VEGF<sub>165</sub> do not bind to the ECM produced by corneal endothelial cells, whereas VEGF<sub>145</sub> binds efficiently to this ECM. Basic fibroblast growth factor (bFGF)-depleted ECM containing bound VEGF<sub>145</sub> induces proliferation of endothelial cells, indicating that the bound VEGF<sub>145</sub> is active. It seems that VEGF<sub>145</sub> possesses a unique combination of biological properties distinct from those of previously characterized VEGF species. The other members of this increasing growth factor family are VEGF-B, -C, -D, -E and -F. Another member is the Placenta growth factor PIGF (PIGF-1, -2 and -3).

## 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
5. Poltorak et al., JBC 272:7151, 1997

## Sequence

APMAEGGGQNHHEVVKFMDVYQRSYCHPIETLVDIFQEY PDEIEYIFKPSCV  
PLMRCGGCCNDEGLECVPTESNITMQIMRIKPHQGQHI GEMSFLOHNKCEC  
RPKKDRARQEKKSVRGKGKQKRKRKKSRYKSWSVCDKPRR

## Database References

Protein RefSeq:	NP_001191313.1
Uniprot ID:	P15692-6
mRNA RefSeq:	NM_001171624

## Product Specifications

Expressed in	E.coli
Purity	> 95% by SDS-PAGE & silver stain
Endotoxin level	< 0.1ng per µg of human VEGF <sub>145</sub>
Buffer	50 mM acetic acid
Stabilizer	None
Formulation	lyophilized
Length (aa):	145
MW:	34 kDa
Result by N-terminal sequencing	APMAEGG

**Stability:** Lyophilized samples are stable for greater than six months at -20°C to -70°C. Reconstituted VEGF<sub>145</sub> should be stored in working aliquots at -20°C.

**Reconstitution:** The lyophilized VEGF<sub>145</sub> 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.



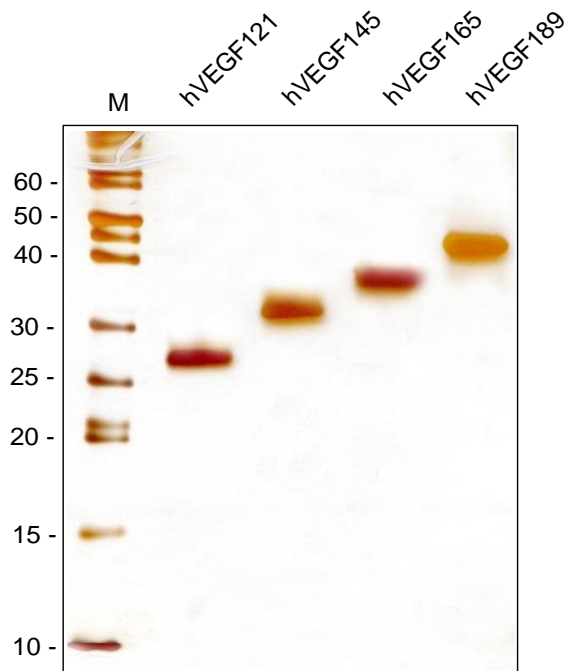
**AVOID REPEATED FREEZE AND THAW CYCLES!**

**Biological Activity:** The ED<sub>50</sub> for stimulation of cell proliferation in human umbilical vein endothelial cells by VEGF<sub>145</sub> has been determined to be in the range of 5-10 ng/ml.



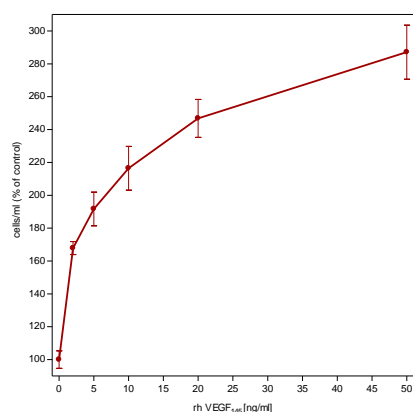
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## Handling/Application



(SDS-PAGE 15%, unreduced)

**Figure 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.



**Figure 2.** VEGF<sub>145</sub>-induced proliferation of primary human dermal lymphatic endothelial cells (HDLEC). HDLECs were stimulated with increasing amounts of human VEGF<sub>145</sub>.