



Recombinant Mouse Vascular Endothelial Growth Factor₁₄₄

20131119BB



FOR RESEARCH ONLY! NOT FOR HUMAN USE!

Cat.-no:	M30-034
Size:	20 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

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

Mouse Vascular Endothelial Growth Factor₁₄₄ (VEGF₁₄₄), a 16,9 kDa protein consisting of 144 amino acid residues, is produced as a homodimer. VEGF₁₄₄ 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 VEGF₁₄₄ have been identified, VEGFR-1 (FLT-1), and VEGFR-2 (Flk-1). Consistent with the endothelial cell-specific action of VEGF₁₄₄, 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 and is also a chemo attractant for monocytes and endothelial cells. At least four different proteins are generated by differential splicing of the mouse VEGF gene: VEGF₁₂₀, VEGF₁₄₄, VEGF₁₆₄ and VEGF₁₈₈. The most abundant form is VEGF₁₆₄. Whereas VEGF₁₂₀, VEGF₁₄₄ and VEGF₁₆₄ are secreted proteins, VEGF₁₈₈ is strongly cell-associated. In addition, the isoforms VEGF₁₆₄ and VEGF₁₈₈ bind to heparin with high affinity.

VEGF is apparently a homodimer, but preparations of VEGF show some heterogeneity on SDS gels depending of the secretion of different forms and the varying degrees of glycosylation. All dimeric forms possess similar biological activities. A related protein of VEGF is placenta growth factor (PlGF) with about 53% homology and VEGF-B with similar biological activities..

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

APTTEGEQKSHEVIKFMVDVYQRSYCRPIETLVDFQEYDPDEIEYIFKPSVCP
LMRCAGCCNDEALECVPTSESNIITMQIMRIKPHQSQIHIGEMSFLOHRSRCECR
PKKDRTKPEKKSVRGKGRGQKRKRKRSRFSWSVCDKPRR

Database References

Protein RefSeq:	NP 001020421
Uniprot ID:	Q00731
mRNA RefSeq:	NM 001025250

Product Specifications

Expressed in	E.coli
Purity	> 95% by SDS-PAGE & silver stain
Endotoxin level	< 0.1ng per µg of mouse VEGF ₁₄₄
Buffer	50 mM acetic acid
Stabilizer	None
Formulation	lyophilized
Length (aa):	144
MW:	33.8 kDa
Result by N-terminal sequencing	APTTEGE

Stability: Lyophilized samples are stable for greater than six months at -20°C to -70°C. Reconstituted VEGF₁₄₄ should be stored in working aliquots at -20°C.

Reconstitution: The lyophilized VEGF₁₄₄ should be reconstituted in 50 mM acetic acid 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 by cell proliferation of human umbilical vein endothelial cells (HUVEC) in the range of 2-20 ng/ml.



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Handling/Application

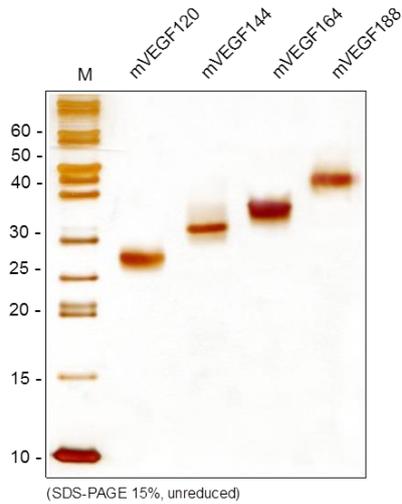


Fig. 1: SDS-PAGE analysis of recombinant mouse VEGF-A isoforms produced in *E. coli*. Samples were loaded under non-reducing conditions in 15% SDS-polyacrylamide gel and stained with Silver stain.

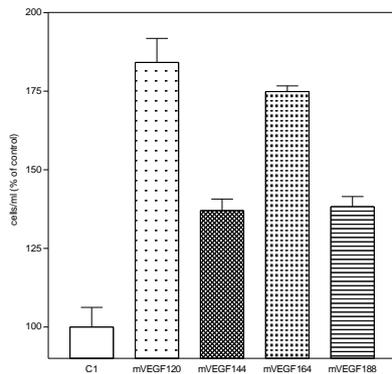


Fig. 2: Stimulation of cell proliferation in primary human umbilical vein endothelial cells (HUVEC) by recombinant mouse VEGF-A isoforms. Values are the means (\pm SD) of triplicate determinations and expressed as percentage of control.

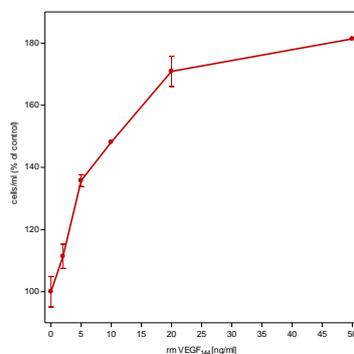


Fig. 3: Dose-dependent stimulation of cell proliferation in primary human umbilical vein endothelial cells (HUVEC) by recombinant mouse VEGF₁₄₄. Values are the means (\pm SD) of triplicate determinations and expressed as percentage of control.