



Recombinant Mouse Vascular Endothelial Growth Factor₁₆₄

20180216BB



FOR RESEARCH ONLY! NOT FOR HUMAN USE!

Cat.-no:	M30-001S
Size:	2 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 Factor₁₆₄ (VEGF₁₆₄), a 19,2 kDa protein consisting of 164 amino acid residues, is produced as a homodimer. VEGF₁₆₄ 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 VEGF₁₆₄ have been identified, VEGFR-1 (FLT-1), and VEGFR-2 (Flk-1). Consistent with the endothelial cell-specific action of VEGF₁₆₄, 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. There is evidence that heterodimeric molecules between the different isoforms exists and that different cells and tissues express different VEGF isoforms. 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

APTTEGEQKSHEVIKFMVDVYQRSYCRPIETLVDFQEYDPDEIEYIFKPSCVPLMRCAGCCNDEALECVPTSESNI TMQIMRIKPHQSQHIGEMSF LQHSRCECRPKKDRTKPENHCEPCSERRKH L FVQDPQTCCKSCKN TDSRCKARQLELNERTCRCDKPRR

Database References

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

Product Specifications

Expressed in	Insect cells
Purity	> 95% by SDS-PAGE & silver stain
Buffer	50 mM acetic acid
Stabilizer	None
Formulation	lyophilized
Length (aa):	164
MW:	48.0 kDa
Result by N-terminal sequencing	APTTEGE

Stability: Lyophilized samples are stable for greater than six months at -20°C to -70°C. Reconstituted VEGF₁₆₄ should be stored in working aliquots at -20°C.

Reconstitution: Centrifuge the vial prior to opening! The lyophilized VEGF₁₆₄ 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: The ED₅₀ for stimulation of cell proliferation by human umbilical vein endothelial cells for VEGF₁₆₄ has been determined to be in the range of 1-5 ng/ml.



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Handling/Application

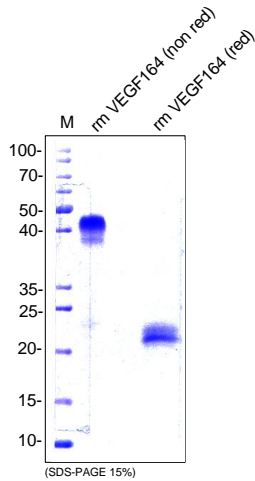


Figure 1: SDS-PAGE analysis of recombinant mouse VEGF₁₆₄ produced in insect cells. Sample were loaded in 15% SDS-polyacrylamide gel under non-reducing and reducing conditions and stained with Coomassie stain.

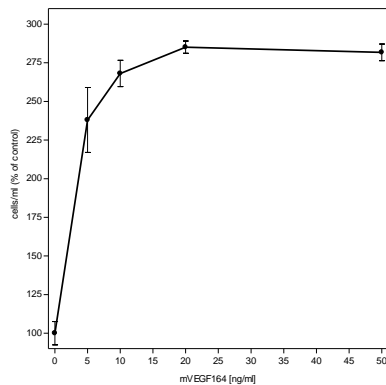


Figure 2. VEGF₁₆₄-induced proliferation of primary human umbilical vein endothelial cells (HUVEC). HUVECs were stimulated with increasing amounts of mouse VEGF₁₆₄.