Recombinant Mouse Vascular Endothelial Growth Factor$_{164}$

20180216BB

FOR RESEARCH ONLY! NOT FOR HUMAN USE!

Cat.-no:	**M30-001**
Size:	5 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

Gene:	*vegf*
Synonyms:	VEGF-A, VPF

Mouse Vascular Endothelial Growth Factor$_{164}$ (VEGF$_{164}$), a 19,2 kDa protein consisting of 164 amino acid residues, is produced as a homodimer. VEGF$_{164}$ 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 VEGF$_{164}$ have been identified, VEGFR-1 (FLT-1), and VEGFR-2 (Flk-1). Consistent with the endothelial cell-specific action of VEGF$_{164}$, 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: VEGF$_{120}$, VEGF$_{144}$, VEGF$_{164}$ and VEGF$_{188}$. The most abundant form is VEGF$_{164}$. Whereas VEGF$_{120}$, VEGF$_{144}$, and VEGF$_{164}$ are secreted proteins, VEGF$_{188}$ is strongly cell-associated. In addition, the isoforms VEGF$_{164}$ and VEGF$_{188}$ 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 at al., Cancer Res 57:3852, 1997

Sequence

APTTEGEQKSHEVIKFMDVYQRSYCRPIETLVDIFQEYPDEIEYIFKPSCVP
LMRCAGCCNDEALECVPTSESNITMQIMRIKPHQSQHIGEMSFLQHSRCECR
PKKDRTKPENHCEPCSERRKHLFVQDPQTCKCSCKNTDSRCKARQLELNERT
CRCDKPRR

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 VEGF$_{164}$ should be stored in working aliquots at -20°C.

Reconstitution: Centrifuge the vial prior to opening! The lyophilized VEGF$_{164}$ 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 ED$_{50}$ for stimulation of cell proliferation by human umbilical vein endothelial cells for VEGF$_{164}$ has been determined to be in the range of 1-5 ng/ml.

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Handling/Application

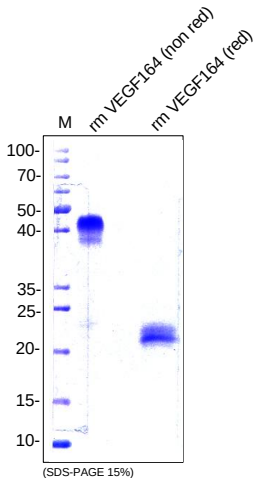

Figure 1: SDS-PAGE analysis of recombinant mouse VEGF$_{164}$ produced in insect cells. Sample were loaded in 15% SDS-polyacrylamide gel under non-reducing and reducing conditions and stained with Coomassie stain.

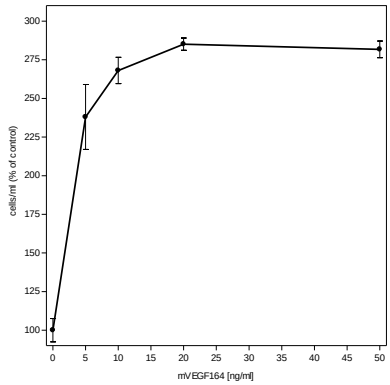

Figure 2. VEGF$_{164}$-induced proliferation of primary human umbilical vein endothelial cells (HUVEC). HUVECs were stimulated with increasing amounts of mouse VEGF$_{164}$.

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