Recombinant Human Vascular Endothelial Growth Factor$_{165b}$

20191118BB

FOR RESEARCH ONLY! NOT FOR HUMAN USE!

Cat.-no:	**300-081**
Size:	5 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

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

Vascular endothelial growth factor-A (VEGF-A) is a potent mediator of both angiogenesis and vasculogenesis in the fetus and adult. Humans express two sets of alternately spliced isoforms of 121, 145, 165, 183, 189, and 206 amino acids. VEGF$_{165}$ appears to be the most abundant and potent of the angiogenic isoform set, followed by VEGF$_{121}$ and VEGF$_{189}$. The anti-angiogenic or "b" set of isoforms is differentially spliced to contain six alternate amino acids at the C-terminus, and are the more highly expressed isoforms in normal adult tissue. VEGF$_{165b}$, like VEGF$_{121}$ but unlike most angiogenic isoforms, does not bind heparins and is therefore diffusible. VEGFs bind the type I transmembrane receptor tyrosine kinases VEGFR1 (Flt1) and VEGFR2 (Flk1/KDR) on endothelial cells. Although VEGF affinity is highest for binding to Flt1, KDR appears to be the primary mediator of VEGF angiogenic activity. The affinity of VEGF$_{165b}$ for KDR is similar to that of VEGF$_{165}$, but VEGF$_{165b}$ only partially activates KDR such that the kinase regulatory site Y1054 is not phosphorylated. VEGF$_{165b}$ also does not bind Neuropilin-1, suggesting that the functional difference between VEGF$_{165}$ and VEGF$_{165b}$ may be due to either the lack of Neuropilin-1 co-signaling or unique downstream signaling activated by VEGF$_{165b}$. Since VEGF$_{165b}$ may compete with angiogenic VEGFs for KDR sites, its ectopic expression in tumors has been shown to inhibit their growth.

References

1. Leung DW et al, Science 246:1306, 1989
2. Keck PJ et al, Science 246:1309, 1989
3. Byrne AM et al, J Cell Mol Med 9:777, 2005
4. Robinson CJ and Stringer SE, J Cell Sci 114:853, 2001
5. Nowak DG et al, J Cell Sci 121:3487, 2008
6. Kawamura H et al, Cancer Res 68:4683, 2008
7. Rennel ES et al, Br J Cancer 98:1250, 2008
8. Harper SJ and Bates DO, Nat Rev Cancer 8(11):880, 2008

Sequence

APMAEGGGQNHHEVVKFMDVYQRSYCHPIETLVDIFQEYPDEIEYIFKPSCV
PLMRCGGCCNDEGLECVPTEESNITMQIMRIKPHQGQHIGEMSFLQHNKCEC
RPKKDRARQENPCGPCSERRKHLFVQDPQTCKCSCKNTDSRCKARQLELNER
TCRSLTRKD

Database References

Protein RefSeq:	NP_001165100.1
Uniprot ID:	P15692-8
mRNA RefSeq:	NM_001171629.1

Product Specifications

Expressed in	E.coli
Purity	> 95% by SDS-PAGE & Coomassie Stain
Endotoxin level	< 0.1ng per µg of human VEGF$_{165b}$
Buffer	50 mM acetic acid
Stabilizer	None
Formulation	lyophilized
Length (aa):	165
MW:	38,2 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$_{165b}$ should be stored in working aliquots at -20°C.

Reconstitution: The lyophilized VEGF$_{165b}$ 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 its binding ability in a functional ELISA: Recombinant human sKDR (Cat# S01-004) and sKDR(D7)/Fc (Cat# SFC-008) were coated to the plate (1µg/ml) and rhVEGF$_{165}$ and rhVEGF$_{165b}$ were added. Bound VEGF$_{165}$ and VEGF$_{165b}$ were detected by an anti-human VEGF-A antibody.

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Handling/Application

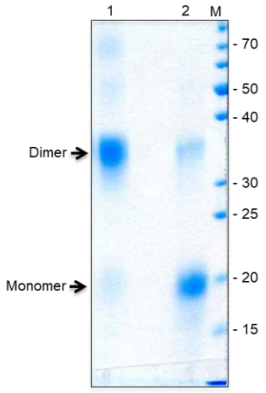

Fig. 1: SDS-PAGE analysis of recombinant human VEGF165b derived from E. coli. Samples were loaded in 15% SDS-polyacrylamide gel under reducing (lane 2) and non-reducing (lane 1) conditions and stained with Coomassie stain.

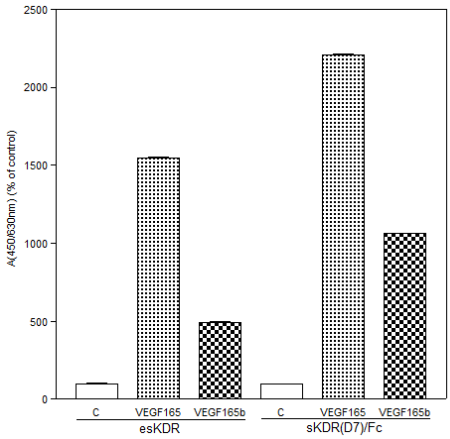

Fig. 2: BioLISA: Recombinant human esKDR (Cat# S01-004) and sKDR(D7)/Fc (Cat# SFC-008) were coated to the plate (1µg/ml) and rh VEGF$_{165}$ and rhVEGF$_{165b}$ were added. Bound VEGF$_{165}$ and VEGF$_{165b}$ were detected by an anti-human VEGF-A antibody.

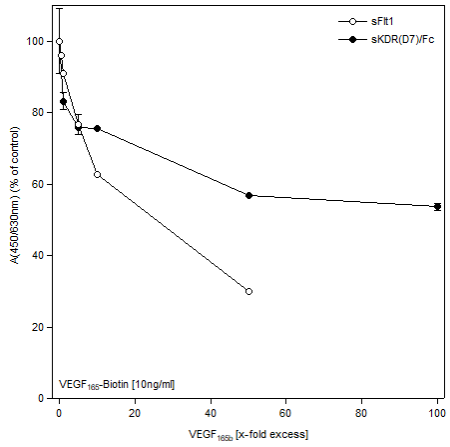

Fig. 3: Competition ELISA: Recombinant human sFlt1 (Cat# S01-010) and sKDR(D7)/Fc (Cat# SFC-008) were coated to the plate (1µg/ml). Then Biotinylated VEGF$_{165}$ (10ng/ml) and increasing amounts of VEGF$_{165b}$ were added.

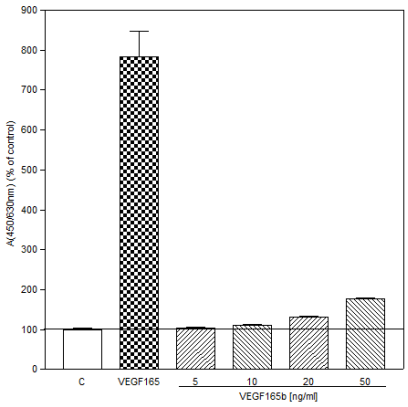

Fig. 4: BioLISA: Recombinant human sNRP1 (Cat# S01-019) was coated to the plate (1µg/ml) and increasing amounts of human VEGF$_{165b}$ were added. VEGF$_{165}$ was used as positive control. Bound VEGF$_{165}$ and VEGF$_{165b}$ were detected by an anti-human VEGF-A antibody.