Recombinant Human Endogenous Soluble Flt1-14

20150212BB

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Cat.-no:	**S01-072**
Size:	20 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

Gene:	*flt1*
Synonyms:	Fms-like tyrosine kinase 1, Vascular permeability factor receptor, sFlt1-14

A human-specific splicing variant of vascular endothelial growth factor (VEGF) receptor 1 (Flt1) was discovered, producing a soluble receptor (designated sFlt1-14) that is qualitatively different from the previously described soluble receptor (sFlt1) and functioning as a potent VEGF inhibitor. sFlt1-14 is generated in a cell type-specific fashion, primarily in non-endothelial cells. Notably, in vascular smooth muscle cells, all Flt1 messenger RNA is converted to sFlt1-14, whereas endothelial cells of the same human vessel express sFlt1. sFlt1-14 expression by vascular smooth muscle cells is dynamically regulated as evidenced by its upregulation on coculture with endothelial cells or by direct exposure to VEGF. Increased production of soluble VEGF receptors during pregnancy is entirely attributable to induced expression of placental sFlt1-14 starting by the end of the first trimester. Expression is dramatically elevated in the placenta of women with preeclampsia, specifically induced in abnormal clusters of degenerative syncytiotrophoblasts known as syncytial knots, where it may undergo further messenger RNA editing. sFlt1-14 is the predominant VEGF-inhibiting protein produced by the preeclamptic placenta, accumulates in the circulation, and hence is capable of neutralizing VEGF in distant organs affected in preeclampsia. Together, these findings revealed a new natural VEGF inhibitor that has evolved in humans, possibly to protect non-endothelial cells from adverse VEGF signaling. Furthermore, the study uncovered the identity of a VEGF-blocking protein implicated in preeclampsia.

References

1. Sela S et al, Circ Res 102(12):1566-74, 2008
2. Steinberg G et al, Thromb Res 123 Suppl 2:S93-9, 2009
3. Yagel S, Thromb Res 127 Suppl 3:S64-6, 2011
4. Barleon et al., 1997, J Biol Chem 272:10382-8
5. Röckl et al., 1998, Exp Cell Res, 241: 161-170].

Sequence

SKLKDPELSLKGTQHIMQAGQTLHLQCRGEAAHKWSLPEMVSKESERLSITK
SACGRNGKQFCSTLTLNTAQANHTGFYSCKYLAVPTSKKKETESAIYIFISD
TGRPFVEMYSEIPEIIHMTEGRELVIPCRVTSPNITVTLKKFPLDTLIPDGK
RIIWDSRKGFIISNATYKEIGLLTCEATVNGHLYKTNYLTHRQTNTIIDVQI
STPRPVKLLRGHTLVLNCTATTPLNTRVQMTWSYPDEKNKRASVRRRIDQSN
SHANIFYSVLTIDKMQNKDKGLYTCRVRSGPSFKSVNTSVHIYDKAFITVKH
RKQQVLETVAGKRSYRLSMKVKAFPSPEVVWLKDGLPATEKSARYLTRGYSL
IIKDVTEEDAGNYTILLSIKQSNVFKNLTATLIVNVKPQIYEKAVSSFPDPA
LYPLGSRQILTCTAYGIPQPTIKWFWHPCNHNHSEARCDFCSNNEESFILDA
DSNMGNRIESITQRMAIIEGKNKMASTLVVADSRISGIYICIASNKVGTVGR
NISFYITDVPNGFHVNLEKMPTEGEDLKLSCTVNKFLYRDVTWILLRTVNNR
TMHYSISKQKMAITKEHSITLNLTIMNVSLQDSGTYACRARNVYTGEEILQK
KEITIRDQEAPYLLRNLSDHTVAISSSTTLDCHANGVPEPQITWFKNNHKIQ
QEPELYTSTSPSSSSSPLSSSSSSSSSSS

Database References

Protein RefSeq:	NP_001153502.1
Uniprot ID:	P17948-2
mRNA RefSeq:	NM_001160030.1

Product Specifications

Expressed in	Insect cells
Purity	> 95% by SDS-PAGE & Coomassie stain
Buffer	PBS
Stabilizer	None
Formulation	lyophilized
Length (aa):	707
MW:	~105 kDa (Monomer)
Result by N-terminal sequencing	SKLKD

Stability: Lyophilized samples are stable for greater than six months at –20°C to –70°C. Reconstituted sFlt1-14 should be stored in working aliquots at -70°C.

Reconstitution: The lyophilized sFlt1-14 is soluble in water and most aqueous buffers and should be reconstituted in water to a concentration not lower than 100 µg/ml.

AVOID REPEATED FREEZE AND THAW CYCLES!

Biological Activity: The activity of sFlt1-14 was determined by its ability to inhibit the $VEGF_{165}$-induced proliferation of HDLECs.

Optimal dilutions should be determined by each laboratory for each application.

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Handling/Application

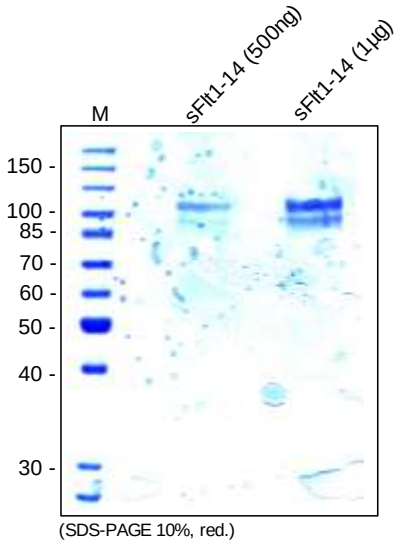

Fig. 1: SDS-PAGE analysis of recombinant human sFlt1-14 produced in insect cells. Sample was loaded in 10% SDS-polyacrylamide gel under reducing condition and stained with Coomassie blue.

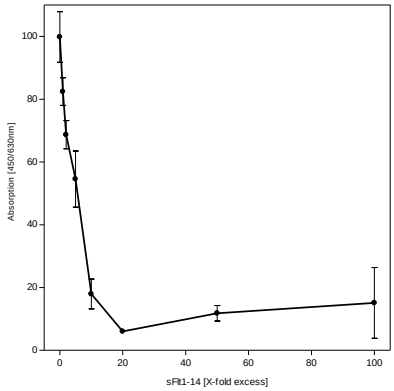

Fig. 2: Inhibition of $VEGF_{165}$-induced proliferation in HDLECs by sFlt1-14. $VEGF_{165}$ (10ng/ml) was preincubated with increasing amounts of soluble receptor for 1h respectively and then added to the cells.

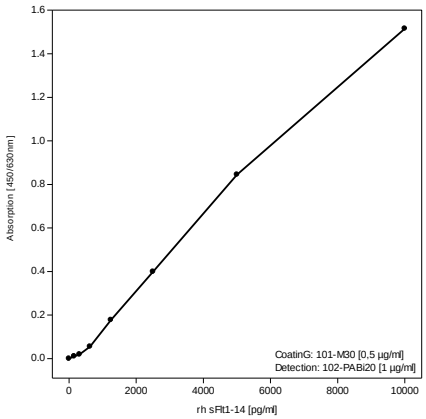

Fig. 3: Flt-1 Sandwich-ELISA using recombinant human sFlt1-14 as standard. Mouse anti-human Flt-1 #EWI (Cat# 101-M30) was used as capture antibody, Biotinylated rabbit anti-human Flt-1 (Cat# 102-PABi20) was used for detection.

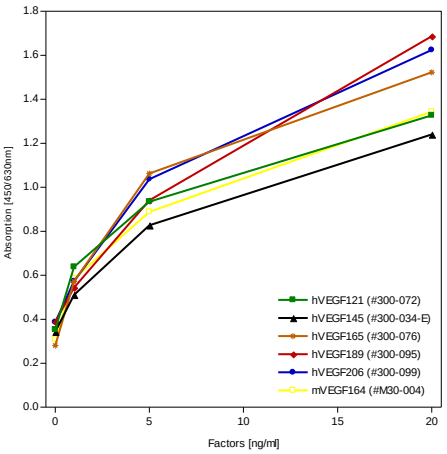

Fig. 4: VEGF-A BioLISA using recombinant human soluble Flt1-14 for capturing and various recombinant human VEGF-A isoforms as standard. A Biotin-conjugated rabbit anti-human VEGF-A antibody [Cat# 102-PABi02] was used for detection. As expected also mouse $VEGF_{164}$ binds to sFlt1-14.

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