VEGFR-2 Protein, Human (745a.a, HEK293, His)

Cat. No.:	HY-P73530
Synonyms:	Vascular endothelial growth factor receptor 2; KDR; VEGFR-2; FLK-1; CD309
Species:	Human
Source:	HEK293
Accession:	P35968 (A20-E764)
Gene ID:	3791
Molecular Weight:	Approximately 84.6 kDa

PROPERTIES

AA Sequence

MQSKVLLAVAL WLCVETRAAS VGLPSVSLDL PRLSIQKDIL
TIKANTTLQI TCRGQRDLDW LWPNNQSGSE QRVEVTECSD
GLFCKTLTIP KVIGNDTGAY KCFYRETDLA SVIYVYVQDY
RSPFIASVSD QHGVVYITEN KNKTVVIPCL GSISNLNVSL
CARYPEKRFV PDGNRISWDS KKGFTIPSYM ISYAGMVFCE
AKINDESYQS IMYIVVVVGY RIYDVVLSPS HGIELSVGEK
LVLNCTARTE LNVGIDFNWE YPSSKHQHKK LVNRDLKTQS
GSEMKKFLST LTIDGVTRSD QGLYTCAASS GLMTKKNSTF
VRVHEKPFVA FGSGMESLVE ATVGERVRIP AKYLGYPPPE
IKWYKNGIPL ESNHTIKAGH VLTIMEVSER DTGNYTVILT
NPISKEKQSH VVSLVVYVPP QIGEKSLISP VDSYQYGTTQ
TLTCTVYAIP PPHHIHWYWQ LEEECANEPS QAVSVTNPYP
CEEWRSVEDF QGGNKIEVNK NQFALIEGKN KTVSTLVIQA
ANVSALYKCE AVNKVGRGER VISFHVTRGP EITLQPDMQP
TEQESVSLWC TADRSTFENL TWYKLGPQPL PIHVGELPTP
VCKNLDTLWK LNATMFSNST NDILIMELKN ASLQDQGDYV
CLAQDRKTKK RHCVVRQLTV LERVAPTITG NLENQTTSIG
ESIEVSCTAS GNPPPQIMWF KDNETLVEDS GIVLKDGNRN
LTIRRVRKED EGLYTCQACS VLGCAKVEAF FIIEGAQEKT
NLE

Biological Activity

1.Measured by its ability to bind human VEGF165 in functional ELISA.
2.Immobilized human VEGF165 at 10 μg/mL (100 μL/well) can bind biotinylated human KDR,the EC_{50} of biotinylated human KDR is 50-160 ng/mL.

Appearance

Lyophilized powder.

Formulation

Lyophilized from a 0.2 μm filtered solution of PBS. Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween 80 are added as protectants before lyophilization.

Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	VEGFR-2 protein, a tyrosine-protein kinase, serves as a cell-surface receptor for VEGFA, VEGFC, and VEGFD, playing a pivotal role in the intricate regulation of angiogenesis, vascular development, vascular permeability, and embryonic hematopoiesis. It actively promotes the proliferation, survival, migration, and differentiation of endothelial cells, while also influencing the reorganization of the actin cytoskeleton. Certain isoforms, lacking a transmembrane domain like isoform 2 and isoform 3, may function as decoy receptors, modulating VEGFA, VEGFC, and/or VEGFD signaling. Specifically, isoform 2 acts as a negative regulator of VEGFA- and VEGFC-mediated lymphangiogenesis by limiting the availability of free VEGFA and/or VEGFC, preventing their binding to FLT4. VEGFR-2 modulates FLT1 and FLT4 signaling through heterodimer formation. Binding of vascular growth factors to isoform 1 triggers multiple signaling cascades, including the activation of PLCG1, resulting in the production of diacylglycerol and inositol 1,4,5-trisphosphate and the subsequent activation of protein kinase C. Additionally, VEGFR-2 mediates the activation of MAP kinase signaling pathways, AKT1 signaling pathway, and the phosphorylation of PIK3R1, contributing to the reorganization of the actin cytoskeleton and the activation of PTK2/FAK1. Its crucial role extends to facilitating VEGFA-mediated induction of NOS2 and NOS3, leading to the production of the signaling molecule nitric oxide (NO) by endothelial cells. VEGFR-2's phosphorylation activity includes PLCG1, FYN, NCK1, NOS3, PIK3R1, PTK2/FAK1, and SRC, highlighting its comprehensive involvement in modulating diverse cellular processes.

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