Recombinant Human VEGF Animal Component Free

Catalog Number: ACFP293

DESCRIPTION

Source	*Spodoptera frugiperda*, *Sf* 9 (baculovirus)-derived human VEGF protein Met1-Arg191 Accession # NP_001165097 Produced in an animal component free process (ACFP).
N-terminal Sequence Analysis	Ala27
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	19.2 kDa (monomer)

SPECIFICATIONS

SDS-PAGE	19-21 kDa, reducing conditions
Activity	Measured in a cell proliferation assay using HUVEC human umbilical vein endothelial cells. Conn, G. *et al.* (1990) Proc. Natl. Acad. Sci. USA **87**:1323. The ED_{50} for this effect is 1-6 ng/mL. The specific activity of recombinant human VEGF is approximately 1.7 x 10^3 U/µg, which is calibrated against recombinant human VEGF 165 WHO Standard (NIBSC code: 02/286).
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in HCl. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in sterile PBS. Alternatively, reconstitute at 100-500 µg/mL in sterile 4 mM HCl.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Vascular endothelial growth factor (VEGF or VEGF-A), also known as vascular permeability factor (VPF), is a potent mediator of both angiogenesis and vasculogenesis in the fetus and adult (1 - 3). It is a member of the PDGF family that is characterized by the presence of eight conserved cysteine residues and a cystine knot structure (4). Humans express alternately spliced isoforms of 121, 145, 165, 183, 189, and 206 amino acids (aa) in length (4). VEGF165 appears to be the most abundant and potent isoform, followed by VEGF121 and VEGF189 (3, 4). Isoforms other than VEGF121 contain basic heparin-binding regions and are not freely diffusible (4). Human VEGF165 shares 88% aa sequence identity with corresponding regions of mouse and rat, 96% with porcine, 95% with canine, and 93% with feline, equine and bovine VEGF, respectively. VEGF binds the type I transmembrane receptor tyrosine kinases VEGF R1 (also called Flt-1) and VEGF R2 (Flk-1/KDR) on endothelial cells (4). Although VEGF affinity is highest for binding to VEGF R1, VEGF R2 appears to be the primary mediator of VEGF angiogenic activity (3, 4). VEGF165 binds the semaphorin receptor, Neuropilin-1 and promotes complex formation with VEGF R2 (5). VEGF is required during embryogenesis to regulate the proliferation, migration, and survival of endothelial cells (3, 4). In adults, VEGF functions mainly in wound healing and the female reproductive cycle (3). Pathologically, it is involved in tumor angiogenesis and vascular leakage (6, 7). Circulating VEGF levels correlate with disease activity in autoimmune diseases such as rheumatoid arthritis, multiple sclerosis and systemic lupus erythematosus (8). VEGF is induced by hypoxia and cytokines such as IL-1, IL-6, IL-8, oncostatin M and TNF-α (3, 4, 9).

References:

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MANUFACTURING SPECIFICATIONS

Animal Component-Free Process (ACFP) Manufacturing Conditions

R&D Systems Animal Component-Free Process (ACFP) recombinant proteins are expressed in an animal-free certified *Sf 9* insect cell line using dedicated animal-free raw materials and labware. Production and purification procedures use equipment and media that are confirmed animal-free but performed outside our dedicated animal-free laboratories. Every stage of the manufacturing process follows R&D Systems' stringent Standard Operating Procedures (SOPs). The certified *Sf 9* insect cell bank has undergone extensive testing to certify the lack of cytopathogens by screening for various viruses, Mycoplasma, and Spiroplasmas using both *in vitro* and *in vivo* testing methods. For *ex vivo* research or bioproduction, additional documentation can be provided.

Please read our complete ACFP Statement

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