Recombinant Bovine VEGF 164

Catalog Number: 8917-BV

DESCRIPTION

Source	Chinese Hamster Ovary cell line, CHO-derived Ala27-Arg190 Accession # P15691
N-terminal Sequence Analysis	Ala27
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	19 kDa

SPECIFICATIONS

SDS-PAGE	21-26 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 0.3-1.8 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE with silver staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in HCl with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 250 µg/mL in 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, 2). It is a member of the PDGF family that is characterized by the presence of eight conserved cysteine residues and a cystine knot structure (3). Humans express two sets of alternatively spliced isoforms of 121, 145, 165, 183, 189, and 206 amino acids (aa) in length (3, 4). Isoforms other than $VEGF_{121}$ contain basic heparin-binding regions and are not freely diffusible (3, 4). $VEGF_{165}$ appears to be the most abundant and potent of the angiogenic isoform set, followed by $VEGF_{121}$ and $VEGF_{189}$ (3, 5). The anti-angiogenic or “b” set of isoforms is differentially spliced to contain five alternative amino acids at the C-terminus, and are the more highly expressed isoforms in normal adult tissue (6). $VEGF_{165b}$, like $VEGF_{121}$ but unlike most angiogenic isoforms, does not bind heparins and is therefore diffusible (3). Mature bovine VEGF corresponds to the $VEGF_{165}$ isoform of human VEGF. It shares 93%-97% aa sequence identity with common regions of human, porcine, equine, canine, and feline VEGF, and 89% with mouse and rat VEGF. In addition to alternatively spliced VEGF isoforms, multiple fragments of VEGF can be generated by extracellular proteolysis (4). VEGFs bind the type I transmembrane receptor tyrosine kinases VEGF R1 (also called Flt-1) and VEGF R2 (Flk-1/KDR) on endothelial cells (3). Although VEGF affinity is highest for binding to VEGF R1, VEGF R2 appears to be the primary mediator of VEGF angiogenic activity (3, 5). Human $VEGF_{165}$ binds the semaphorin receptor, Neuropilin-1 and promotes complex formation with VEGF R2 (7). VEGF is required during embryogenesis to regulate the proliferation, migration, and survival of endothelial cells (3, 5). In adults, VEGF functions mainly in wound healing and the female reproductive cycle (5). Pathologically, it is involved in tumor development and tumor vascular leakage (8). Circulating VEGF levels correlate with disease activity in autoimmune diseases such as rheumatoid arthritis, multiple sclerosis, and systemic lupus erythematosus (9). VEGF is induced by hypoxia and cytokines such as IL-1, IL-6, IL-8, Oncostatin M, and TNF-α (5, 10).

References:

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