Recombinant Rat VEGF$_{164}$

Catalog Number: 564-RV

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived Ala27-Arg190 Accession # AAL07526.1
N-terminal Sequence Analysis	Ala27
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	19.2 kDa (monomer)

SPECIFICATIONS

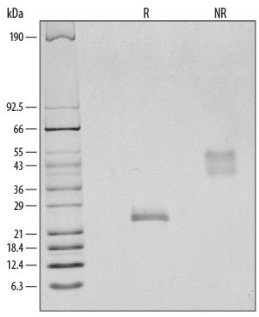
SDS-PAGE	25 kDa, reducing conditions
Activity	Measured in a cell proliferation assay using HUVEC human umbilical vein endothelial cells. Conn, G. *et al.* (1990) Proc. Natl. Acad. Sci. USA **87**:1323. The ED_{50} for this effect is typically 0.75–3.75 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in sterile PBS containing at least 0.1% human or bovine serum albumin.
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.

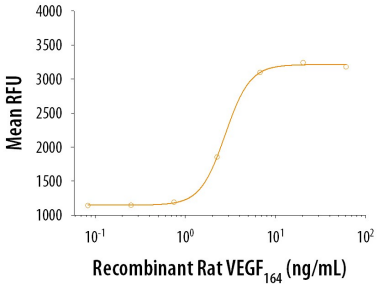
DATA

SDS-PAGE



1 µg/lane of Recombinant Rat VEGF$_{164}$ was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by silver staining, showing bands at 25 kDa and 54 kDa, respectively.

Bioactivity



Recombinant Rat VEGF$_{164}$ (Catalog # 564-RV) stimulates cell proliferation in HUVEC human umbilical vein endothelial cells in a dose-dependent manner. The ED_{50} is typically 0.75-3.75 ng/mL.

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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 a cysteine-knot structure formed by eight conserved cysteine residues (4). Alternately spliced isoforms of 121, 145, 165, 183, 189, and 206 amino acids (aa) have been identified in humans, with 120, 164 and 188 aa isoforms found in rat and mouse (2, 4). Isoforms other than VEGF$_{120}$ and VEGF$_{121}$ contain basic heparin-binding regions and are not freely diffusible (4). Rat VEGF$_{164}$ shares 97% aa sequence identity with corresponding regions of mouse, 88% with human and bovine, 89% with porcine and canine, and 90% with feline and equine 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 affinity is highest for binding to VEGF R1, VEGF R2 appears to be the primary mediator of VEGF angiogenic activity (3, 4). Human VEGF$_{165}$ 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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