PRODUCT INFORMATION

VEGF-A 164 variant (mouse, recombinant)

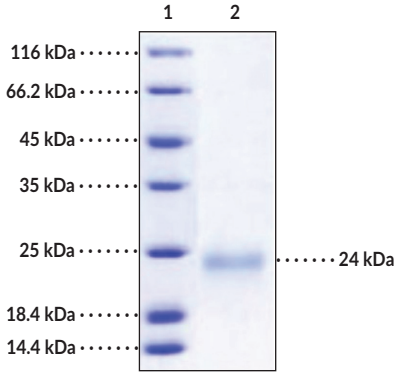
Item No. 32068

Overview and Properties

Synonym:	Vascular Endothelial Growth Factor A 164 variant
Source:	Active recombinant mouse VEGF-A 164 variant expressed in insect cells (baculovirus)
Amino Acids:	27-190
Uniprot No.:	Q00731-2
Molecular Weight:	19.4 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥90% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile 20 mM HAC-sodium acetate, pH 6.5, with 500 mM sodium chloride
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay
Bioactivity:	See figures for details

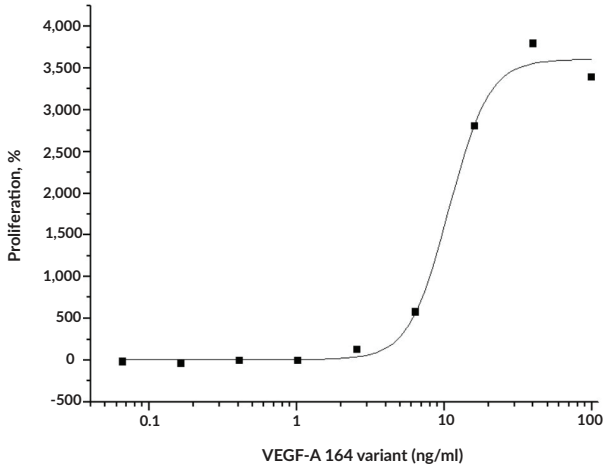
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: VEGF-A 164 variant

SDS-PAGE Analysis of VEGF-A 164 variant. This protein has a calculated molecular weight of 19.4 kDa. By SDS-PAGE, under reducing conditions, the molecular weight of the protein is 24 kDa due to apparent post-translational modifications.



Cell proliferation assay using human umbilical vein endothelial cells (HUVECs). The ED_{50} value for this effect is typically 5-22 ng/ml.

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

PRODUCT INFORMATION

Description

VEGF-A is a member of the PDGF/VEGF family of growth factors that regulates development, proliferation, and maintenance of the vascular system.[1] Alternative splicing of *Vegfa* pre-mRNA leads to the formation of VEGF-A 164 variant (VEGF-164), an isoform of VEGF-A that contains two heparin binding domains that interact with VEGFR1 and VEGFR2, the VEGFR co-receptors neuropilin-1 (NRP1) and NRP2, and matrix-associated glycosaminoglycans.[2,3] VEGF-164 exists as a secreted or matrix-bound homodimer and is expressed in the brain, bone, eye, heart, lung, kidney and liver.[4,5] Transgenic overexpression of VEGF-164 in the podocytes of mice induces complete collapse of the glomerular capillary network and is perinatal lethal.[6] Inhibition of VEGF-164 with a neutralizing aptamer inhibits leukocyte adhesion and neovascularization in the retina in a rat model of hyperoxia-induced proliferative retinopathy.[7] Serum levels of the human homolog VEGF-165 are increased in patients with melanoma and positively correlated with metastasis.[8] VEGF-165 levels are also increased in the serum, synovial fluid, and inflamed joints of patients with rheumatoid arthritis.[9] Cayman's VEGF-A 164 variant (mouse, recombinant) protein can be used for cell-based assay applications. This protein consists of 164 amino acids, has a calculated molecular weight of 19.4 kDa, and a predicted N-terminus of Ala27 after signal peptide cleavage. By SDS-PAGE, under reducing conditions, the molecular weight of the protein is 24 kDa due to apparent post-translational modifications.

References

1. Shibuya, M. Vascular endothelial growth factor (VEGF) and its receptor (VEGFR) signaling in angiogenesis: A crucial target for anti- and pro-angiogenic therapies. *Genes Cancer* **2(12)**, 1097-1105 (2011).
2. Holmes, D.I.R. and Zachary, I. The vascular endothelial growth factor (VEGF) family: Angiogenic factors in health and disease. *Genome Biol.* **6(2)**, 209 (2005).
3. Krilleke, D., DeErkenez, A., Schubert, W., *et al.* Molecular mapping and functional characterization of the VEGF164 heparin-binding domain. *J. Biol. Chem.* **282(38)**, 28045-28056 (2007).
4. Carmeliet, P., Ng, Y.-S., Nuyens, D., *et al.* Impaired myocardial angiogenesis and ischemic cardiomyopathy in mice lacking the vascular endothelial growth factor isoforms $VEGF_{164}$ and $VEGF_{188}$. *Nat. Med.* **5(5)**, 495-502 (1999).
5. Yamamoto, H., Rundqvist, H., Branco, C., *et al.* Autocrine VEGF isoforms differentially regulate endothelial cell behavior. *Front. Cell. Dev. Biol.* **4**, 99 (2016).
6. Eremina, V., Sood, M., Haigh, J., *et al.* Glomerular-specific alterations of VEGF-A expression lead to distinct congenital and acquired renal diseases. *J. Clin. Invest.* **111(5)**, 707-716 (2003).
7. Ishida, S., Usui, T., Yamashiro, K., *et al.* VEGF164-mediated inflammation is required for pathological, but not physiological, ischemia-induced retinal neovascularization. *J. Exp. Med.* **198(3)**, 483-489 (2003).
8. Osella-Abate, S., Quaglino, P., Savoia, P., *et al.* VEGF-165 serum levels and tyrosinase expression in melanoma patients: Correlation with the clinical course. *Melanoma Res.* **12(4)**, 325-334 (2002).
9. Yoo, S.-A., Kwok, S.-K., and Kim, W.-U. Proinflammatory role of vascular endothelial growth factor in the pathogenesis of rheumatoid arthritis: Prospects for therapeutic intervention. *Mediators Inflamm.* 129873 (2008).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM