VEGF Human recombinant protein
Catalog Number: 10-663-45110

Related Product Names:
- VEGF protein; VEGFA; VEGF; VEGF Human
- Vascular endothelial growth factor A, VEGF-A, Vascular permeability factor, VPF, VEGF, MGC70609.; VEGF-A; Vascular permeability factor; VPF; vascular endothelial growth factor A isoform a

- Gene Information -
Information in yellow represents specific gene information and does not necessarily represent specific product details. For more information please contact sales@genwaybio.com.

<table>
<thead>
<tr>
<th>Gene Name</th>
<th>Gene Name Synonym</th>
<th>Gi #</th>
<th>NCBI Acc #</th>
<th>Swiss Prot Acc #</th>
<th>Length (aa)</th>
<th>Mol. Weight (Da)</th>
<th>Chrom Location</th>
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</thead>
<tbody>
<tr>
<td>VEGFA</td>
<td>VEGF</td>
<td>N/A</td>
<td>NP_001020537.2</td>
<td>P15692</td>
<td>N/A</td>
<td>27042</td>
<td>N/A</td>
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- Amino Acid Sequence: The sequence of the first five N-terminal amino acids was determined and was found to be Ala-Pro-Met-Ala-Glu.

- Biological Activity: Determined by the dose-dependent stimulation of the proliferation of human umbilical vein endothelial cells (HUVEC) using a concentration range of 1.0-8.0 ng/ml.

- Protein Content: Protein quantitation was carried out by two independent methods:
  1. UV spectroscopy at 280 nm using the absorbency value of 0.2875 as the extinction coefficient for a 0.1% (1mg/ml) solution. This value is calculated by the PC GENE computer analysis program of protein sequences (IntelliGenetics).

- Physical Appearance: Sterile Filtered White lyophilized (freeze-dried) powder.

- Solubility: It is recommended to reconstitute the lyophilized Vascular Endothelial Growth Factor in sterile 18MO-cm H2O not less than 100ug/ml, which can then be further diluted to other aqueous solutions.

Protocols from Publications


- Experiment Name: 1. Binding of IVIg to the recombinant VEGF (sandwich ELISA)
  2. Binding of IVIg to the solid-phase-immobilized VEGF
  3. Blocking of IVIg binding to VEGF in a direct ELISA
  4. Binding of IVIg to the recombinant VEGF (immunoblot)
  5. Anti-VEGF activity of IVIg in a model of mouse hind limb Ischemia

- Experiment Background: The aim of the present study was to investigate whether in an IVIg preparation there are natural antibodies directed against VEGF with the potential to affect angiogenesis. Using both sandwich and direct ELISA assays, IVIg was found to specifically recognize and bind VEGF in a dose-dependent manner.

- Experimental Steps: 1. Binding of IVIg to the recombinant VEGF (sandwich ELISA):
  Plates were coated with 1 ug ml -1 mouse anti-VEGF antibody (DuoSet ELISA, R&D System), washed and blocked before adding rhVEGF. An ELISA was carried out using biotinylated intravenous immunoglobulins (b.IVIg) followed by streptavidin-HRP and appropriated substrate. Data were read at a wavelength of 450 nm.
  2. Binding of IVIg to the solid-phase-immobilized VEGF:
  rhVEGF (0.5 ug ml -1 in PBS) -coated ELISA plates were blocked with 3% BSA. Serial dilutions of b.IVIg, biotinylated anti-vascular endothelial growth factor (b.anti-VEGF) mAb or biotinylated control-IgG were added and probed as described for sandwich ELISA.
3. Blocking of IVIg binding to VEGF in a direct ELISA:
For the assessment of the IVIg capability to prevent the binding of anti-VEGF mAb to VEGF, VEGF-coated plates were incubated with different concentrations of IVIg, and thereafter, mouse or human b.anti-VEGF mAbs (at EC50) were added. The percentage of inhibition of binding was calculated.

4. Binding of IVIg to the recombinant VEGF (immunoblot):
rhVEGF samples were loaded onto 12% SDS-PAGE (1 lg per lane) and run under non-reducing conditions. The protein was transferred to nitrocellulose membrane, blocked with 10% skim milk in Tris-buffered saline (TBS). Both b.anti-VEGF mAb (mouse or human) and b.IVIg, diluted in 0.5% skim milk-TBS, were added to the membrane for 2 h. For inhibition assays, either disabling of IVIg-to-VEGF binding by anti-VEGF mAb or conversely, the prevention of anti-VEGF mAb to VEGF reaction by IVIg was evaluated. The binding to VEGF was probed with streptavidin-HRP followed by an appropriate substrate (ECL-Luminol Reagent, Santa Cruz, CA, USA).

5. Anti-VEGF activity of IVIg in a model of mouse hind limb Ischemia:
The mouse ischemic hind limb model (35-37) was used to evaluate the inhibitory effect of IVIg on VEGF-mediated reperfusion.

**Source/Host:** E. Coli

**Purity/Purification:** Greater than 98.0% as determined by: (a) Analysis by RP-HPLC. (b) Analysis by SDS-PAGE.

**Format:** The protein was lyophilized from a concentrated (1mg/ml) solution with no additives.

**Stability:** Lyophilized Vascular Endothelial Growth Factor although stable at room temperature for 3 weeks, should be stored desiccated below -18 C. Upon reconstitution VEGF should be stored at 4 C between 2-7 days and for future use below -18 C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Please prevent freeze-thaw cycles.

**Shipping:** Products may be shipped on ice pack or dry ice.

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**TESTING: (secondary reagents and protocols)**

Not Available

**VEGFA PROTEIN TARGET DESCRIPTION:**

**Synonym Names for VEGFA protein:** VEGFA; VEGF; Vascular endothelial growth factor A, VEGF-A, Vascular permeability factor, VPF, VEGF, MGC70609.; VEGF-A; Vascular permeability factor; VPF; vascular endothelial growth factor A isoform a

Vascular Endothelial Growth Factor Human Recombinant produced in E.Coli is a double, non-glycosylated, polypeptide chain containing 165 amino acids and having a molecular mass of 38231 Dalton. The VEGF is purified by proprietary chromatographic techniques.

Vascular endothelial growth factor is an important signaling protein involved in both vasculogenesis and angiogenesis. As its name implies, VEGF activity has been mostly studied on cells of the vascular endothelium, although it does have effects on a number of other cell types (e.g. stimulation monocyte/macrophage migration, neurons, cancer cells, kidney epithelial cells ). VEGF mediates increased vascular permeability, induces angiogenesis, vasculogenesis and endothelial cell growth, promotes cell migration, and inhibits apoptosis. In vitro, VEGF has been shown to stimulate endothelial cell mitogenesis and cell migration. VEGF is also a vasodilator and increases microvascular permeability and was originally referred to as vascular permeability factor. Elevated levels of this protein is linked to POEMS syndrome, also known as Crow-Fukase syndrome. Mutations in this gene have been associated with proliferative and nonproliferative diabetic retinopathy.

**Function:** Growth factor active in angiogenesis, vasculogenesis and endothelial cell growth. Induces endothelial cell proliferation, promotes cell migration, inhibits apoptosis, and induces permeabilization of blood vessels. Binds to the VEGFR1/Flt-1 and VEGFR2/Kdr receptors, heparan sulfate and heparin. Neuropilin-1 binds isoforms VEGF-165 and VEGF-145.

**Subunit:** Homodimer; disulfide-linked. Also found as heterodimer with PIGF (By similarity).

**Subcellular Location:** Secreted. Note=VEGF121 is acidic and freely secreted. VEGF165 is more basic, has heparin-binding properties and, although a significant proportion remains cell-associated, most is freely secreted. VEGF189 is very basic, it is cell-associated after secretion and is bound avidly by heparin and the extracellular matrix, although it may be released as a soluble form by heparin, heparinase or plasmin.
**Tissue Specificity:** The VEGF189, VEGF-165 and VEGF-121 isoforms are widely expressed whereas the VEGF206 and VEGF-145 are uncommon.

**Induction:** Regulated by growth factors, cytokines, gonadotropins, nitric oxide, hypoxia, hypoglycemia and oncogenic mutations.

**Similarity:** Belongs to the PDGF/VEGF growth factor family.

**OMIM:** 192240; gene. [NCBI / EBI]

**Pathways:**
- KEGG pathway: **Cytokine-cytokine receptor interaction** 04060
- KEGG pathway: **Focal adhesion** 04510
- KEGG pathway: Pancreatic cancer 05212
- KEGG pathway: Renal cell carcinoma 05211
- KEGG pathway: VEGF signaling pathway 04370
- KEGG pathway: mTOR signaling pathway 04150
- Reactome Event:Hemostasis 109582
- Reactome Event:Signaling by VEGF 194138

**PRODUCT INTERACTIONS:**
- VEGF Human interacts with **Neuropilin 1, IgG** (GenWay Catalog #: 10-663-45110).
- VEGF Human interacts with **Neuropilin-1, IgG** (GenWay Catalog #: 10-663-45110).

**Order Confirmation:** Sales order confirmations are sent out upon the receipt of all orders. Please contact GenWay if you do not receive a confirmation within 1 business day of submitting your order.

**Precautions:** VEGFA protein is for in vitro research use only. Not for use in diagnostics or therapeutic procedures.

**Important Notes:** During shipment, small volumes of VEGFA protein vial. For products with volumes of 200 µL or less, we recommend gently tapping the vial on a hard surface or briefly centrifuging the vial in a tabletop centrifuge to dislodge any liquid in the container’s cap. Actual concentration, volume and quantity will be printed on the vial’s label. Please refer to the vial’s label for this information.

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