GMP Human VEGF165 Protein

Catalog # GMP-VE5H23

Product Details

VEGF165 is the predominant isoform of Vascular Endothelial Growth Factor, belonging to the Platelet-Derived Growth Factor (PDGF) family. It serves as a key cytokine regulating angiogenesis and endothelial cell function. During the differentiation of human pluripotent stem cells (hPSCs) toward endothelial cells, VEGF165 drives mesoderm cells toward endothelial progenitors and promotes endothelial cell proliferation, migration, and tube formation. In protocols for differentiation into immune cells, VEGF165 supports the construction of a vascular-like microenvironment, indirectly facilitating the homing and differentiation of hematopoietic stem/progenitor cells. It plays a synergistic role, particularly in the differentiation of myeloid immune cells such as macrophages and dendritic cells, and is often combined with cytokines like SCF, FLT3L, and IL-3 to enhance differentiation efficiency and functional maturation.

Product Features and Advantages

- **Specific Angiogenic & Hematopoietic Driver**: Efficiently supports hPSC-derived hematopoietic stem/progenitor cell (HSPC) expansion and endothelial cell differentiation.
- **Reliable Large-Scale Supply**: Ensures batch production capacity, supporting robust and consistent manufacturing scale-up.
- **High Lot-to-Lot Consistency**: Ensures reliable and reproducible performance in every batch, supporting scalable applications.

GMP Platform Advantages

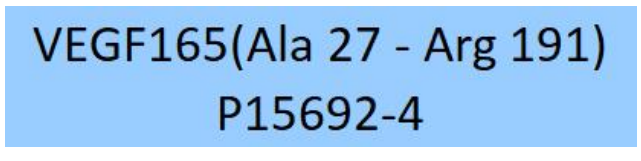
- **Quality Assurance**: Global QMS with comprehensive and stringent QC release criteria.
- **End-to-End GMP Compliance**: Full manufacturing and QC under a cGMP system.
- **Comprehensive Control of Adventitious Agents**: Stringent biosafety from cell banks to final release.
- **Comprehensive Regulatory Support**: Includes RSF and DMF to meet global requirements.
- **Resilient Supply Chain**: Intelligent modular facilities ensure a stable global supply.
- **Professional Support**: Extensive manufacturing and application expertise to accelerate development.

Source

GMP Human VEGF165 Protein (GMP-VE5H23) is expressed from human 293 cells (HEK293). It contains AA Ala 27 - Arg 191 (Accession # P15692-4).

Predicted N-terminus: Ala 27

Molecular Characterization



This protein carries no "tag".

The protein has a calculated MW of 19.2 kDa. The protein migrates as 24 kDa±3 kDa when calibrated against Star Ribbon Pre-stained Protein Marker under reducing (R) condition (SDS-PAGE) due to glycosylation.

Endotoxin

Less than 10 EU/mg, tested by the LAL method in compliance with USP <85> and Ph. Eur. 2.6.14.

Host Cell Protein

<0.5 ng/μg of protein tested by ELISA.

Host Cell DNA

<0.02 ng/μg of protein tested by qPCR.

Sterility

Sterility testing was performed using the membrane filtration method in compliance with USP <71> and Ph. Eur. 2.6.1.

Mycoplasma

Negative

Purity

>95% as determined by SDS-PAGE.

Formulation

Lyophilized from 0.22 μm filtered solution in PBS, pH7.4 with protectants.

Contact us for customized product form or formulation.

Vial Specification

2R (13 mm neck finish)

Shipping

This product is supplied and shipped with blue ice, please inquire the shipping cost.

Storage

Upon receipt, store it immediately at -20°C or lower for long term storage.

Please avoid repeated freeze-thaw cycles.

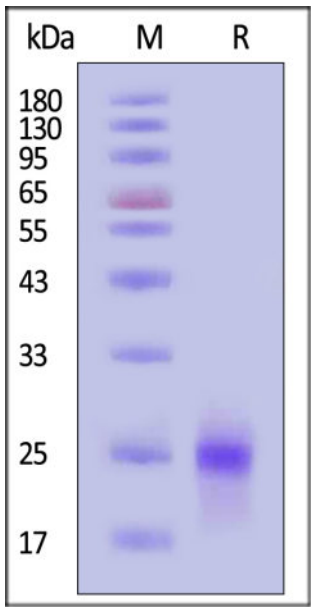
This product is stable after storage at:

- -20°C to -70°C for 5 years in lyophilized state;
- -70°C for 12 months under sterile conditions after reconstitution.

ACRO Quality Management System

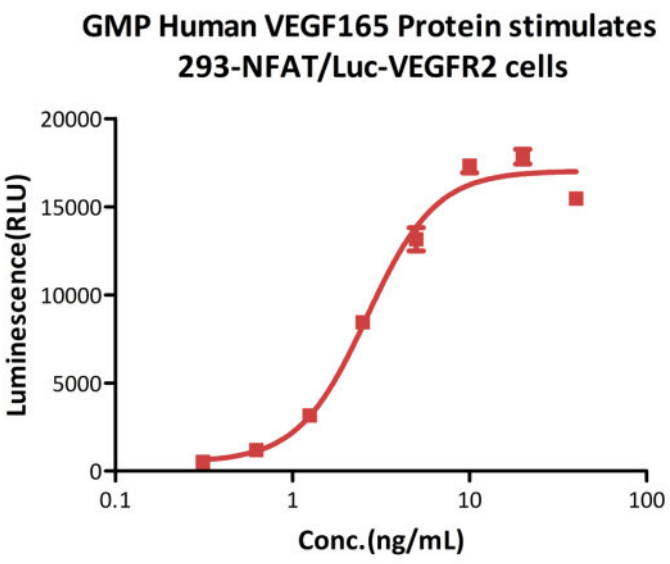
- QMS(ISO, GMP)
- Quality Advantages
- Quality Control Process

SDS-PAGE

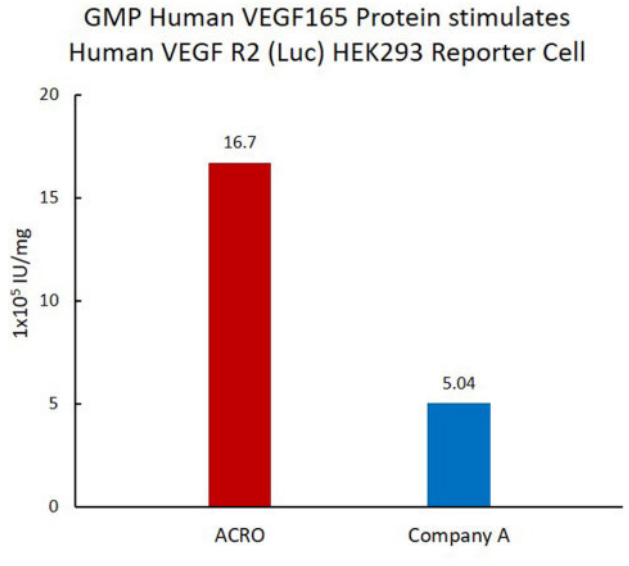


GMP Human VEGF165 Protein on SDS-PAGE under reducing (R) condition. The gel was stained with Coomassie Blue. The purity of the protein is greater than 95% (With Star Ribbon Pre-stained Protein Marker).

Bioactivity-CELL BASE

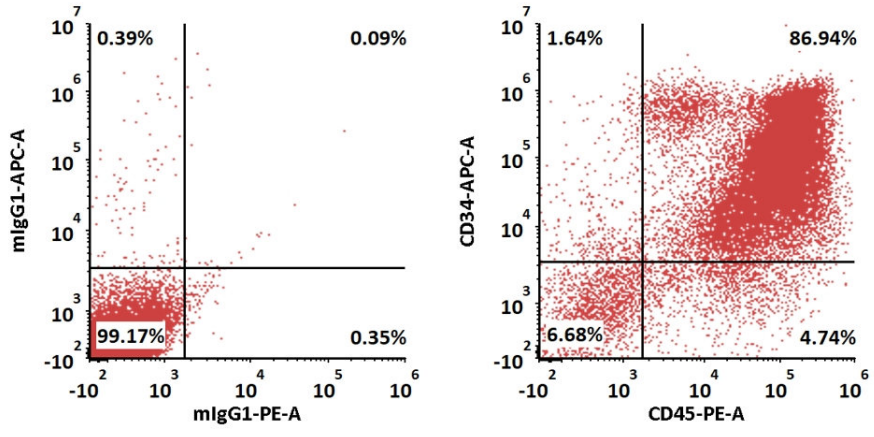


GMP Human VEGF165 Protein (Cat. No. GMP-VE5H23) stimulates 293-NFAT/Luc-VEGFR2 cells. The specific activity of GMP Human VEGF165 Protein is ＞ 8.00 x 10^5 IU/mg, which is calibrated against human vascular endothelial growth factor 165 WHO International Standard (NIBSC code: 02/286) (QC tested).



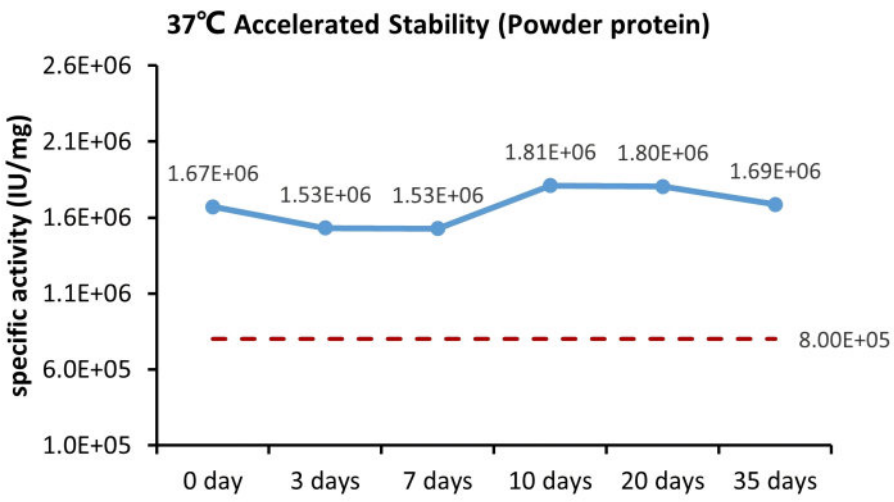
GMP Human VEGF165 Protein (Cat. No. GMP-VE5H23) exhibits superior activity compared to commercially available product.

Application Data

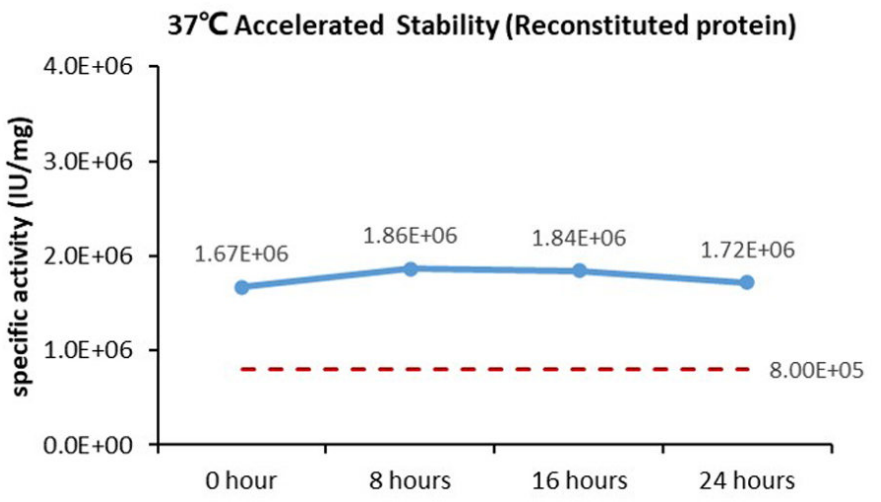


GMP Human SCF Protein (Cat. No. GMP-SCFH25), GMP Human Thrombopoietin Protein (Cat. No. GMP-THNH25), GMP Human Flt-3 Ligand Protein (Cat. No. GMP-FLLH28), GMP Human FGF basic Protein (Cat. No. GMP-FGCH17) and GMP Human VEGF165 Protein (Cat. No. GMP-VE5H23) could significantly promote the iPSC differentiation to HSPCs after 14 days, highly expressed hematopoietic stem cell markers CD34 and CD45.

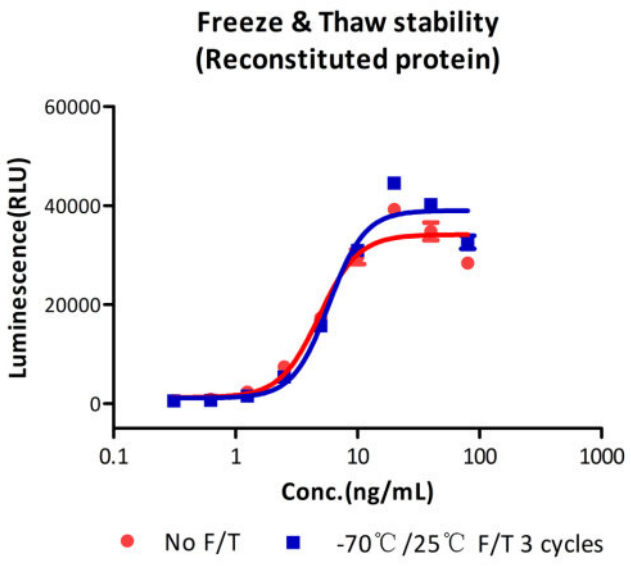
Bioactivity-Stability



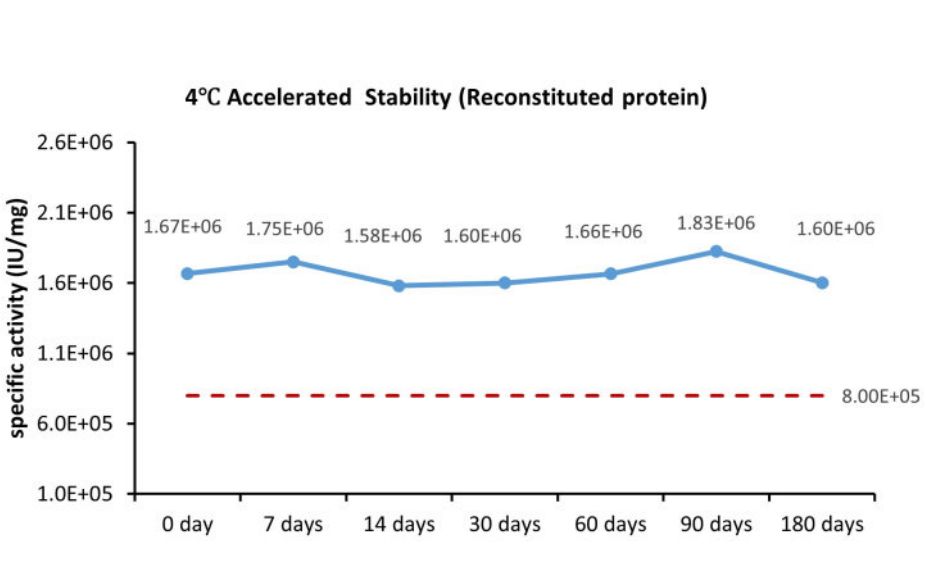
Cell-based assay demonstrates that the lyophilized GMP Human VEGF165 Protein (Cat. No. GMP-VE5H23) is stable at 37°C for 35 days.



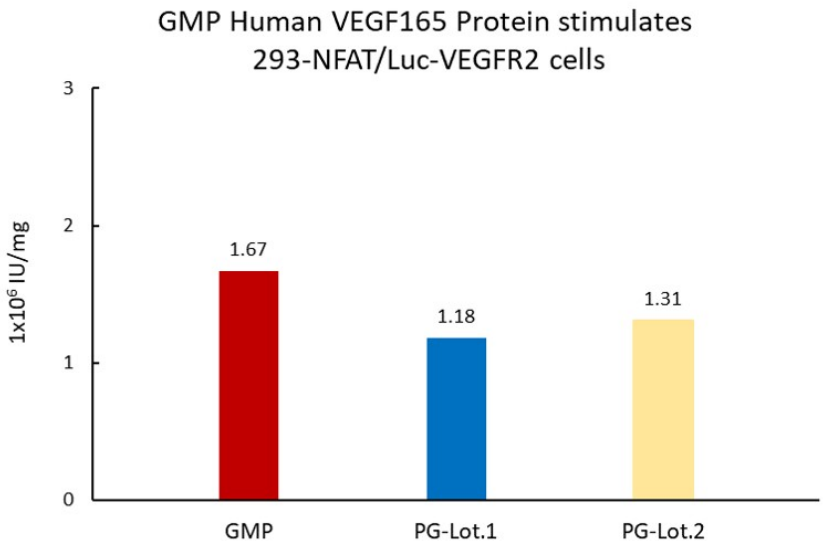
Cell-based assay demonstrates that the reconstituted GMP Human VEGF165 Protein (Cat. No. GMP-VE5H23) is stable at 37°C for 24 hours.



Cell-based assay demonstrates that the reconstituted GMP Human VEGF165 Protein (Cat. No. GMP-VE5H23) is stable after 3 freeze-thaw cycles.



Cell-based assay demonstrates that the reconstituted GMP Human VEGF165 Protein (Cat. No. GMP-VE5H23) is stable at 4℃ for 180 days.



Cell-based assay demonstrates batch-to-batch consistency between Acro's GMP and PG VEGF165.

Background

VEGF165 is the most abundant splice variant of VEGF-A. VEGF165 is produced by a number of cells including endothelial cells, macrophages and T cells. VEGF165 is involved in angiogenesis, vascular endothelial cell survival, growth, migration and vascular permeability. VEGF gene expression is induced by hypoxia, inflammatory cytokines and oncogenes. VEGF165 binds to heparan sulfate and is retained on the cell surface and in the extracellular matrix. VEGF165 binds to the receptor tyrosine kinases, VEGFR1 and VEGFR2. VEGF165 is the only splice variant that binds to co-receptors NRP-1 and NRP-2 that function to enhance VEGFR2 signaling. Binding of VEGF165 to VEGFR1 and VEGFR2 leads to activation of the PI3K/AKT, p38 MAPK, FAK and paxillin. VEGF plays a key role in tumor angiogenesis in many cancers.

MANUFACTURING SPECIFICATIONS

ACROBiosystems GMP grade products are produced under a quality management system and in compliance with relevant guidelines: Ph. Eur General Chapter 5.2.12 Raw materials of biological origin for the production of cell-based and gene therapy medicinal products; USP<92>Growth Factors and Cytokines Used in Cell Therapy Manufacturing; USP<1043>Ancillary Materials for Cell, Gene, and Tissue-Engineered Products; ISO/TS 20399-1:2018, Biotechnology - Ancillary Materials Present During the Production of Cellular Therapeutic Products.

ACROBiosystems Quality Management System Contents：

- GMP-certified facility (compliance with FDA cGMP, EMA GMP, ICH, ISO9001/13485/MDSAP, and certified by third-party SGS, UL, and RX360)
- Animal origin-free materials, equipments, and facilities
- Materials sourced only from approved suppliers
- ISO 5 cleanrooms and automatic filling equipment
- Professional quality personnel and training programs
- Validated analytical testing methods in accordance with the ICH guidelines
- Safety Testing (Sterility, Mycoplasma, etc): compliant with USP, EP, etc
- In-depth stability studies
- Fully batch production and control records
- Equipment maintenance and calibration

ACROBiosystems provide rigorous quality control tests (fully validated equipment, processes and test methods) on our GMP grade products to ensure that they meet stringent standards in terms of purity, safety, activity and inter-batch stability, and each bulk QC lot mainly contains the following specific information:

- SDS-PAGE
- Protein content
- Endotoxin level
- Residual Host Cell DNA content
- Residual Host Cell Protein content
- Biological activity analysis
- Microbial testing
- Mycoplasma testing
- In vitro virus assay
- Residual moisture

- Batch-to-batch consistency

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