

Recombinant Human Vitronectin Protein

Product Name

Recombinant Human Vitronectin Protein

Size / Catalog Number

100 μ g / GMP-TL651-0100

1000 μ g / GMP-TL651L-1000

Product Information

Synonyms: VN, S-protein, Serum-spreading factor, V75

Accession: UniProt P04004

Expressed Region: Asp19-Leu478

Tag: C-terminal 6 \times His-tag

Expression system: HEK293 cells

Predicted Molecular weight: 53 kDa

Purity: > 90% as determined by SDS-PAGE

Endotoxin: < 0.1 EU per 1 μ g of protein (LAL method)

Activity: Determined by promoting the adhesion ability of hiPS cells, the ED₅₀ is \leq 2.4 μ g/mL.

Form: Lyophilized (GMP-TL651-0100) from sterile PBS (pH7.4), typically supplemented with 6% mannitol as a protectant.

Liquid (GMP-TL651L-1000) in sterile PBS (pH7.4), trehalose and mannitol are typically added as stabilizers.

Background

The recombinant human Vitronectin (VTN) protein is a high-purity multifunctional glycoprotein transiently expressed in HEK-293 cells, featuring a C-terminal polyhistidine tag for precise purification via nickel-affinity chromatography. As a core component of the extracellular matrix (ECM), vitronectin mediates cell adhesion, spreading, and migration through RGD sequence-specific binding to integrin receptors ($\alpha\beta3$, $\alpha\beta5$, $\alpha\beta1$, etc.), while regulating stem cell proliferation and differentiation. In cell and gene therapy applications, this protein serves as a critical element in serum-free culture systems: its multimeric form efficiently incorporates into biomimetic scaffolds, providing *in vivo*-like adhesion signals for mesenchymal stem cells (MSCs) and induced pluripotent stem cells (iPSCs) to significantly enhance *ex vivo* expansion efficiency and stemness maintenance. Furthermore, it synergizes with growth factors (e.g., TGF- β) to optimize microenvironments for organoid development and tissue-engineered grafts, promoting vascularized tissue regeneration. The native conformation ensures its full bioactivity.

Introductions

1. Lyophilized (GMP-TL651-0100)

Reconstitute every 100 μ g of lyophilized powder with 0.5 mL sterile water, mix well and stand for 25~30 minutes until completely dissolved, then aliquot and freeze for use. Do not vortex vigorously. Vitronectin is an ideal choice for surface coating. The optimal concentration for different types of cells to attach and culture may be different, please adjust according to the actual application conditions. The typical coating concentration is 5~20 μ g/mL. For example, when coating a 6-well plate, add 1 mL of diluted vitronectin solution to

each well, and incubate at 37°C for 2 hours or 2~8°C overnight. Then aspirate and discard the vitronectin solution, gently wash well with sterile PBS, add the cells to be cultured.

2. Liquid (GMP-TL651L-0100)

Please thaw slowly in an ice water bath. After fully thawing, flick to mix or use a pipette to mix gently (be careful to minimize bubbles). Do not vortex vigorously. Vitronectin is an ideal choice for surface coating. The optimal concentration for different types of cells to attach and culture may be different. Please adjust according to the actual application conditions. The typical coating concentration is 5~20 µg/mL. For example, when coating a 6-well plate, add 1 mL of diluted vitronectin solution to each well, and incubate at 37°C for 2 hours or 2~8°C overnight. Then aspirate and discard the vitronectin solution, gently wash well with sterile PBS, add the cells to be cultured.

Stability & Storage

Storage: Stable for 24 months at -20°C when stored in the original sealed container under desiccant.

Reconstitution: For lyophilized powder, dissolve in sterile water for injection, 0.9% NaCl, or PBS (pH7.4), maintaining a final concentration ≥ 100 µg/mL to prevent adsorption.

Handling: Aliquot to avoid repeated freeze-thaw cycles.

References

1. Schwartz I, Seger D, Shaltiel S. Vitronectin. *Int J Biochem Cell Biol.* 1999 May;31(5):539-44. doi: 10.1016/s1357-2725(99)00005-9.
2. Xiao Y, Donnelly H, Sprott M, *et al.* Material-driven fibronectin and vitronectin assembly enhances BMP-2 presentation and osteogenesis. *Mater Today Bio.* 2022 Jul 19; 16:100367.
3. Sen A, Ta M. Vitronectin acts as a key regulator of adhesion and migration in human umbilical cord-derived MSCs under different stress conditions. *Exp Cell Res.* 2023 Feb 15;423(2):113467.
4. Goyal U, Ta M. A novel role of vitronectin in promoting survival of mesenchymal stem cells under serum deprivation stress. *Stem Cell Res Ther.* 2020 May 19;11(1):181.

Intended Us

For research and manufacturing purposes only.