

Recombinant Human Vitronectin, Animal Component-Free

Cat. No. :	H061H
Alternative Names:	Vitronectin; VN; VTNC; S-Protein; Serum-Spreading Factor; V75; VTN
Species:	Human
Accession No.:	P04004
Expression System:	HEK293
Protein Sequence:	Asp20-Leu478
Theoretical MW:	52.28 kDa
Theoretical pI:	5.47
Tag:	Tag-Free.
Formulation buffer:	PBS, 5% Mannitol and 0.01% Tween 80, pH7.4.
Appearance:	Lyophilized Powder.
Purity:	≥95% as determined by SDS-PAGE.
Bioactivity:	ED ₅₀ : 0.2 - 1 µg/mL, as determined by an NIH3T3 cell adhesion assay using the immobilized protein.
Endotoxin Level:	≤0.01 EU/µg, as determined by the LAL assay.
Application:	Cell Culture; Activity Assays.

Preparation & Storage

Reconstitution:	<p>Reconstitute with sterile double-distilled water (ddH₂O).</p> <p>⚠ Centrifuge the vial briefly before opening to ensure full recovery of the solution. Avoid vortexing and minimize vigorous pipetting to maintain protein stability.</p> <p>❄ Immediately aliquot the reconstituted protein solution and store under recommended conditions. Avoid repeated freeze-thaw cycles.</p>
Shipping:	Shipped on dry ice. Short-term transit on cold packs (2-8°C) is acceptable.
Storage:	<p>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</p> <ul style="list-style-type: none"> ● 12 months from date of receipt, -20 to -80°C as supplied. ● 2-7 days at 2 to 8°C under sterile conditions after reconstitution. ● 3-6 months at -20 to -80°C under sterile conditions after reconstitution.

Protein Description

Background: Vitronectin (VN), also designated S-protein or serum spreading factor, is a multifunctional glycoprotein essential for hemostasis, complement regulation, cell adhesion, and tissue remodeling. Encoded by the VTN gene, human vitronectin (UniProt: P04004) is synthesized primarily by hepatocytes and secreted into plasma at concentrations of 200-500 µg/mL. Processed to a mature 326-amino acid polypeptide (~ 75 kDa monomer), it circulates as monomers, disulfide-linked dimers, or multimers and is stored in platelet α-granules. Structurally, it features an N-terminal somatomedin B domain (critical for PAI-1 and uPAR binding), a central hemopexin-like domain, and a C-terminal region containing a canonical RGD motif and heparin-binding sites. The RGD sequence mediates high-affinity interactions with αvβ3, αvβ5, and other αv-integrins.

Vitronectin orchestrates key physiological processes:

- Fibrinolysis regulation: stabilizes the active conformation of plasminogen activator inhibitor-1 (PAI-1), prolonging its half-life and suppressing plasmin generation.
- Complement inhibition: binds C5b-7 complexes to prevent membrane attack complex (MAC) assembly on host cell membranes.
- Cell adhesion/migration: supports endothelial cell, fibroblast, and tumor cell attachment, spreading, and motility via integrin engagement.
- Wound healing: deposited into provisional matrices to facilitate cell recruitment and tissue repair.

Pathologically, dysregulated vitronectin contributes to thrombotic disorders (via enhanced PAI-1 activity), cancer progression (promoting invasion, metastasis, and angiogenesis), age-related macular degeneration (complement dysregulation), and fibrotic diseases. Clinically, recombinant vitronectin serves as a defined, xeno-free substrate for human pluripotent stem cell culture and regenerative medicine applications. Circulating levels and isoforms are investigated as biomarkers in liver fibrosis and thrombosis. Therapeutic strategies targeting vitronectin-integrin or vitronectin-PAI-1 interfaces are under preclinical evaluation for oncology and antifibrotic indications.

References:

1. Podack ER, Müller-Eberhard HJ. Isolation of human S protein, an inhibitor of the membrane attack complex of complement. J Immunol. 1981;127(6):2282-2286.

2. Preissner KT. Structure and biological role of vitronectin. *Annu Rev Cell Biol.* 1991;7:31-55.
3. Zhou A, Huntington JA, Pannu NS, Carrell RW, Read RJ. How vitronectin binds PAI-1 to modulate fibrinolysis. *Nature.* 2003;425(6958):107-111.
4. Ruoslahti E, Pierschbacher MD. New perspectives in cell adhesion: RGD and integrins. *Science.* 1987;238(4826):491-497.
5. Xue M, Jackson CJ, Dear AE. Vitronectin: a multifunctional protein in health and disease. *J Thromb Haemost.* 2019;17(10):1603-1615.

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