Human Vitronectin
Catalog Number: 2349-VN

DESCRIPTION

Source
Human plasma-derived
The human plasma used for the isolation of this product were certified by the supplier to be HIV-1 and HBsAg negative at the time of shipment. Human blood products should always be treated in accordance with universal handling precautions.

N-terminal Sequence Analysis
DQESCKGRCT

SPECIFICATIONS

SDS-PAGE
55-85 kDa, reducing conditions

Activity
Measured by the ability of the immobilized protein to support the adhesion of DU145 human prostate carcinoma cells or B16-F1 mouse melanoma cells. When 5 x 10⁶ cells/well are added to Vitronectin coated plates (5 µg/mL with 100 µL/well), approximately >55% will adhere after 30 minutes at 37 °C.

Optimal concentration depends on cell type as well as the application or research objectives.

Endotoxin Level
<0.10 EU per 1 µg of the protein by the LAL method.

Purity
>90%, by SDS-PAGE under reducing conditions and visualized by silver stain.

Formulation
Lyophilized from a 0.2 µm filtered solution in PBS and Urea. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution
Reconstitute at 100 µg/mL in sterile PBS.

Shipping
The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage
- Use a manual defrost freezer and avoid repeated freeze-thaw cycles.
- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Vitronectin is a large glycoprotein found in blood and the extracellular matrix (ECM). The gene for Vitronectin encodes a 19 amino acid (aa) signal peptide and a 459 aa protein. The amino terminal 130 aa’s of Vitronectin contains multiple binding sites for a variety of structures. Included is a site for binding to plasminogen activator inhibitor-1 (PAI-1) and urokinase receptor, an (RGD) sequence that binds αvβ3, αvβ5, αvβ1, αIIbβ3, αvβ6, and αvβ8 integrins, a stretch of acidic amino acids that includes two sulfated tyrosine residues that bind thrombin-anti-thrombin III complexes, and a collagen binding site. The major part of the Vitronectin molecule (aa 132-459) contains six hemopexin repeats.* The carboxyl-terminal end of Vitronectin has multiple sites and functions. It contains a stretch of basic amino acids that binds the acidic amino acids of the amino-terminal region, thereby stabilizing Vitronectin’s three dimensional structure. The carboxyl-terminal end also contains a plaminogen binding site, a heparin binding site that binds complement factor C7, C8 or C9, a glycosaminoglycan binding site, and a second PAI-1 binding site (aa 348-370). Vitronectin also contains an endogenous cleavage site, plus cleavage sites for elastase, thrombin and plasmin. Vitronectin has also been shown to bind IGF-2 and TGF-β. The apparent molecular weight of human Vitronectin is 75 kDa, with ~30% of its molecular mass being attributed to glycosylation at 3 different sites. In blood and plasma, Vitronectin is found predominantly as a single chain monomer. It can also be found as a dimer after endogenous cleavage. The dimer is composed of a 65 kDa and 10 kDa component held together by a disulfide bond. Binding of thrombin-anti-thrombin II complex or complement leads to an unfolding of Vitronectin. Unfolding of Vitronectin generates disulfide-linked multimers that are found in platelet secretions and extracellular matrix. Vitronectin is produced at high levels by the liver and many tumors. As might be expected by its structure, Vitronectin is involved in a number of biological activities including cell adhesion, cell spreading and migration, cell proliferation, extracellular anchoring, fibrinolysis, hemostasis, and complement mediated immune defense.

*Hemopexin domains are associated with enzyme and protein binding.

References: