Vitronectin

Description

Human Vitronectin is a major plasma glycoprotein that exhibits multiple activities and functions as a cell adhesion molecule and regulator of coagulation. It contains the amino acid structural motif Arg-Gly-Asp (RGD), which is involved in cell attachment. Human Vitronectin circulates as a single-chain moiety of 75 kDa and a two-chain moiety of 65 kDa and 10 kDa.

Vitronectin belongs to the group of structurally and functionally homologous adhesive proteins (fibrinogen, fibronectin, Von Willebrand factor) that interact with platelets and the vessel wall in the early stages of blood clotting. When coated on surfaces, very low concentrations of Vitronectin promote endothelial cell attachment and induce spreading and migration of cells in a time- and concentration-dependent fashion.

Indication

- Disseminated intra-vascular coagulation
- Degenerative liver disease
- Liver cirrhosis

Pathophysiology

The normal plasma concentration of vitronectin is approximately 100-400 µg/ml. Reduced vitronectin plasma levels (up to 50 %) have been found in several patients suffering from disseminated intravascular coagulation and degenerative liver disease (e.g. liver cirrhosis). Also, vitronectin deposition is associated with atherosclerotic lesions.

References

- Vitronectin stabilizes thrombi and vessel occlusion but plays a dual role in platelet aggregation. Reheman A, Gross P, Yang H, Chen P, Allen D, Leytin V, Freedman J, Ni H. J Thromb Haemost. 2005 Feb 23
- Evaluation of fibronectin, vitronectin, and leptin levels in coronary artery disease: impacts on thrombosis and thrombolysis. Ekmekci H, Ekmekci OB, Sonmez H, Ozturk Z, Domanic N, Kokoglu E. Clin Appl Thromb Hemost. 2005 Jan;11(1):63-70.
- Plasma vitronectin levels in patients with coronary atherosclerosis are increased and correlate with extent of disease. Ekmekci H, Sonmez H, Ekmekci OB, Ozturk Z, Domanic N, Kokoglu E. J Thromb Thrombolysis. 2002 Dec;14(3):221-5.
- Role of vitronectin and its receptors in haemostasis and vascular remodeling. Preissner KT, Seiffert D. Thromb Res. 1998 Jan 1;89(1):1-21.

american diagnostica GmbH
Kaplaneigasse 35
D-64319 Pfungstadt

Tel: +49 (0)6157-99 08 99
Fax: +49 (0)6157-99 08 08

email: info@amdiag.de
www.americandiagnostica.de

Vitronectin Literature

Evaluation of fibronectin, vitronectin, and leptin levels in coronary artery disease: impacts on thrombosis and thrombolysis.
Ekmekci H, Ekmekci OB, Sonmez H, Ozturk Z, Domanic N, Kokoglu E. *Clin Appl Thromb Hemost*. 2005.Jan;11(1):63-70.

Summary:
Plasma levels of vitronectin were investigated in patients with coronary artery disease and in control subjects. Levels were found to be higher in patients and there was a strong correlation between vitronectin levels and severity of the disease. These findings were taken to suggest that plasma vitronectin represent a pathogenic factor for atherogenesis and thrombus formation in patients with coronary artery disease.

Vitronectin in atherosclerotic disease.
Ekmekçi OB, Ekmekçi H. *Clin Chim Acta* 2006, Jun;368(1-2):77-83.

Summary:
In this review the role of plasma-derived vitronectin in the intimal thickening observed in atherosclerotic lesions is discussed. Atherosclerotic lesion formation is based on the complex interplay between resident and inflammatory cells, as well as coagulation factors and inflammatory mediators. The authors conclude that vitronectin, due to its ability to interact with paletelet surface glycoproteins and its ability to mediate platelet adhesion and aggregation at sites of vascular injury, may be seen as an important mediator in the pathogenesis of such lesions.

Role of Vitronectin and Its Receptors in Haemostasis and Vascular Remodeling.
Preissner KT and Seiffert D. *Thromb Res 1998,* 89:1-21.

Summary:
In this earlier review Klaus Preissner and Dietmar Seiffert summarize the molecular nd biological aspects of vitronectin and vitronectin receptors. They point out the multifunctional role of vitronectin in various biological processes, which is based on the multidomain structure of vitronectin and the distinct expression of vitronectin receptors of the integrin family. Particular emphasis is put on discussing the role of vitronectin in the fibrinolytic system, as well as in immune defense and infections.

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www.americandiagnostica.de

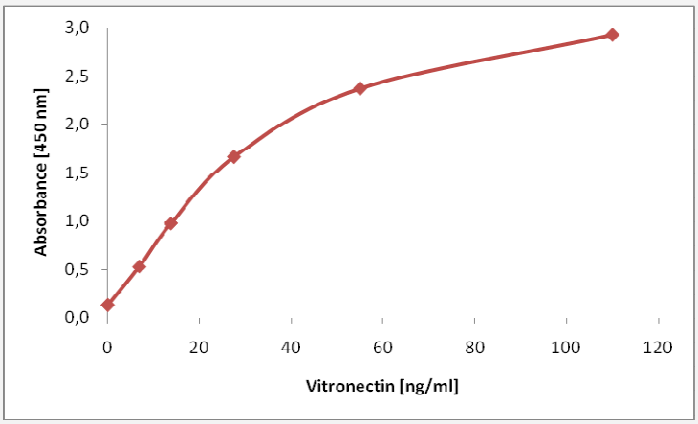
NEW: Vitronectin ELISA

Principle of the assay

The Vitronectin (VN) ELISA is a "sandwich" ELISA employing a monoclonal and a polyclonal antibody specific for human Vitronectin.

Diluted plasma samples are added to microwells coated with the monoclonal antibody against Vitronectin. During an incubation period, Vitronectin present in the sample will bind to the antibody coated to the wells. Following a washing step, a horseradish peroxidase (HRP) conjugated rabbit anti-Vitronectin polyclonal antibody is added to the microwells and binds to the Vitronectin protein captured on the plate during a short incubation period. Following another washing step, the addition of a TMB substrate and its subsequent reaction with the HRP present generates a blue colored solution. The reaction is stopped by the adding sulfuric acid, which turns the solution color yellow. Measuring the solution absorbance at 450 nm and extrapolating the value with those of a standard curve determines the level of Vitonectin in the diluted plasma sample.

Standard curve



Related products

- monoclonal anti-human VN antibodies
- polyclonal anti-human VN antibodies
- human VN protein

Key Features

- **Format:** 96-well plate
- **Sample type:** human citrated plasma
- **Sample Volume:** less than 1 µl to perform a duplicate analysis
- **Reagents:** color-coded, ready-to-use (except standard dilution)
- **Assay Range**: 0 – 110 ng/ml
- **For research use only**

REFER TO APPROPRIATE PACKAGE INSERT FOR ADDITIONAL TECHNICAL INFORMATION

american diagnostica GmbH
Kaplaneigasse 35
D-64319 Pfungstadt
Tel: +49 (0)6157-99 08 99
Fax: +49 (0)6157-99 08 08
email: info@amdiag.de
www.americandiagnostica.de