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Thrombomodulin, human

REF 2374

Description

Thrombomodulin (TM) is the cell surface receptor for thrombin. When occupied, thrombomodulin converts thrombin from a procoagulant protein into the activator of Protein C.[1,2] After activating Protein C, thrombomodulin acts as a major anticoagulant through its ability to inactivate various blood factors (Va, VIIIa, Xa and XIIIa). In competing for thrombin binding, thrombomodulin inhibits the proteolytic effect of thrombin in its clotting of fibrinogen, the inactivation of Protein S and the induction of platelet aggregation.

TM is similar in structure to the low-density lipoprotein (LDL) receptor. TM possesses several EGF repeats, of which numbers five and six are responsible for the high affinity binding of thrombin (K_d = 0.5 nM). In addition, the B chain of thrombin possesses a domain, distinct from the active catalytic site, termed anion-binding Exosite I, which is involved in the binding of thrombin to thrombomodulin. TM contains a chondroitin sulfate (glycosoaminoglycan) which accelerates the inactivation of thrombin by anti-thrombin III. On SDS-polyacrylamide gels, human thrombomodulin appears as a single band at M_r 75,000 D under non-reducing conditions and shows a band at approximately M_r 110,000 D following reduction of its disulfide bonds.

The thrombomodulin-thrombin complex enhances the catalytic activation of Protein C over 1,000 fold[3]. The binding of thrombin to thrombomodulin does not require calcium; however, interaction of the complex with Protein C is calcium dependent. Platelets, monocytes and neutrophils contain small amounts of TM in comparison to cultured endothelial cells. Immunohistochemical analysis has localized TM to the luminal surface of endothelium of blood vessels and lymphatics, the squamous epithelium, and the placental syncytiotrophoblast.

REF 2374 is a recombinant carboxy-terminal truncated form of thrombomodulin and lacks the putative transmembrane and cytoplasmic domains, approximately 38 amino acids.

Preparation

REF 2374 has been expressed by a HEK293 cell line and purified by reverse phase, ion exchange and size-exclusion chromatography. Purity is determined via SDS-PAGE analysis. Under reducing conditions, the protein migrates as a single band at 68,000 Da.

Presentation

Screw-capped clear glass vial containing 10 µg of recombinant human thrombomodulin lyophilized from a 100 µg/mL solution in 50 mM Tris, 100 mM NaCl, pH 7.4, with 100 mM Mannitol added as an excipient. Protein content was determined by spectrophotometric analysis at a wavelength of 280 nm using an extinction coefficient of 0.97 for a 0.1% solution, 1 cm pathlength.

Reconstitution

Add 100 µL of filtered deionized or sterile water to generate a 100 µg/mL solution.

Storage

Store lyophilized protein at 2°-8°C. Aliquot and store reconstituted protein in plastic tubes at -70°C.

Warnings and Precautions

For Research Use Only

This product contains source material of a biological origin. As no known test method can provide complete assurance that biologicals will not transmit pathogens, this reagent should be handled as recommended for any potentially infectious human specimen.

CONT	Tris-(hydroxymethyl)aminomethane

Warning

Hazard Statements:
H315 Causes skin irritation.
H319 Causes serious eye irritation
H335 May cause respiratory irritation

Precautionary Statements:
P261 Avoid breathing dust.
P264 Wash thoroughly after handling.
P280 Wear protective gloves/eye/face protection
P305 + P351 + P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.

References

1. Esmon, C. T., and Owen, W. G. Identification of an endothelial cell cofactor for the Thrombin - Catalyzed activation of Protein C. *Proc N.H. Acad Sci USA* 1981; **78**: 2249-2252.
2. Esmon, N. L., Owen, W. G., and Esmon, C. T. Isolation of a membrane-bound cofactor for thrombin-catalyzed activation of Protein C. *Journal of Biological Chemistry* 1982; **257**: 859.
3. Esmon, N. L. Thrombomodulin. *Seminars in Thrombosis and Hemostasis* 1987; **13**: 454-463.

Related Products

REF 237, Thrombomodulin, rabbit lung

REF 837, IMUBIND® Thrombomodulin ELISA

Definition of Symbols:

	Consult instructions for use
	Manufacturer
	Refer to Safety Data Sheet
CONT	Contains…
	Temperature Limitation
LOT	Lot Number
	Expiration Date
REF	Catalog Number