

\*\*REPRESENTATIVE DATASHEET\*\*



## Sheep anti-human Thrombin (FIIa)

FITC-Conjugated Affinity-Purified IgG

0.1 mg

**Product #:** SAHT-APFTC

**Lot #:** XXXX

**Expiry date:** XXXX

Store at 2°C to 8°C

For Research Use Only.

Not for use in diagnostic procedures.

### Description of Thrombin

Thrombin (EC3.4.21.5,  $\alpha$ -thrombin) is the product of proteolytic activation of the zymogen prothrombin. Human thrombin is a two-chain serine protease with a mass of 37 kDa. The active site is located within the heavy chain. Thrombin has a high specificity for certain arginine bonds in protein substrates. The primary substrate is fibrinogen which thrombin converts to fibrin through the cleavage of four arginyl-glycyl peptide bonds. Thrombin is also an important activator of platelets, factor XIII, Protein C and TAFI (Plasma procarboxypeptidase B). In a positive feedback mechanism, thrombin increases the rate of its own production by activation of factors VIII and V. The rate of thrombin production is subsequently limited indirectly through the activation of Protein C by thrombin, which then inactivates the activated cofactors VIII and V. The binding of thrombin to thrombomodulin on the cell surface dramatically alters thrombin's specificity, increasing its activity toward Protein C and TAFI, and decreasing its activity toward fibrinogen and activating cofactors VIII and V. In plasma, thrombin activity is inhibited primarily by antithrombin and to a lesser extent heparin cofactor II. The rate of inhibition by both of these inhibitors is profoundly increased in the presence of optimal concentrations of heparin. Other physiological inhibitors of thrombin in the absence of heparin include  $\alpha_2$ -macroglobulin and  $\alpha_1$ -antitrypsin<sup>1-4</sup>.

### REFERENCES and REVIEWS

1. Mann KG; Prothrombin and Thrombin; in Hemostasis and Thrombosis, 3<sup>rd</sup> Edition, eds. RW Colman, J Hirsh, VJ Marder and EW Salzman, pp. 184-199, J.B. Lippincott Co., Philadelphia PA, USA, 1994.
2. Stubbs MT, Bode W; A Player of Many Parts: The Spotlight Falls on Thrombin's Structure; Thrombosis Research 69, pp 1-58, 1993.
3. Downing MW, Bloom JW, Mann KG; Comparison of the Inhibition of Thrombin by Three Plasma Protease Inhibitors; Biochemistry 17, pp 2649-2653, 1978.
4. Weitz JI, Hudoba M, Massel D, Maranganore J, Hirsh J; Clot-bound Thrombin is Protected from Inhibition by Heparin-ATIII but is Susceptible to -ATIII independent Inhibitors; J. Clin. Invest 86, pp 385-391, 1990.

### Product Specifications

**Description:**

Vial containing XXXX mL of affinity-purified IgG conjugated to fluorescein isothiocyanate (FITC). Total protein is 0.1 mg.

**Format:**

APIgG-FITC conjugate as a clear yellow liquid.

**Host Animal:**

Sheep

**Immunogen:**

Thrombin prepared from purified human prothrombin, active site blocked with PPACK.

**Concentration:**

APIgG-FITC concentration is XXXX mg/mL, determined by absorbance using an extinction coefficient ( $E^{1\%_{280}}$ ) of 14.

**Buffer:**

Phosphate-buffered saline containing 1 mg/mL bovine albumin and 0.1% sodium azide (w/v), pH 7.4.

**Storage:**

Store at 2°C to 8°C and protect from light.

**Specificity:**

Prior to conjugation, this antibody was specific for thrombin (including prothrombin) as demonstrated by immunoelectrophoresis and ELISA.

**Applications:**

Suitable as a source of fluorescein labelled antibodies to human thrombin (and prothrombin).

**Incorporation of FITC:**

XXXX moles fluorescein per mole IgG as determined spectrophotometrically.