

Product Specification Sheet

Human Prothrombin (Factor II) Protein and antibodies

□ Cat. # PRTN11-A

Sheep Anti-Human Prothrombin (Factor II) IgG, Purified

SIZE: 1 mg (or bulk)

Thrombin (EC 3.4.21.5, fibrinogenase, thrombase, thrombofort, topical, thrombin-C, tropostasin, activated blood-coagulation factor II, blood-coagulation factor IIa, factor IIa, E thrombin, beta-thrombin, gamma-thrombin) is a serine protease that in humans is encoded by the F2 gene.[2][3] **Prothrombin** (coagulation factor II or **F II**) is proteolytically cleaved to form thrombin in the coagulation cascade, which ultimately results in the reduction of blood loss. Thrombin in turn acts as a serine protease that converts soluble fibrinogen into insoluble strands of fibrin, as well as catalyzing many other coagulation-related reactions. Prothrombin is produced in the liver and is post-translationally modified in a vitamin K-dependent reaction that converts ten glutamic acids on prothrombin to gamma-carboxyglutamic acid (Gla). In the presence of calcium, the Gla residues promote the binding of prothrombin to phospholipid bilayers (see the picture). Deficiency of vitamin K or administration of the anticoagulant warfarin inhibits the production of gamma-carboxyglutamic acid residues, slowing the activation of the coagulation cascade. Activation by prothrombinase occurs by sequential cleavage after residue Arg320 then after Arg271 to produce the active protease α -thrombin (37 kDa) and the byproduct prothrombin fragment 1.2 (35 kDa). The product thrombin further cleaves prothrombin fragment 1.2 after residue Arg155 into individual prothrombin fragments 1 and 2. The concentration of prothrombin in plasma is ~100 μ g/ml (~1.4 μ M).

The molecular weight of prothrombin is approximately 72,000 Da. The catalytic domain is released from prothrombin fragment 1.2 to create the active enzyme thrombin, which has a molecular weight of 36,000 Da. Activation of prothrombin is crucial in physiological and pathological coagulation. Various rare diseases involving prothrombin have been described (e.g., hypoprothrombinemia). Anti-prothrombin antibodies in autoimmune disease may be a factor in the formation of the lupus anticoagulant also known as (antiphospholipid syndrome). Hyperprothrombinemia can be caused by the G20210A mutation.

Source of Antigen and Antibodies

Antigen	Highly purified preparation of human prothrombin or Factor II
Ab Host/type	Sheep, Polyclonal IgG purified by salt precipitation and ion-exchange chromatography; supplied in 10 mM HEPES, pH 7.4, 150 mM NaCl, 50% (v/v) glycerol (or see lot sp. conc on the vial)
2-Ab	Cat # 20520, rabbit anti-sheep IgG-HRP (AP, biotin, FITC conjugates also available).
-ve control IgG	# 20006-1, Sheep IgG (non-immune), purified, suitable for ELISA, Western, IHC as -ve control

Form & Storage of Antibodies/Peptide Control

Pure IgG

- solution lyophilized powder

Supplied in **Buffer:** 10 mM HEPES, pH 7.4, 150 mM NaCl, 50% (v/v) glycerol/6/19/13

Storage

Short-term: unopened, undiluted liquid vials at -20OC and powder at 4oC or -20oC..

Long-term: at -20C or below in suitable aliquots after reconstitution. Do not freeze and thaw and store working, diluted solutions.

Stability: 6-12 months at -20oC or below.

Recommended Usage

Western Blotting (1-10 ug/ml for pure IgG using Chemiluminescence technique).

ELISA: Control protein can be used to coat ELISA plates at 1 ug/ml and detected with antibodies (1:1000-1:100,000).

Histochemistry: not tested. We recommend the use of purified antibody at 2-10 ug/ml.

Depletion of human Prothrombin/Factor II: Antibodies should be coupled to Activated agarose to prepare affinity column and used to deplete human plasma for Factor II.

Specificity & Cross-reactivity

Human Prothrombin protein (protein accession # P000734) sequence is highly conserved in various species: Chimp (99%), Pig 983%), Dog (85%), Cat (84%), Horse (81%), Cow/bovine (81%), Mouse (81%, Rat (79%), rabbit (78%), and Chicken (75%). Antibody to human prothrombin (#PRTN11-A) found to be crossreactive with mouse, rat, rabbit, pig, and dog. Other species not tested. Purified human, bovine, rabbit, and mouse prothrombin proteins are also available for control studies. Prothrombin Fragment 1 and 2 and Factor II deficient plasma are also available.

General References: Royle NJ (1987) Somat. Cell Mol. Genet. 13, 285-292; Degen SJ (1987) Biochem. 26, 6165-6177; Huang M (2003) Nat. Struct. Biol. 10, 751-756;

*This product is for In vitro research use only.

Related material available from ADI

Anti-human Factor II, VII, Willebrand Facotr, factor IX, factor X, Factor XIII, Protien C, Proteins S, Plasminogen, Fibrinogen, Fibrin, and anti-thrombin (ATIII).

Human Prothrombin ELISA

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