Product Information

Anti-Factor IX

Produced in rabbit, IgG fraction of antiserum

F0652

Product Description

Anti-Factor IX is produced in rabbit using purified human Factor IX as the immunogen. Whole antiserumis purified to provide an IgG fraction of antiserum.

Polyclonal Anti-Factor IX specifically detects human factor IX using immunoblotting.

Factor IX is a 55 kDa, single chain, vitamin K-dependent plasma zymogen which plays a key role in the intrinsic and extrinsic blood coagulation systems. Hereditary deficiencies or dysfunctions of factor IX cause hemophilia B or "Christmas Disease" (the surname of the first family described). A disulfide bond in factor IX connects the N-terminal sequence (light chain) of factor IX to the C-terminal sequence (heavy chain). Upon activation of factor IX to factor IXa by factor XIa in the intrinsic system, an 11 kDa activation peptide is removed from the factor IX molecule by cleavage of two peptide bonds. These changes allow the exposure of the serine protease site on the heavy chain which can then activate factor X in the presence of factor VIII, Ca^{++} and phospholipid. Factor IX can be similarly activated by the extrinsic system, i.e., the tissue factor-factor VII complex.[1] Factor IX is synthesized in liver parenchymal cells and requires a post-translational, vitamin K-dependent, modification in order to become a mature plasma zymogen. When patients lack vitamin K or take oral anticoagulants that interfere with the metabolism of vitamin K, a hypocoagulable or antithrombotic state is induced. This state stems from the diminished ability of factor IX to bind to phospholipids. Factor IX concentration in human plasma ranges between 2.5-5 µg/mL, and its half-life is ~24 hours. Human factor IX gene is about 40 kb in size and is localized at the distal end of the X-chromosome. The gene has been completely sequenced[2] and so far, more than 50 gross or subtle mutations have been discovered.[3]

Assays of factor IX antigen levels are useful for:

- Initial characterization of the genetic defect in patients affected by hemophilia B.
- Detection of female carriers of hemophilia B in families affected by mutant genes that are expressed by dysfunctional factor IX.
- Prenatal diagnosis by fetal blood sampling when molecular genetic techniques cannot be used.
- *In vitro* studies of the role of factor IX in the intrinsic or extrinsic pathways of blood coagulation.

The antibody may be used in Factor IX coagulant activity neutralization assays and in various immunological precipitation techniques.

Reagent

Solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Precautions

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage

For continuous use, store at 2–8 °C for up to one month. For extended storage, the solution may be frozen in working aliquots at –20 °C. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

Product Profile

Immunoblotting

A minimum working antibody dilution of 1:3,000 was determined using reduced and nonreduced human plasma blots.

Indirect ELISA

A minimum working antibody dilution of 1:5,000 was determined using human Factor IX for coating.

Protein Concentration

10–20 mg/mL by absorbance at 280 nm ($E_{280}^{1\%}$ = 14.0).

Note: In order to obtain the best results, it is recommended that each individual user determine their working dilution by titration assay.

References

1. Osterud, B., & Rapaport, S. I. (1977). Activation of factor IX by the reaction product of tissue factor and factor VII: additional pathway for initiating blood coagulation. *Proceedings of the National Academy of Sciences*, *74*(12), 5260-5264.
2. Yoshitake, S., Schach, B. G., Foster, D. C., Davie, E. W., & Kurachi, K. (1985). Complete nucleotide sequences of the gene for human factor IX (antihemophilic factor B). *Biochemistry*, *24*(14), 3736-3750.
3. Thompson, A., Progress in Hemostasis and Thrombosis, (Ed. Coller, B.S.), 10, 175 (1990).

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