

Product Information

Factor IX, human

Catalog Number **F0806**

Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS RN 9001-28-9

Synonym: Christmas factor

Product Description

Plasma Factor IX levels are useful in the characterization of the genetic defect in patients affected by hemophilia B, the detection of female carriers of hemophilia B, prenatal diagnosis, and *in vitro* studies of the role of Factor IX in the intrinsic and extrinsic pathways of blood coagulation. Purified Factor IX may be used as a specific control in gel electrophoresis, gel filtration, immunoblot, ELISA, and other immunological assays.

Factor IX is a 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". A disulfide bond in Factor IX connects the N-terminal sequence (light chain) to the C-terminal sequence (heavy chain) of Factor IX. 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^{2+} , 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 the 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 plasma ranges between 2.5–5 $\mu\text{g}/\text{ml}$ and its half life is ~24 hours.

The Human Factor IX gene is ~40 Kb in size and is localized at the distal end of the X-chromosome. The gene was completely sequenced² and so far more than 50 gross or subtle mutations have been discerned.³

Molecular mass:⁴ 55 kDa
Isoelectric point (pI):⁴ 4.2–4.5
Extension Coefficient:⁴ $E_{280}^{1\%} = 13.2$

This Factor IX product is purified from a concentrated pool of normal human plasma prepared by barium citrate adsorption. This product is immunopurified using a monoclonal antibody specific to Factor IX coupled to agarose. The product is supplied as an aqueous solution containing 50%(v/v) glycerol.

Monoclonal Anti-Human Factor IX (Catalog Number F2645) specifically binds Human Factor IX in a Western blot.

Specific activity: ≥ 145 units/mg protein

Unit definition: One unit is equivalent to the Factor IX activity in 1.0 ml of normal human plasma at pH 7.4 at $37\text{ }^{\circ}\text{C}$.

Precautions and Disclaimer

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

Storage/Stability

Store the product at $-20\text{ }^{\circ}\text{C}$.

References

1. Osterud, B., and Rapaport, S., Proc. Natl. Acad. Sci. (USA), **74**, 5260 (1977).
2. Yoshitake, S. et al., Biochemistry, **24**, 3736 (1985).
3. Thompson, A., Progress in Hemostasis and Thrombosis, (ed. Collier B.S.), **10**, 175 (1990).
4. Fujikawa, K. et al., Biochemistry, **12**, 4938 (1973).

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