



Product Information

HUMAN PROTEIN C from Plasma

Product No. **P 2562**

Product Description

Protein C is purified from a concentrate of pooled normal human plasma by barium citrate adsorption. Immunopurification is performed using Monoclonal Anti-Protein C (clone HC-2)^{1,2} coupled to Agarose (Sigma Product No. A 0435). Further purification is obtained by gel filtration.

Alkaline Phosphatase Conjugated Monoclonal Anti-Human Protein C (Sigma Product No. A 9683) specifically binds Human Protein C by direct dot blot assay.

Protein C is a vitamin K-dependent plasma zymogen which plays an essential role in the regulation of blood coagulation. Human protein C was first purified by Kisiel et al.,³ and more recently the nucleotide sequence of the gene has been determined.⁴ Protein C is synthesized by liver parenchymal cells as a single chain-polypeptide, but in plasma it consists mainly of a heavy chain (41 kD) linked by a disulfide bond to a light chain (21 kD).³ The plasma concentration of protein C is about 4 µg/ml and its half life about 15 hours. Activation of human protein C involves the release of a dodecapeptide from the N-terminal domain of the heavy chain.³ This is accomplished inefficiently by thrombin which cleaves an Arg-Leu bond, however, when thrombin forms a 1:1 high affinity complex with the endothelial membrane protein-thrombomodulin, activation of protein C is accelerated about 20,000 fold. Activated protein C (APC) cleaves essential peptide bonds in the heavy chains of factors Va and VIIIa which result in their inactivation and consequently in inhibition of the coagulation cascade. Free plasma protein S serves as a cofactor for APC's inhibitory functions probably by enabling the reactions to take place on platelet and endothelial cell membranes. Hereditary and acquired protein C deficiency states have been recognized in the last decade to be associated with thrombosis.

Assays of plasma protein C levels are useful for the detection of hereditary and acquired deficiency states as well as for studies of the control mechanisms of blood coagulation and fibrinolysis. Purified Protein C may be used as a specific control in gel electrophoresis, gel filtration, immunoblot, ELISA and other immunological assays.

Reagents

The product is supplied lyophilized from 20 mM Tris buffered saline, pH 7.4, containing 0.02% sodium azide (see MSDS) as preservative.

Precautions

Due to the sodium azide content a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Product Profile

By HPLC, Human Protein C elutes from a gel filtration column in a single peak. Human Protein C shows a closely spaced doublet at approximately 62 kD using gel electrophoresis in non-denatured, non-reduced conditions.

Protein Content

Each vial contains not less than 100 µg of purified Human Protein C ($E_{280}^{1\%} = 14.5$).

Reconstitution and Storage

To one vial of lyophilized powder, add 1 ml of deionized water. Rotate vial gently until powder dissolves. Prior to reconstitution, store the product below 0 °C. After reconstitution, the solution may be stored frozen in working aliquots. Repeated freezing and thawing is **not** recommended.

POTENTIAL BIOHAZARD

Handle as if capable of transmitting infectious agents. Refer to the Material Safety Data Sheet. Source material tested and found negative for antibody to HIV and HBsAg.

References

1. Miletich, J., et al., N. Engl. J. Med., **317**, 991 (1987).
2. Miletich, J., and Broze, Jr., G., J. Biol. Chem., **265**, 11397 (1990).
3. Kisiel, W., J. Clin. Invest., **64**, 761 (1979).
4. Foster, D., et al., Proc. Natl. Acad. Sci. (USA), **82**, 4673 (1985).

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