



Product Information

MONOCLONAL ANTI-HUMAN PROTEIN C CLONE HC-2 Purified Mouse IgG1

Product No. **P5305**

Product Description

Monoclonal Anti-Human Protein C (mouse IgG1 isotype) is derived from the hybridoma produced by the fusion of mouse myeloma cells (cell line Sp 2/O-Ag-14) and splenocytes from an immunized mouse. Protein C purified from human plasma was used as the immunogen. The antibody is purified by HPLC using a protein A column. The isotype is determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Sigma Produce Code ISO-2).

Monoclonal Anti-Human Protein C, a divalent cation independent antibody, recognizes an epitope on the heavy chain of protein C and binds to protein C zymogen. The antibody strongly inhibits the activation of protein C but has no effect on the function of activated protein C. No reaction is observed with the activation peptide itself or with the heavy chain after removal of the activation peptide.

Protein C is a vitamin K dependent plasma zymogen which plays an essential role in the regulation of blood coagulation. The nucleotide sequence of the gene that codes for protein C has been determined¹. Protein C is synthesized by liver parenchymal cells as a single chain polypeptide², but in plasma it consists mainly of a heavy chain (41 kDa) linked by a disulfide bond to a light chain (21 kDa)³. The plasma concentration of protein C is approximately 4 µg/ml with a half-life of about 15 hours⁴. Activation of human protein C involves the release of a dodeca-peptide from the C-terminal domain of the heavy chain¹. This is accomplished inefficiently by thrombin which cleaves an Arg-Leu bond, but when thrombin forms a 1:1 high affinity complex with the endothelial membrane protein thrombo-modulin, activation of protein C is accelerated approximately 20,000 fold⁵. Activated protein C cleaves essential peptide bonds in the heavy chains of factors Va and VIIIa which result in their in-activation and consequently

in inhibition of the coagulation cascade^{6,7,8}. Free plasma protein S serves as a cofactor for activated protein C's inhibitory functions probably by enabling the reactions to take place on platelet and endothelial cell membranes⁵. Activated protein C also enhances fibrinolysis by forming a complex with plasminogen activator inhibitor, thus allowing enhanced activity of plasminogen activator⁹. Inactivation of activated protein C in plasma requires at least two "serpin" inhibitors. One inhibitor's activity is enhanced by heparin¹⁰ while the other (α -1-antitrypsin) is heparin independent¹¹.

Hereditary and acquired protein C deficiency states have been recognized to be associated with thrombosis.

Homozygous severe protein C deficiency manifests in the newborn by massive thrombosis¹² and purpura fulminans¹³. Heterozygotes for this entity usually do not manifest thrombosis^{14,15}. However, patients affected by a different heterozygous (partial) protein C deficiency frequently present a thrombotic tendency during young adulthood¹⁶. Acquired deficiency has been observed in patients with disseminated intravascular coagulation, liver diseases, complications following surgery and in those taking coumarin drugs¹⁷.

Anti-Protein C may be used for immunochemical determination of protein C levels in normal and pathogenic human plasma. Determination of protein C levels can be used in the study of regulation of blood coagulation and fibrinolysis.

Reagents

The product is supplied as a liquid in 10mM HEPES, 140mM NaCl, pH 7.4, containing 0.05% sodium azide as a 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

A minimum dilution of 1:400 was determined by indirect immunoblotting using denatured and reduced pooled plasma.

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

Storage

Store at 2-8 °C for up to one month. For extended storage, the solution may be frozen in working aliquots.

Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

References

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