

## Product Information

### ANTI-HUMAN PROTEIN S - AGAROSE

Antibody Developed in Rabbit  
IgG Fraction of Antiserum

Product Number **A 0436**

#### Product Description

Antiserum is developed in rabbit using Protein S purified from human plasma as the immunogen. Whole antiserum is fractionated and then further purified by ion exchange chromatography to provide the IgG fraction of antiserum. This fraction is essentially free of other rabbit serum proteins. Rabbit Anti-Human Protein S is coupled to cyanogen bromide-activated agarose at 4.5-50 mg of antibody per milliliter agarose (bed volume). The product is supplied as a 1:1 suspension in 0.02 M Tris buffered saline, pH 7.4, containing 0.1% sodium azide as a preservative.

Rabbit Anti-Protein S bound to agarose specifically binds with Protein S in pooled normal human plasma. It recognizes free Protein S and Protein S complexed to the C4b-binding protein.

Human Protein S is a vitamin K-dependent protein with a molecular weight of 69 kDa.<sup>1</sup> It is produced by the liver and has been identified in plasma (at a concentration of approximately 22 µg/ml),<sup>2</sup> in platelets,<sup>3</sup> and in endothelial cells.<sup>4</sup> Like other vitamin K-dependent proteins, it contains approximately 10 glutamate residues localized at the N-terminus site of the molecule. Unlike the other vitamin K-dependent proteins, Protein S is not a proenzyme to a serine protease.<sup>1</sup> The isolation and sequence of human cDNA clones that code for human Protein S have been reported<sup>5</sup> and the Protein S locus which consists of two Protein S genes has been identified on gene 3.<sup>6</sup> Protein S is present in plasma in two forms: approximately 60% is bound to C4b binding protein (C4BP), which is a regulator of the complement system, and the other 40% is free.<sup>1</sup> Bound Protein S is probably important for binding the C4BP-Protein S complex to negatively charged phospholipid surfaces.<sup>1</sup> Free Protein S functions as a co-factor for activated protein C,<sup>7</sup> and therefore plays a key role in the regulation of blood coagulation by breaking down factors Va and VIIIa.<sup>8,9</sup> Heterozygous Protein S deficiency is manifested by recurrent venous and arterial thrombosis,<sup>10,11</sup> while the homozygous deficiency is represented by a serious thrombotic process in the newborn.<sup>12</sup>

Acquired deficiencies of Protein S have also been described to predispose patients to thrombosis.<sup>13</sup>

#### Precautions and Disclaimer

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.

#### Storage/Stability

Store at 2-8°C. **Do Not Freeze.**

#### Product Profile

A 1.5 ml (3.0 ml of suspension) bed volume of the product will deplete 0.5 ml of normal human plasma of Protein S, at 90-95% efficiency. It will also remove the major part of C4b-binding protein complexed to Protein S. Other coagulation factors remain in the normal range. Dilute the plasma 1:5 prior to adsorption for better results. Depletion is measured by ELISA using Monoclonal Anti-Human Protein S, clones HS-3 and HS-4 (Product Nos. P 5180 and P 5055) as capturing antibodies and Alkaline Phosphatase Conjugated Anti-Human Protein S (Product No. A 6556). Coagulation activity of the depleted plasma remains within normal values, considering the dilution factor and void volume of the absorbent.

#### References

1. Dahlback, B., *Semin. Thrombos. Hemost.*, **10**, 139 (1984).
2. Dahlback, B., *Biochem. J.*, **209**, 836 (1983).
3. Schwartz, H.P., et al., *Blood*, **66**, 1452 (1985).
4. Fair, D.S., et al., *Blood*, **67**, 1168 (1986).
5. Lundwall, A., et al., *Proc. Natl. Acad. Sci. USA*, **83**, 6716 (1986).
6. Ploos Van Amstel, J.K., et al., *Thromb. Hemost.*, **58**, 982 (1987).
7. Walker, F.J., *J. Biol. Chem.*, **255**, 5521 (1980).
8. Walker, F.M., et al., *Biochim. Biophys. Acta*, **571**, 333 (1979).
9. Fulcher, C.A., et al., *Blood*, **63**, 486 (1984).
10. Comp, P.C., et al., *J. Clin. Invest.*, **74**, 2082 (1984).

11. Coller, B.S., et al., Arteriosclerosis, **7**, 456 (1987).
12. Mahasandana, C., et al., Lancet, **335**, 61 (1990).

13. D'Angelo, A., et al., J. Clin. Invest., **81**, 1445 (1988).

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