Native Rat fH Protein

Cat. No. fH-10R **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Rat (Rattus Norvegicus) Complement factor H (fH) is purified from normal rat serum. Extinction Coefficient: A280 nm = 1.682 at 1.0 mg/mL
Species	Rat
Source	Rat Serum
Description	Factor H is an essential regulatory component of the alternative pathway of complement. It is critical for prevention of complement activation on host cells and tissues, especially the kidney. It has two functional activities: 1) it controls the formation and decay of the alternative pathway C3/C5 convertase (decay accelerating activity) and 2) it acts as a cofactor for factor I which proteolytically inactivates C3b when C3b is bound to factor H (cofactor activity). A C3b-binding protein, similar to factor H isolated from rat plasma, has been reported to be produced by rat platelets and functions as an immune adherence receptor for clearance of immune complexes in rodents. Factor H is a 155,000 Da protein composed of 20 homologous domains arranged like beads on a semi-flexible string. The N-terminal 5 domains bind to C3b and inhibit binding of factor B thus reducing the formation of C3/C5 convertase. Factor H also binds to preformed C3/C5 convertases (C3b,Bb and C3b,Bb,C3b) and causes rapid release of the catalytic subunit Bb (decay acceleration). These activities are essential for controlling the spontaneous activation of the alternative pathway amplification process in plasma. In addition, factor H controls the formation and decay of these enzymes when C3b is attached to the surface of particles. It is most effective on host cells and less effective on foreign particles for reasons described below. The

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	alternative pathway of complement is constantly activating by "tickover" producing fluid phase C3b-like C3(H2O) and C3b. Factor H can bind to these proteins and act as a cofactor so that factor I (a serine protease that circulates in active form) can cleave their alpha chains producing inactive proteins (iC3b or iC3(H2O)). If C3b is not inactivated in this way it continues to form C3 convertases and consumes factor B and C3. If C3b is attached to surfaces it is converted to iC3b by factors H and I in a similar manner. Factor H is more effective when C3b resides on a host cell due to the presence of host markers recognized by factor H. Complement-mediated damage to the host is minimized due to host specific recognition by factor H. Factor H appears to regulate discrimination between potential pathogens and host cells and tissues by recognizing host markers. C3b attached to a surface can initiate the amplification cascade of the alternative pathway. Factor H prevents this on host cells and allows it to occur on surfaces that do not bear host-like markers. These host-specific structures are thought to be polyanionic clusters such as sialic acids and sulfated glycosoaminoglycans. Recognition of host markers occurs through multiple polyanion binding sites located in domains 6-20 of factor H. One site is located in domain 7 and a mutation in this domain (Y402H) is strongly associated with complement activation and tissue destruction in age-related macular degeneration. A tentative site is located in the domain 12-14 region and a very important site is located at the C-terminal in domains 19-20. This C-terminal site appears to be the main site that aids binding to host surfaces. Mutations affecting or located in these domains lead to activation of the alternative pathway of complement in inherited hemolytic uremic syndrome. This site appears to be the site involved in polyanion-dependent dimer and tetramer formation of factor H.
Form	Liquid
Molecular Mass	155 kDa (single chain)
Purity	> 90% by SDS-PAGE

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Storage	At -70 centigrade or below. Avoid freeze/thaw.
Concentration	1 mg/mL
Storage Buffer	10 mM Sodium phosphate, 145 mM NaCl, pH 7.3
Preservative	None, 0.22 μm filtered.

GENE INFORMATION

Gene Name	Cfh complement factor H [Rattus norvegicus (Norway rat)]
Official Symbol	Cfh
Synonyms	Cfh; complement factor H; Fh; AMBP1; AMBP-1; complement factor H; adrenomedullin binding protein-1; complement component factor H; complement inhibitory factor H; platelet complement factor H; EC 4.2.1.2
Gene ID	155012
mRNA Refseq	NM_130409
Protein Refseq	NP_569093
UniProt ID	Q91YB6

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