

Native Human C6 Protein

Cat. No. C6-101H Lot. No. (See product label)

SPECIFICATION

Species Human

Source Human Serum

Description

Native human C6 is a naturally glycosylated (11%) protein composed of a single polypeptide chain of 105,000 Da. C6 is essential for formation of the membrane attack complex (MAC) and is activated non-proteolytically by binding to recently-formed C5b at the cell membrane. Each pathway of complement activation generates proteolytic enzyme complexes (C3/C5 convertases) which are bound to the target surface (Law, S.K.A. and Reid, K.B.M. (1995); Ross, G.D. (1986)). These enzymes cleave a peptide bond in the larger alpha chain of C5 releasing the anaphylatoxin C5a and activating C5b. This is the only proteolytic step in the assembly of the C5b-9 complex. C5b is unstable, but it remains bound to the activating complex for a brief time (~2 min) during which it either binds a single C6 from the surrounding fluid or it decays and is no longer capable of forming MAC. The C5b,6 complex may also remain bound to the C3/C5 convertase where the binding of a single C7 exposes a membrane-binding region and C5b,6,7 can partially insert into the bilipid layer of the target cell. Up to this point the complex may diffuse away from the target cell and enter the membrane of a nearby cell. This is called bystander lysis or "reactive lysis" and can be a significant source of pathology. Each C5b-7 complex can bind one C8 protein molecule which results in the complex inserting more firmly into the membrane. This complex binds C9 and each bound C9 can bind another C9 initiating formation of a ring structure containing up to 18 C9 molecules (Podack, E.R. (1984)). C5b-9 complexes with one or more C9 are referred to as the Membrane Attack

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Complex (MAC) of complement. Not all C5b-8 complexes have complete rings of C9 with the average being only three C9 per C5b-8 complex. Completed protein rings of C9 form the pores seen on electron micrographs and they result in leakage of metabolites and small proteins out of the cell as well as movement of water into the cell. If sufficient numbers are inserted into a cell membrane then water flowing into the cell, due to osmotic pressure, will rupture the cell membrane allowing the entire contents of the target cell (or a bystander cell) to be released. Either process may result in cell death. Originally it was thought that this required only one C5b-9 complex per cell (referred to as the "one hit theory" of lysis (Rommel F.A. and Mayer, M.M. (1973)), but this is probably not correct. For example, an erythrocyte requires ~850 C5b-9 complexes, as measured by the number of C7 molecules, for lysis to occur (Bauer, J. et al. (1979)). Host cells protected from MAC by CD59 require sufficient numbers of C5b-9 to tie up all the CD59 and then ~850 C5b-9 in addition. Lysis of nucleated cells requires many more C5b-9 complexes due to their size and due to the presence of multiple defense mechanisms in such cells.

Form	Frozen liquid
Molecular Mass	105,000 Da (single chain)
Purity	>90% by SDS-PAGE
Characteristic	Molecular weight: 105,000 Da composed of a single polypeptide chain. The pI of C6 is heterogeneous from 6.0 to 6.5.
Usage	For research use only. Not for human or drug use.
Storage	-70°C or below. Avoid freeze/thaw.
Concentration	1.0 mg/mL (see Certificate of Analysis for actual concentration)

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Storage Buffer	10 mM sodium phosphate, 145 mM NaCl, pH 7.3
Preservative	None, 0.22 µm filtered.
Warning	Use normal precautions for handling human blood products.
GENE INFORMATION	
Gene Name	C6 complement component 6 [Homo sapiens]
Official Symbol	C6
Synonyms	C6; complement component 6; complement component C6;
Gene ID	729
mRNA Refseq	NM_000065
Protein Refseq	NP_000056
MIM	217050
UniProt ID	P13671
Chromosome Location	5
Pathway	Complement Activation, Classical Pathway, organism-specific biosystem; Complement and Coagulation Cascades, organism-specific biosystem; Complement and coagulation cascades, organism-specific biosystem; Complement and coagulation cascades, conserved biosystem; Complement cascade, organism-

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specific biosystem; Immune System, organism-specific biosystem; Innate Immune System, organism-specific biosystem;

Function

protein binding;

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