

Active Native Human C1 Complex

Cat. No. C1-95H **Lot. No.** (See product label)

SPECIFICATION

Product Overview

Species Human

Source Human Serum

Description

C1 is the first complement component in the cascade referred to as the classical pathway of complement. C1 binds to and is activated by antibodies bound to antigens (immune complexes) yielding a protease that initiates the cascade. C1 is actually a non-covalent complex of three different proteins (C1q, C1r and C1s) bound together in a calcium-dependent complex. C1q binds through two or more of its six arms to the Fc domains of IgG or IgM. The binding of multiple arms to immune complexes is thought to introduce stress which causes the two C1r proteins in the complex (protease zymogens) to auto-activate themselves producing two active C1r serine proteases (Morikis, D. and Lambris, J.D. (2005)). These activated C1r subunits cleave and activate the two C1s protease zymogens in the complex. Activated C1s cleaves complement component C4 releasing C4a and initiating covalent attachment of C4b to the activating surface. Activated C1s also cleaves C2 and the larger fragment of C2 binds to the surface-attached C4b forming C4b,C2a which is the C3/C5 convertase of the classical pathway.

Form Frozen liquid

Bio-activity >250,000 C1H50 units/mg total protein

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Molecular Mass	766,000 Da (22 chains)
Purity	Purified C1 complex is free of other complement proteins, but it is not a pure protein and it contains other high MW plasma proteins.
Characteristic	C1 is a high molecular weight complex (766,000 daltons) composed of one C1q molecule (410,000 daltons), two C1r molecules (92,000 daltons) and two C1s molecules (86,000 daltons). The complex of C1q, C1r and C1s is stable in the presence of calcium, but easily dissociates if calcium is removed. C1q itself is composed of 18 polypeptide chains with six each of three different types of chains. When C1 is activated the C1r and C1s subunits are each cleaved into two chain molecules due to proteolytic activation. Thus, the SDS gel pattern of C1 is very complex. C1 is difficult to separate from other high molecular weight complexes in serum and extensive handling results in spontaneous activation (Dodds, A.W. and Sim, R.B. (1997)).
Applications	C1 can be used to prepare cells bearing active C1 on their surface by incubating C1 with EA (Dodds, A.W. and Sim, R.B. editors (1997); Morgan, B.P. ed. (2000)). EA are sheep erythrocytes with rabbit IgM anti-sheep erythrocytes antibodies bound to their surface. These cells (EAC1 cells) can be washed with SGVB++ buffer (see Assays below) and they maintain bound active C1 if not washed too much or for too long. EAC14 cells may be prepared from EAC1 by addition of C4 which may subsequently be used to make EAC142 cells by addition of C2. Similarly, EAC1 cells can be used to assay C4 or C2 (Morgan, B.P. ed. (2000)).
Usage	FOR RESEARCH USE ONLY. NOT FOR HUMAN OR DRUG USE.
Storage	Avoid freeze/thaw.
Concentration	>0.20 mg C1/mL based on functional activity measurement (see Certificate of

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	Analysis for actual concentration)
Storage Buffer	50 mM sodium acetate, 50 mM EACA, 10 mM benzamidine, 10 mM, EDTA, 300 mM NaCl, 40% glycerol, pH 5.5
Preservative	None, 0.22 µm filtered.
Warning	Use normal precautions for handling human blood products.

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