

<b>Name:</b>	<b>C1q Protein (Rabbit)</b>
<b>Catalog Number:</b>	<b>Rb099</b>
<b>Sizes Available:</b>	50 µg/vial
<b>Concentration:</b>	0.5 mg/mL (see Certificate of Analysis for actual concentration)
<b>Form:</b>	Frozen liquid
<b>Purity:</b>	≥ 85% by SDS PAGE
<b>Buffer:</b>	10 mM HEPES, 300 mM NaCl, pH 7.2
<b>Extinction Coeff.</b>	$A_{280\text{ nm}} = 0.682$ at 1.0 mg/ml for pure C1q
<b>Molecular weight:</b>	417,600 Da (18 chains)
<b>Preservative:</b>	None, 0.22 µm filtered.
<b>Storage:</b>	-70°C or below. Avoid freeze/thaw.
<b>Source:</b>	Normal rabbit serum from healthy animals of mixed gender
<b>Precautions:</b>	Use normal precautions for handling animal blood products.
<b>Origin:</b>	Manufactured in the USA.

### General Description

Rabbit C1q is purified from pooled normal rabbit serum. C1q is part of the C1 complex, which is the first complement component in the classical pathway of complement. The C1 complex is a non-covalent assembly of three different proteins (C1q, C1r, and C1s) bound together in a calcium-dependent complex. C1q has six extended arms with domains at the end of each arm that bind to the Fc domains of immunoglobulins such as IgG or IgM. When antibodies bind to antigens, forming immune complexes, they cluster allowing two or more of the six C1q arms to bind to the Fc domains of antibodies. The binding of multiple arms of C1q to immune complexes causes the two C1r proteins in the complex (protease zymogens) to auto-activate. The activated C1r proteases cleave and activate the two C1s protease zymogens in the complex. The 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, the C3/C5 convertase of the classical pathway.

### Physical Characteristics & Structure

The molecular weight of rabbit C1q has been reported to be 395,000-417,600 (McKay, JE (1981) and Reid, K.B.M., et al., (1972)). Rabbit C1q is a high molecular weight complex of 18 polypeptide chains. Each of the six arms of rabbit C1q contains three types of chains, an A, B and C. Studies have observed two major bands on staining SDS/polyacrylamide gel electrophoresis under reduced conditions: the A and B chains (32,000 Da each) and the C chain (30,000 Da) (Reid, K.B.M., et al (1972) and Volankis & Stroud, 1972)). Employing the Novex NuPAGE gel electrophoresis system with MOPS buffer, CompTech observes all three chains of rabbit C1q on a 4-12% Tris-Glycine gel (see gel image under CoA).

Rabbit C1q concentration is calculated using an extinction coefficient  $E^{1\%/280\text{nm}} = 6.82$  (Reid, K.B.M., et al. (1972)).

### Function

The biological functions of C1q are described above in the General Description section.

### Genetics

The UniProt accession numbers for rabbit C1q chains are: C1q A chain (U3KMB5), C1q B chain (A0A5F9DF82) and C1q C chain (G1T8T3). The genes for rabbit C1q chains A, B and C are located on chromosome 13.

### **Precautions/Toxicity/Hazards**

This protein is purified from animal plasma/serum and therefore precautions appropriate for handling any animal blood-derived product must be used.

### **References**

Reid, K.B.M., et al., Lowe, D.M and Porter, R.R. (1972). Isolation and characterization of C1q, a subcomponent of the first component of complement, from Human and rabbit sera. *Biochem. J.* 130: 749-763.

McKay, JE (1981). A simple two-step procedure for the purification of plasma C1q from different animal species. *Immunology Letters*, 3 (1981) 303-308).

Volankis, J. E. & Stroud, R. M. (1972). Rabbit C1q: purification, functional and structural studies. *J. Immunol. Methods* 2, 25-34

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