

Polyclonal Antisera: Anti-Human C4

For **Research Use Only**. Not for use in diagnostic procedures

Background

C4 is a plasma protein that is key to the classical and lectin pathways of complement activation. This polypeptide is approximately a 200 kD and is primarily synthesized in single chains by liver hepatocytes. However, synthesis by epithelial cells of the genitourinary and intestinal tract and by phagocytic mononuclear cells has also been reported, and C4 generally circulates as a three-chain molecule instead of a single chain.

The C4 protein contains 3 disulfide bonded subunits: α – 93 kD, β – 75 kD, and γ – 32 kD. The normal concentration of C4 in serum/plasma is approximately 400 μ g/mL.

Upon activation of the classical or lectin complement pathway, C4 is cleaved into C4a and C4b fragments. C4a is one of three distinct anaphylatoxins produced directly as a result of complement activation.

Upon complement activation, the C4b fragment α -chain's thioester bond becomes accessible to nucleophilic attack by target cell acceptor molecules or non-complement proteolytic enzymes. Such an attack results in a covalent ester bond between the C4b fragment and the target cell surface. This attachment provides the binding site for C2a. The binding of C4b and C2a forms the C3 convertase, C4b,C2a. After the C3 convertase has cleaved C3, the C3b fragment of C3 can also then bind to the C3 convertase, which forms the C5 convertase: C3b,C4b,C2a.

Cell-bound C4 can interact with complement receptors (CR1) present on phagocytic leukocytes to mediate opsonization of the cell. This mediation response is inhibited by cleavage of the C4b fragment into C4c and C4d by C4b binding proteins and Factor I. The C4c oligopeptide is released from the target surface where the C4d remains bound.

Characterization

Highly purified human C4 was isolated from normal serum and used to immunize goats. The anti-human C4 polyclonal antisera was tested against normal human plasma by double immunodiffusion, one-dimensional immunoelectrophoresis, quantitative radial immunodiffusion, and quantitative rocket immunoelectrophoresis. The antiserum was determined to be monospecific for C4 at varying concentrations.

Applications

Applications of the C4 polyclonal antisera have been evaluated by various research facilities, and include, Western Blot,¹ IHC,² Immunofluorescence,³ and ELISA.⁴

Specifications

- Volume/vial: 2.0 mL
- Storage: 2°C to 8°C* (\leq 30 days)
- Form: Whole Antiserum
- Preservative: \leq 0.1% Sodium Azide

Species Cross Reactivity:

- Baboon, Dog, Horse, Hamster, Rabbit, Rat, Mouse, Cat, Pig

*For long-term storage (> 30 days), aliquot and store at \leq -20°C. Avoid repeated freeze-thaw.

References

- Avirutnan, P., et al. "Antagonism of the Complement Component C4 by Flavivirus Nonstructural Protein NS1." *J. of Experimental Medicine* (2010): 793-806.
- Truow, L., et al. "C4b-Binding Protein is Present in Affected Areas of Myocardial Infarction During the Acute Inflammatory Phase and Covers a Larger Area than C3." *PLOS One* (2008).
- Jansen, J., et al. "Extensive Complement Activation in Hereditary Porcine

Membranoproliferative Glomerulonephritis Type II (Porcine Dense Deposit Disease)." *Am. J. of Pathology* (1993): 1356-1365.

⁴Mollnes, T. et al. "Complement Activation in Patients with System Lypus Erythematosus Without Nephritis." *British Society for Rheumatology* (1999): 933-940.

Also available:

MicroVue C4d Fragment EIA – Cat. #A008
 MicroVue C4a Fragment EIA – Cat. #A035
 Biotinylated MoAbs:
 Anti-human C4c – Cat. #A703
 Anti-human C4d – Cat. #A704

MoAbs: Anti-human C4 (C4c) – Cat. # A211
 Anti-human C4 (C4d) – Cat. #A213
 Anti-human C4 binding protein – Cat. # A215
 Anti-human C4d (neoantigen) – Cat. #A251
 Anti-human C4 (C4d) – Cat. #A253

C3/C4 Depleted Serum –
 Cat. #A521
 C4 Depleted Serum –
 Cat. #A522
 C4 Proteins – Cat. #A402