



Polyclonal Antisera: Anti-Human C3

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

Background

C3 plays a central role for the classical, alternative, and lectin pathways of the complement system. The circulating form of C3 is naturally glycosylated and contains two disulfide-bonded chains that weigh approximately 110 kD and 75 kD, respectively. The average concentration of circulating C3 in human serum/plasma is 1.25 mg/mL.

Activation of any of the three complement pathways results in the cleavage of C3 into C3a and C3b fragments. C3a is one of the three complement-derived anaphylatoxins. The C3a polypeptide also exhibits immunoregulatory activity. This activity is dependent on the physical binding of C3a to helper T lymphocytes, which results in the inhibition of helper T cell function.

C3a also suppresses the production, *in vitro*, of lymphokines by PHA or Con A simulated human PBL. This suppression is dependent on the presence of the carboxyl terminal arg-77, due to the inactivity of C3a-des-arg.

Upon complement activation, the C3b fragment's reactive site (a 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 C3b fragment and the target cell surface. This attachment provides the binding site for C5, initiating membrane attack complex assembly.

The ability of C3b to continue cleaving C5 is lost upon cleavage into iC3b and C3f by naturally occurring plasma regulator proteins, Factor H and Factor I. iC3b remains bound to the cell surface and can continue to mediate the opsonization of complement-coated target cells by binding CR3 receptors, or in the presence of CR1, iC3b can further be hydrolyzed by a variety of proteolytic enzymes, trypsin, elastase, plasmin or Factor I, into C3c and C3d,g.

Characterization

Highly purified human C3 was isolated from normal serum and used to immunize goats. The Anti-Human C3 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 C3 at varying concentrations.

Applications

Applications of the C3 polyclonal antisera have been evaluated by various research facilities, and include Western Blot,¹ Flow Cytometry,² IHC,³ Immunoblot,⁴ and ELISA.⁵

Specifications

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

Species Cross Reactivity:

- Baboon, Horse, Hamster, Rabbit, Guinea Pig, Rat, Mouse, Rhesus macaque

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

References

- ¹Duce, J., et al. "Activation of Early Components of Complement Targets Myelin and Oligodendrocytes in the Aged Rhesus Monkey Brain." *Neurobiology of Aging* (2006): 633-644.
- ²Attia, A., et al. "Binding of Vitronectin by the *Moraxella catarrhalis* UspA2 Protein Interferes with Late States of the Complement Cascade." *Infection and Immunity* (2006): 1597-1611.
- ³Stoltzner, S., et al. "Temporal Accrual of Complement Proteins in Amyloid Plaques in

Down's Syndrome with Alzheimer's Disease." *Am. J. of Pathology* (2000): 489-499.

⁴Woodman, M., et al. "Borrelia burgdorferi Binding of Host Complement Regulator Factor H Is Not Require for Efficient Mammalian Infection." *Infection and Immunity* (2007): 3131-3139.

⁵Scantlebury, T., et al. "Chylomicron-specific Enhancement of Acylation Stimulating Protein and Precursor Protein C3 Production in Differentiated Human Adipocytes." *J. of Biological Chem.* (1998): 20903-20909.

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Anti-Human C3 – Cat. #A304

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C3a – Cat. #A414

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Anti-human C3 (C3d) – Cat. #A207
Anti-human iC3b (neoantigen) – Cat. #A209
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Anti-human iC3b – Cat. #A710
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C3/C4 Depleted Serum – Cat. #A521

