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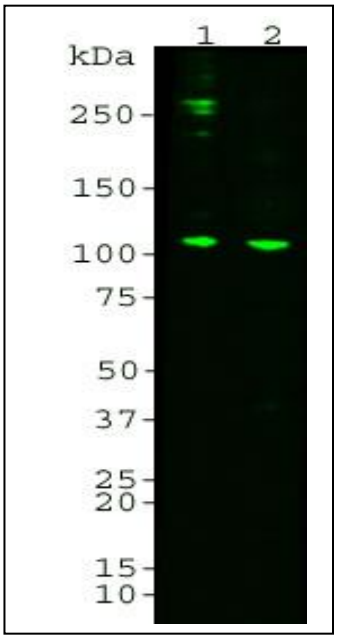
Catalogue# MCA-2B5: Monoclonal Antibody against Netrin Domain of Complement Component 3

Immunogen: Complement component 3, often simply called C3, is the third protein in the complement system. The complement system is a part of the immune system to "complement" the ability of antibodies and phagocytic cells to clear pathogens such as bacteria and viruses from organism, trigger inflammation and remove debris from cells and tissues (1). C3 plays a central role in complement activation, and is involved in both the classical and alternative pathway. C3 is synthesized as an intracellular precursor (pro-C3) of 185 kDa which is processed by proteolytic cleavage into two large chains called the α subunit (115 kDa) and the β sunbunit (70 kDa) which are however linked by a disulfide bond (2).

C3 activation involves further cleavage by C3 convertase to produce C3a (9 kDa) and C3b (the remaining 176 kDa of the β subunit and truncated α subunits). C3a is released into the surrounding fluids and can bind to receptors on basophils and mast cells triggering them to release their vasoactive contents (e.g., histamine). Because of the role of these materials in anaphylaxis, C3a is called an anaphylatoxin, and the N-terminal region of the α subunit is referred to as the anaphylatoxin domain. In blood, C3a may be further cleaved by carboxypeptidase to produce C3adesArg or ASP (acylation-stimulating protein), which acts as a paracrine signal to increase triglyceride synthesis in adipocytes (3). C3adesArg have been demonstrated to be present at increased levels in patients with obesity, diabetes mellitus type 2 and coronary artery disease (4,5,6). C3b is the main effector molecule of the complement system, expressing multiple binding sites for other complement components such as C5, properdin, factor B, factor H and certain membrane proteins such as MCP). Binding these proteins to C3b leads either to amplification of C3 convertase, or initiation of Membrane Attack Complex (MAC). C3b also serves as an opsonizing agent to bind to the pathogen and target it for destruction by phagocytes. On the other hand, binding of C3b to complement component, factor I and a co-factor, inactivates C3b to iC3b and release C3f (2 kDa). iC3b can further be cleaved to form C3c, C3dg which further produces C3d and C3g (3). Overall, C3 promotes phagocytosis, supports local inflammatory responses against pathogens, and instructs the adaptive immune response to select the appropriate antigens for a humoral response (6). More recently, C3 has been suggested to have a pathophysiological role in Alzheimer's and other neurodegenerative disorders (7). In clinical practice the level of (C3) in serum and CSF can be used to help identify immunological disorders, especially those associated with deficiencies of complement components.



Western blot analysis of MCA-2B5 on human serum sample. 0.1 µg human C3 protein purified from human serum (lane 1), 10 µg normal human serum proteins (lane 2) was blotted with MCA-2B5 at a concentration 1:3,000. The MCA-2B5 monoclonal binds strongly and cleanly to a band at about 115 kDa which represents the intact α subunit of C3 and its proteolytic band at approximately 40 kDa. Bands at 190 kDa and above are likely the pro-C3 and its glycosylated form.

Antibody characteristics: MCA-2B5 was raised against recombinant netrin domain of human C3 expressed in and purified from *E.Coli*. The antibody works on human samples by western blot and Elisa. The antibody is a mouse IgG1 with a κ light chain. Store at 4°C. For safest long-term storage, maintain aliquots at -80°C or at -20°C. Avoid repeated freeze-thaw cycles.

Suggestions for use: The antibody is provided as purified material at 1mg/mL in PBS. We recommend trying the antibody at 1:1,000-3,000 for western blotting purposes.

Limitations: This product is for research use only and is not approved for use in humans or in clinical diagnosis.

References:

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