SANTA CRUZ BIOTECHNOLOGY, INC.

C3aR (D-12): sc-133172

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Complement C3 precursor contains complement C3 β chain, complement C3 α chain, C3a anaphylatoxin, complement C3b α chain, complement C3c fragment, complement C3dg fragment, complement C3g fragment, complement C3d fragment and complement C3f fragment. C3a, C4a and C5a are potent anaphylatoxins that are released during complement activation, a system of ligand-surface protein interactions specific to cells of hematopoietic lineage that aids in the elimination of pathogens. C3a and C5a secretion correlates with pathophysiological phenotypes such as asthma and bacterial meningitis. Binding of these proteins to their respective G protein-coupled receptors (C3aR, C5aR), which are present on the surface of myeloid leukocytes, induces proinflammatory events such as cellular degranulation, smooth muscle contraction, arachidonic acid metabolism, cytokine release, leukocyte activation and cellular chemotaxis. C3aR is expressed in brain and activated B lymphocytes, whereas C5aR is prevalent on the surface of hepatocyte, lung, smooth muscle and endothelial cells. Upon activation, C3aR and C5aR are susceptible to rapid GRK-mediated phosphorylation and clathrin-coated vesicle targeting. C5aR utilizes the Ras-Raf-ERK1/2 cascade and couples to G_i/G_{16} proteins.

REFERENCES

1. de Bruijn, M.H. and Fey, G.H. 1985. Human complement component C3: cDNA coding sequence and derived primary structure. Proc. Natl. Acad. Sci. USA 82: 708-712.
2. Buhl, A.M., et al. 1995. Mitogen-activated protein kinase activation requires two signal inputs from the human anaphylatoxin C5a receptor. J. Biol. Chem. 270: 19828-19832.

CHROMOSOMAL LOCATION

Genetic locus: C3AR1 (human) mapping to 12p13.31; C3ar1 (mouse) mapping to 6 F2.

SOURCE

C3aR (D-12) is a mouse monoclonal antibody raised against amino acids 183-482 mapping at the C-terminus of C3aR of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

C3aR (D-12) is available conjugated to agarose (sc-133172 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-133172 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-133172 PE), fluorescein (sc-133172 FITC), Alexa Fluor® 488 (sc-133172 AF488), Alexa Fluor® 546 (sc-133172 AF546), Alexa Fluor® 594 (sc-133172 AF594) or Alexa Fluor® 647 (sc-133172 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-133172 AF680) or Alexa Fluor® 790 (sc-133172 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

APPLICATIONS

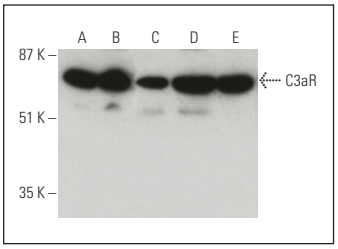
C3aR (D-12) is recommended for detection of C3aR of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for C3aR siRNA (h): sc-42840, C3aR siRNA (m): sc-42841, C3aR shRNA Plasmid (h): sc-42840-SH, C3aR shRNA Plasmid (m): sc-42841-SH, C3aR shRNA (h) Lentiviral Particles: sc-42840-V and C3aR shRNA (m) Lentiviral Particles: sc-42841-V.

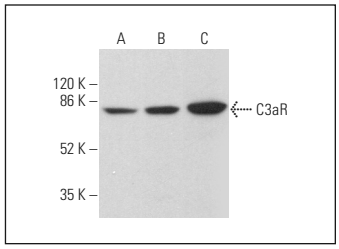
Molecular Weight of C3aR: 65 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, RAW 264.7 whole cell lysate: sc-2211 or K-562 whole cell lysate: sc-2203.

DATA



C3aR (D-12) HRP: sc-133172 HRP. Direct western blot analysis of C3aR expression in HeLa (**A**), K-562 (**B**), NIH/3T3 (**C**), M1 (**D**) and RAW 264.7 (**E**) whole cell lysates.



C3aR (D-12): sc-133172. Western blot analysis of C3aR expression in NIH/3T3 (**A**), RAW 264.7 (**B**) and K-562 (**C**) whole cell lysates. Detection reagent used: m-IgGκ BP-HRP: sc-516102.

SELECT PRODUCT CITATIONS

1. Lim, R. and Lappas, M. 2012. Decreased expression of complement 3a receptor (C3aR) in human placentas from severe preeclamptic pregnancies. Eur. J. Obstet. Gynecol. Reprod. Biol. 165: 194-198.
2. Li, X.Q., et al. 2019. Deficiency of C3a receptor attenuates the development of diabetic nephropathy. BMJ Open Diabetes Res. Care 7: e000817.
3. Huang, P., et al. 2020. Complement C3a induces axonal hypomyelination in the periventricular white matter through activation of Wnt/β-catenin signal pathway in septic neonatal rats experimentally induced by lipopolysaccharide. Brain Pathol. 30: 495-514.
4. Ishii, M., et al. 2021. Mitochondrial C3a receptor activation in oxidatively stressed epithelial cells reduces mitochondrial respiration and metabolism. Front. Immunol. 12: 628062.
5. Zhang, L., et al. 2022. C-reactive protein inhibits C3a/C3aR-dependent podocyte autophagy in favor of diabetic kidney disease. FASEB J. 36: e22332.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.