

Anti-Bundibugyo Ebolavirus, GP1

Recombinant Monoclonal Antibody

Product Information

Product No.: E167

Clone: BDBV-43

Isotype: Human IgG1k

Storage: 2° to 8°C

Product Description

Specificity:

BDBV-43 activity is directed against the glycan cap of the GP1 subunit of Bundibugyo ebolavirus (BDBV), Zaire ebolavirus (EBOV), and Sudan ebolavirus (SUDV) glycoprotein.

Antigen Distribution:

Ebola virus glycoprotein is a surface protein expressed on the virus envelope.

Background:

Ebola virus is a member of the Filoviridae family that causes severe disease in humans with a mortality rate of 25-90%¹. Three Ebola species are responsible for lethal outbreaks: Zaire ebolavirus (EBOV), Bundibugyo ebolavirus (BDBV), and Sudan ebolavirus (SUDV).

The Ebola virus envelope contains a single surface glycoprotein (GP) which is responsible for viral attachment to the host cell, endosomal entry, and membrane fusion¹. GP is composed of two subunits, GP1 and GP2. GP1 has a heavily glycosylated mucin-like domain and a glycan cap. GP2 contains the internal fusion loop, transmembrane domain, and stalk. GP is the major target of neutralizing monoclonal antibody (mAb) and vaccine design against Ebola virus. mAbs targeting GP1 are capable of neutralizing all known filovirus GPs^{2,3}. A pan-Ebola virus mAb is highly desirable to protect against future outbreaks.

BDBV-43 is a glycan cap mAb isolated from B cells of a survivor of the 2007 Uganda BDBV outbreak³. Peripheral blood mononuclear cells from the survivor were transformed with Epstein-Barr virus, CpG, and additional supplements. Subsequently, cell supernatants were screened by ELISA for binding to GPs from BDBV, EBOV, or MARV filoviruses. Positive cells were fused with HMMA^{2,5} myeloma cells by electrofusion and cloned by single-cell fluorescence-activated cell sorting. In binding and neutralization assays, BDBV-43 binds to and neutralizes BDBV, EBOV and SUDV. BDBV-43 also binds BDBV-secreted GP (sGP)⁴. BDBV-43 is defined as a neutralizing antibody because it has a half-maximal inhibitory concentration value of < 10 µg/mL³.

Epitope mapping of GP1 shows that L273 is a critical binding residue for BDBV-43^{3,4}. Cryo-EM structures show that the BDBV-43 CDRH2 loop primarily binds along the β17 strand from residues 268-280, with the majority of contacts around W275⁴.

Known Reactivity Species:

Ebola

Format:

Purified No Carrier Protein

Immunogen:

Sequenced from PBMCs from a donor who had recovered from a naturally-occurring BDBV infection.

Formulation

This recombinant monoclonal antibody is aseptically packaged and formulated in 0.01 M phosphate buffered saline (150 mM NaCl) PBS pH 7.2 - 7.4 with no carrier protein, potassium, calcium or preservatives added. Due to inherent biochemical properties of antibodies, certain products may be prone to precipitation over time. Precipitation may be removed by aseptic centrifugation and/or filtration.

Purity

≥90% monomer by analytical SEC and SDS-Page

Storage and Stability

This antibody may be stored sterile as received at 2-8°C for up to one month. For longer term storage, aseptically aliquot in working volumes without diluting and store at ≤ -70°C

Avoid Repeated Freeze-Thaw Cycles

Product Preparation

This antibody is purified by a multi-step process including the use of protein A or G to assure extremely low levels of endotoxins, leachable protein A or aggregates.

Applications

Applications Reported in Literature:

**B,
EM,
ELISA,
FA,
N**

Country of Origin

USA

References

- 1) Gilchuk P, Kuzmina N, Illykh PA, et al. Immunity. 49(2):363-374.e10. 2018.
- 2) Bornholdt ZA, Ndungo E, Fusco ML, et al. mBio. 7(1):e02154-15. 2016.
- 3) Flyak AI, Shen X, Murin CD, et al. Cell. 164(3):392-405. 2016.
- 4) Murin CD, Gilchuk P, Illykh PA, et al. Cell Rep. 35(2):108984. 2021.