

## Anti-Botulinum neurotoxin type A [CR1] Standard Size Ab00803-23.0

This chimeric rabbit antibody was made using the variable domain sequences of the original Human IgG1 format, for improved compatibility with existing reagents, assays and techniques.

**Isotype and Format:** Rabbit IgG, Kappa

**Clone Number:** CR1

**Alternative Name(s) of Target:** BoNT/A; BoNT; Botulinum neurotoxin; Bontoxilysin-A; Bontoxilysin A; BOTOX

**UniProt Accession Number of Target Protein:** P10845

**Published Application(s):** neutralize, FC

**Published Species Reactivity:** Clostridium

**Immunogen:** CR1 was produced by a yeast gene diversity library used to increase the affinity of scFv AR2 for BoNT/A2, while maintaining high affinity binding to BoNT/A2. AR2 was generated after multiple rounds of affinity maturation of the humanized C25, which itself was created by CDR-grafting from the parental murine C25. Murine C25 was prepared by constructing a scFv phage display library from mice immunized with recombinant BoNT/A binding domain (Hc).

**Specificity:** CR1 binds to both BoNT/A1 and BoNT/A2 with high affinity (CR1 scfv: KD BoNT/A1 ~ 0.13 nM; KD BoNT/A2 ~ 0.4 nM. CR1 IgG: KD BoNT/A1 ~ 2.5 pM; KD BoNT/A2 ~ 1.7 nM.). CR1 Fab fragment binds to the BoNT/A1 binding domain, at the interface between the N-terminal lectin subdomain (HCN) and the C-terminal trefoil subdomain (HCC) at a discontinuous epitope consisting of  $\beta$ 23- $\beta$ 24,  $\beta$ 25- $\beta$ 26,  $\beta$ 27- $\beta$ 28 and  $\beta$ 35- $\beta$ 36 loops of the lectin subdomain and the C-terminus of the trefoil. Botulinum neurotoxin (BoNT) is secreted by Clostridial bacteria, and causes botulism which is characterized by flaccid paralysis and can be fatal without hospitalization. BoNT acts by inhibiting acetylcholine release through binding with high affinity to SV2 on the presynaptic membrane and inducing its internalization by receptor-mediated endocytosis.

**Application Notes:** Antibody binding can be studied by FC and the antibody also shows in vivo neutralizing activity against botulinum neurotoxin - the neutralizing activity is increased when administered in combination with the human BoNT/A antibodies RAZ1 and 2G11.

**Antibody First Published in:** Garcia-Rodriguez et al. Molecular evolution of antibody cross-reactivity for two subtypes of type A botulinum neurotoxin. Nat Biotechnol. 2007 Jan;25(1):107-16. [PMID:17173035](#)

**Note on publication:** Describes the process of increasing AR2 antibody affinity for BoNT/A2 while

maintaining high affinity binding to BoNT/A1. Thermodynamics of antibody binding to BoNT/A1 and BoNT/A2 were studied and the crystal structure of the antibody complexed with BoNT/A1 was solved.

## Product Form

**Size:** 200 µg Purified antibody.

**Purification:** Protein A affinity purified

**Supplied In:** PBS with 0.02% Proclin 300.

**Storage Recommendation:** Store at 4°C for up to 3 months. For longer storage, aliquot and store at -20°C.

**Concentration:** 1 mg/ml.

Important note – This product is for research use only. It is not intended for use in therapeutic or diagnostic procedures for humans or animals.