

BoNT/F Protein, Clostridium botulinum, Recombinant (His)

General Information

Synonyms: Botulinum neurotoxin type F; Bontoxilysin-F; botF; BoNT/F

Protein Construction: 1-436 aa

Species: Clostridium botulinum

Expression Host: E. coli

Accession: P30996

Molecular Weight: 53.6 kDa (predicted)

AA Sequence: MPVAINSFNYNDPVNDDTILYMQIPYEEKSKKYYKAFEIMRNVWIIPERNITIGTNP SDFDPPASLKN GSSAYYD PNYLTDAEKDRYLKTTIKLFKRINSNPAGKVLLQEISYAKPYLGN DHTPIDEFSPVTRTTSVNIKLSTNVESSML LNLLVLGAGPDIFESCYPVRKLIDPDVVYDPSNYGFGSINIVTFSPEYEYTFNDISGGHNSSTESFIADPAISLA HELIHALHGLYGARGVTYEETIEVKQAPLMIAEKPIRLEEFLTFGGQDLNIITSAMKEKIYNNLLANYEKIATRLSE VNSAPPEYDINEYKDYFQWKYGLDKNADGSYTVNENKFNEIYKKLYSFTESDLANKFKVKCRNTYFIKYEFLK VPNLLDDDIYTVSEGFNIGNLAVNNRGQSIKLNPKIIDSIPDKGLVEKIVKFCKSVIPRK

QC Testing

Biological Activity: Activity has not been tested. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.

Purity: > 90% as determined by SDS-PAGE.

Endotoxin: < 1.0 EU/μg of the protein as determined by the LAL method.

Formulation: Tris-based buffer, 50% glycerol

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Botulinum toxin causes flaccid paralysis by inhibiting neurotransmitter (acetylcholine) release from the presynaptic membranes of nerve terminals of the eukaryotic host skeletal and autonomic nervous system, with

frequent heart or respiratory failure. Precursor of botulinum neurotoxin F which may have 2 coreceptors; complex polysialylated gangliosides found on neural tissue and specific membrane-anchored proteins found in synaptic vesicles. Receptor proteins are exposed on host presynaptic cell membrane during neurotransmitter release, when the toxin heavy chain (HC) binds to them. Upon synaptic vesicle recycling the toxin is taken up via the endocytic pathway. When the pH of the toxin-containing endosome drops a structural rearrangement occurs so that the N-terminus of the HC forms pores that allows the light chain (LC) to translocate into the cytosol. Once in the cytosol the disulfide bond linking the 2 subunits is reduced and LC cleaves its target protein on synaptic vesicles, preventing their fusion with the cytoplasmic membrane and thus neurotransmitter release. Whole toxin only has protease activity after reduction, which releases LC. Requires complex eukaryotic host polysialogangliosides for full neurotoxicity. It is not clear whether a synaptic vesicle protein acts as its receptor; there is evidence for and against SV2 fulfilling this function.; Has proteolytic activity. After translocation into the eukaryotic host cytosol, inhibits neurotransmitter release by acting as a zinc endopeptidase that catalyzes the hydrolysis of the '60-Gln-|-Lys-61' bond of synaptobrevin-1/VAMP1 and the equivalent 'Gln-|-Lys' sites in VAMP2 and VAMP3. Cleaves the '48-Gln-|-Lys-49' bond of A.californica synaptobrevin (AC P35589).; Responsible for host epithelial cell transcytosis, host nerve cell targeting and translocation of light chain (LC) into host cytosol. Composed of 3 subdomains; the translocation domain (TD), and N-terminus and C-terminus of the receptor-binding domain (RBD). The RBD is responsible for the adherence of the toxin to the cell surface. It simultaneously recognizes 2 coreceptors; polysialated gangliosides and the receptor protein SV2A, SV2B and SV2C in close proximity on host synaptic vesicles; although not all evidence indicates these are the receptors. The N-terminus of the TD wraps an extended belt around the perimeter of the LC, protecting Zn(2+) in the active site; it may also prevent premature LC dissociation from the translocation channel and protect toxin prior to translocation. The TD inserts into synaptic vesicle membrane to allow translocation into the host cytosol.

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