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# Botulinum Toxin Type A

National Cancer Institute

## Source

National Cancer Institute. *Botulinum Toxin Type A*. NCI Thesaurus. Code C82623.

An injectable formulation of a neurotoxin derived through the fermentation of the Hall strain of *Clostridium botulinum* type A with neuromuscular transmission inhibitory and analgesic activities. Upon injection into the affected muscle, the heavy chain portion of botulinum toxin type A (BTX-A) binds to the cell membrane of the motor nerve and is internalized via endocytosis. Upon entry, the light chain portion of the toxin is activated and cleaves the protein SNAP-25, thereby preventing the fusion of acetylcholine (ACh)-containing synaptic vesicles with the cell membrane and, so, the release of ACh into the neuromuscular junction; subsequent binding of ACh to motor end-plate nicotinic acid receptors and ACh-mediated muscle contraction are thus blocked. In addition to ACh, BTX-A may inhibit the release of neuropeptides, such as substance P and glutamate, which may contribute to its analgesic activity.