

## Study on the production and purification of BoNT/A in *C. botulinum*

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### Abstract

*Clostridium botulinum* is a gram-positive, endospore-forming anaerobic bacterium that produces a botulinum neurotoxin (BoNT), the causative agent of the severe neuroparalytic illness in humans and animals known as botulism. BoNTs consists of a 50kDa light chain (LC : catalytic domain) and a 100kDa heavy chain (HC : transmembrane N-terminal half of HC(H<sub>N</sub>)/receptor-binding C-terminal half of HC(H<sub>C</sub>)), which are linked through a disulfide bond. Botulinum neurotoxin type A (BoNT/A) blocks an acetylcholine release from peripheral nerves by binding to the terminal, undergoing internalization and proteolyzing a protein essential for exocytosis. The neurotoxins associate with nontoxin components in the culture fluids and form a large complex which is designed progenitor toxins. BoNT/A has three different sizes of progenitor toxins with molecular masses of 900 kDa, 500 kDa, and 300 kDa. BoNT/A products were maximized at 5 days of the cultivation. Harvested BoNT/A were purified by ion-chromatography (Q-sepharose CL 4B) and made sure of the pure BoNT/A.

### References

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