Botulinum Toxin and Human Welfare

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Introduction

- **Botulinum toxin (BTX)** is a neurotoxic protein produced by the bacterium *Clostridium botulinum.*
- ***C. botulinum*** is a Gram-positive, rod-shaped, anaerobic, spore-forming, motile bacterium, that causes botulism.
- The toxin is relatively heat-labile, meaning it can be inactivated by boiling for several minutes.
- Patients with botulism are often presented with descending weakness and paralysis.[1]

Special Characteristics

- Botulinum toxin has 8 immunologic types, (A, B, and E) are the most common in human illness.
- The toxin is composed of 2 chains, a heavy chain and a light chain.[1]

Mechanism of Action

After being absorbed in the gut and carried via the blood to peripheral nerve synapses, BTX blocks the release of ACh

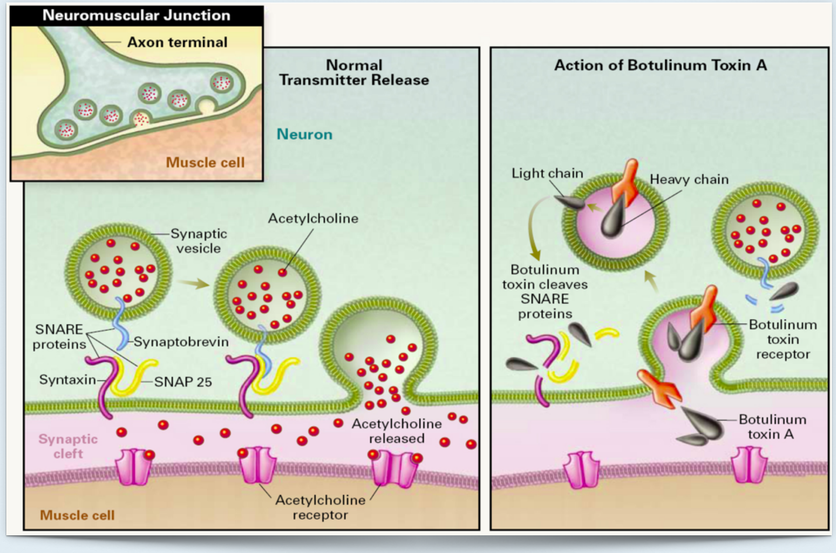

Figure showing the action of BTX (A) 1

Clinical Uses of BTX

- Botulinum toxin, one of the most poisonous substances known to man, now has over 30 potential medical applications.
- According to a study conducted in April, 2009, these are a few of the most common conditions:
- **Dystonias**, **achalasia**, **hyperhidrosis**, **cosmetic uses,** etc.[2]

Conclusion

- Botulinum toxin is now used for an increasingly wide range of clinical problems, and with time, and through further studies, it is likely that the number of conditions treated with botulinum toxin will keep expanding.

References

1. Levinson, Warren. Review Of Medical Microbiology And Immunology 14E. 1st ed. New York: McGraw-Hill Education, 2016.
2. “Clinical Use Of Botulinum Toxin". NPS MedicineWise. N.p., 2017. Web. 5 June 2017. https://www.nps.org.au/australian-prescriber/articles/clinical-use-of-botulinum-toxin