



Use of an Atoxic C. Tetani Strain as a Universal Expression System for Complex-Free BONTs

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The Invention

UW-Madison researchers have developed a universal botulinum neurotoxin production strain using *Clostridium tetani*. *C. tetani* ATCC 454 is an atoxic strain lacking the tetanus toxin gene (*tet*) as well as its regulator and promoter region (*tetR*). The researchers used an *E. coli* conjugative donor strain to move a plasmid expressing a botulinum toxin gene into the *tetani* strain. By utilizing a combination of antibiotic treatments, they could select the *C. tetani* organisms containing the expression vector. The researchers also designed the expression vector to contain an optimal origin of replication, a strong promoter, and they had to determine the optimal media in which to grow the transfected organism. They found that they could express a mutated form of botulinum toxin A1 gene that produces a toxin with very low toxicity using the *Clostridium tetani* without the toxin protein complexing with the stabilizing proteins commonly seen in botulinum toxin fermentation.

Tech Fields

- [Drug Discovery & Development : Drug production & design](#)

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