

Beyond Botox: Natural born killer or medical miracle?

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Botox is best known for its use in cosmetic procedures, but this potent neurotoxin could be transformed into an extraordinary drug to treat a raft of debilitating conditions, a leading scientist will tell an audience at the University of Lincoln.

Synthesised by [clostridium botulinum](#), botox is the most [deadly poison](#) known to man, however, in tiny doses it is widely used as an effective anti-aging treatment. In injection form the toxin blocks the signals that tell muscles to contract, reducing the appearance of wrinkles.

Now scientists are working to expand the toxin's potential as a prodigious drug that could be used for the treatment of disorders such as cerebral palsy, Parkinson's and chronic migraine.

A scientist from the University of Lincoln (UK), who is working on refining the botox protein, will talk about its use in treating a broad range of neurological disorders in a free public lecture on 19th March, 2013.

Dr Enrico Ferrari, from the University's School of Life Sciences, will also reveal the future avenues for turning this natural born killer into a [therapeutic drug](#).

He said: "Many painkillers relieve pain temporarily and have various side effects. The selling point of this molecule is that the pain relief could last up to seven months, in a similar way that [Botox injections](#) last for several months. Engineering this kind of toxin has many uses and would be a major improvement in the quality of life for those people who suffer from chronic pain."

Dr Ferrari joined the University in October 2012 after spending three years working with a group at the Medical Research Council's Laboratory of Molecular Biology in Cambridge.

Led by Professor Bazbek Davletov, the team developed a new way of joining and rebuilding elements of the clostridium [botulinum neurotoxin](#) in a way that eliminated the unwanted toxic effects. In its natural state 150 [nanograms](#) would be enough to kill a person.

Dr Ferrari said: "The re-engineered toxin has very similar characteristics so is still able to block neurotransmission release, but the paralytic effect is a lot less because we have discovered a way to impede the toxin from reaching the muscles."

The lecture entitled Beyond Botox: molecular engineering and the design of new therapeutics takes place at 6pm on Tuesday, 19th March at the University of Lincoln's EMMTEC auditorium. Registration starts at 5.30pm.

A review paper entitled 'Presynaptic neurotoxins: An expanding array of natural and modified molecules' by Bazbek Davletov, Enrico Ferrari and Yuri Ushkaryov was published in the September/October 2012 edition of *Cell Calcium*.

More information: Go to www.sciencedirect.com/science/.../S0143416012000942 to view the full paper.

Provided by University of Lincoln

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