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Dr Warren Casey
Director, NICEATM

18th of June, 2018

Dear Dr Casey,

I am writing this letter to highlight our recent successes in developing cell-based methods to measure activities of botulinum neurotoxins (BoNTs). Currently, the standard test in each case presented below is a mouse lethality assay and our new methods shall provide valid alternatives thereby saving thousands of mice from unethical endpoints.

Firstly, we developed a method that can detect activity of BoNT type B, which is the second most important BoNT type in human medicine. Briefly, we genetically engineered the first cell line that is sensitive to BoNT/B. We incorporated a luminescent reporter system allowing convenient detection of BoNT/B activity using a user friendly microplate assay. We presented this cell assay at the 2017 IBRCC meeting and also published this advance in Frontiers in Neuroscience. Please see attached the 2017 publication describing the BoNT/B cell assay.
''A Cell Line for Detection of Botulinum Neurotoxin Type B'' Rust A, Doran C, Hart R, Binz T, Stickings P, Sesardic D, Peden AA, Davletov B. Front Pharmacol. 8:796.

Secondly, my BoNT/B collaborator, Dr Dorothea Sesardic, developed a highly sensitive cell-based assay for neutralization of BoNTs type A and type E which could replace the current in vivo methods used for determination of antitoxin potency. Please see attached the 2017 publication describing the BoNT/A and /E neutralisation assays.
''SiMa Cells for a Serotype Specific and Sensitive Cell-Based Neutralization Test for Botulinum Toxin A and E'' Bak N, Rajagopal S, Stickings P, Sesardic D. Toxins (Basel). 20;9(7). pii: E230.

We would be happy to contribute further in implementation of these novel cell-based replacement assays and are looking forward for any advice in this matter. Please don't hesitate to contact me if you require further information.

Sincerely,

Professor Bazbek Davletov,
Chair in Biomedical Science