

NCL collaborates with USAMRIID for nanotech-formulation of botulinum toxin inhibitors



August 15, 2013 -

The United States Army Medical Research Institute of Infectious Diseases (USAMRIID) and the National Cancer Institute's Nanotechnology Characterization Laboratory (NCL) have teamed up to formulate inhibitors of botulinum toxin into nanoparticles to improve their solubility. Botulinum toxin can cause sudden-onset paralysis, shortness of breath, and, if not treated, respiratory failure. The only current therapy against botulinum neurotoxins is antitoxin, which has to be given extremely quickly after exposure to neutralize toxin molecules that have not yet bound to nerve endings or entered neurons. There are no known treatments once the toxin has entered nerve cells.

USAMRIID has identified several promising inhibitors that selectively inhibit the catalytic activity of botulinum toxin. Theoretically, these inhibitors could be given to patients to provide protection from exposure. However, these inhibitors are highly insoluble, preventing them from being administered in sufficient amounts for enough inhibitor to get where it needs to go in the body.

The Nanotechnology Characterization Laboratory (NCL) has teamed up with USAMRIID to use nanotechnology to improve the solubility of the inhibitors. USAMRIID has selected several of its most promising inhibitors and NCL will attempt to package them into nanoparticles to improve their solubility and delivery to the site of protection. If the collaboration is successful, NCL and USAMRIID will pursue clinical testing of the nanoparticles as protective agents against botulinum toxin.

For more information about USAMRIID, please visit their website, <http://www.usamriid.army.mil/>. For more information about NCL, please contact them at ncl@mail.nih.gov, or visit their website, <http://ncl.cancer.gov>.