HYBRIDOMAS FOR MONOCLONAL ANTIBODIES SPECIFIC TO FRAGMENT B, FRAGMENT C, AND LIGHT CHAIN OF TETANUS TOXIN

Technology Summary

Tetanus toxin is a potent neurotoxin produced by the bacterium *Clostridium tetani*. The tetanus and combination vaccines use the tetanus toxoid which is a modified tetanus toxin that has been made to be nontoxic but still retains its ability to induce anti-toxin antibodies.

FDA researchers have produced novel antibodies to characterize the ability of anti-tetanus antibodies to neutralize tetanus toxin. Antibodies were tested to determine their ability to inhibit tetanus toxin binding to gangliosides and to assess the roles of different fragments of tetanus toxin in inducing toxic effects. One domain of the tetanus toxin heavy chain, Fragment C, is known to bind to neurons. Fragment C is the focus of much research including: analysis of the subtle differences between neuronal uptake of tetanus toxin; the design of compounds that block the uptake of tetanus toxin; and the design of drugs that target the same cellular mechanism to enhance uptake. Of the 14 antibodies produced, anti-fragment C antibody, 18.1.7, showed potential to be a therapeutic or prophylactic monoclonal antibody.

Potential Commercial Applications

- Research and development related to tetanus toxin and fragments
- In-vitro Diagnostic

Competitive Advantages

- Differential binding to tetanus toxin and its fragments
- Unique mAb (18.1.7) effectively targets tetanus toxin fragment C

Development Stage: Research Materials

Inventors: Marjorie Shapiro, James Kenimer, William Habig, Sean Fitzsimmons, Carolyn Hardegree

Publications:

- Fitzsimmons, SP., et. al. Inhibition of tetanus toxin fragment C binding to ganglioside G(T1b) by monoclonal antibodies recognizing different epitopes. Vaccine. 2000 Aug 15;19(1):114-21. PMID: 10924793

- Kenimer, JG., et. al. Monoclonal antibodies as probes of tetanus toxin structure and function. Infect Immun. 1983 Dec;42(3):942-8. PMID: 6642671

Product Area: research materials, antibody, vaccine

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