

PROTECTIVE ANTIGEN COMPLEXES

NEW VACCINE COMPLEX UNDETTED BY PREVIOUS RESTRICTIONS



TECHNOLOGY FIELD

Biochemistry, Healthcare, Pharmaceutical

IP PROTECTION

Patent No. US 7,731,979 B2

RESEARCHER



Dr. James Bann is an associate professor in the Department of Chemistry at Wichita State University. After receiving his Ph.D. from Oregon Health Sciences in 2000, Dr. Bann continues to perform research in Biochemistry.

Dr. Bann leads research groups to understand how proteins fold and adopt their three-dimensional, biologically active conformations. Focusing on two bioVlogical toxins - Anthrax and E. coli, Dr. Bann performs research to recognize the mechanisms responsible for how these toxins form membrane-spanning channels that transport the proteins critical for disease pathogenesis into the host cell.

BACKGROUND

➔ Bacillus anthracis, more commonly known as Anthrax, is a bacterial toxin and is regarded to be a potential threat for bio-warfare or bioterrorism. Exposure to aerosolized B. anthracis spores is toxic and lethal to humans and mammals, and can have devastating consequences if used as an agent for bioterrorism. Protective antigen (PA) is the key component for many Anthrax vaccines currently licensed as well as those under development. While PA complexes have been made to protect against Anthrax, the significant challenge lies in the storage and stability of the complex. Efforts to develop protective adjuvants that do not require the use of a cold chain are of interest.

ADVANTAGES

➔ Protective antigen is the protein responsible for transporting Lethal Factor (LF) and Edema Factor (EF) into the host cell. Researchers developed an advanced Protective Antigen Complex to elicit an immunogenic response in a subject and induce protective immunity. The complex has elevated resistance to PA folding and pore formation, preventing LF and EF from comprising immunity in the cell. The invented complex also raises the thermal stability by at least 200C compared to the prior serum. By achieving storage of the vaccine at 25 °C , this eliminates the necessity for specialized transport containers with temperature control. This will allow for the wide distribution of the vaccine, making it easily accessible in underdeveloped areas with scarce medical resources.

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Revised: 8/28/2019

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