

REPURPOSING TO SPEED CHEMICAL AND BIOLOGICAL MEDICAL COUNTERMEASURE DISCOVERY AND DEVELOPMENT

Characterizing Medical Countermeasure Efficacy Against Aerosol Administration Of Bacillus Cereus Biovar Anthracis Cameroon And Cote D'ivoire In The New Zealand White Rabbit Model.

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Bacillus anthracis is the causative agent of anthrax and was developed as a weapon by several former state bioweapons programs and used as a bioterror agent against the United States in 2001. The U.S. government (USG) has invested > \$900 million developing detection platforms, medical countermeasures (MCM), and risk models to mitigate potential consequences resulting from a bioterrorism event involving *B. anthracis*. *Bacillus cereus* biovar anthracis (Bcbva) is a variant of *B. cereus* that possesses the *B. anthracis* virulence factors, causes an anthrax-like disease in animals and is a Department of Health and Human Services (HHS) Tier 1 Select Agent. However, there were no reports on the effectiveness of MCMs developed for anthrax against Bcbva. As a result, the efficacy of anthrax MCMs against inhalational challenges of Bcbva Cameroon (CA) and Cote d'Ivoire (CI) in a New Zealand white rabbit model was evaluated. The results demonstrated that pre-exposure vaccination with Anthrax Vaccine Adsorbed (AVA) and post-exposure prophylaxis of levofloxacin with or without AVA vaccination were effective against an aerosol challenge with a dose of ~200x inhalation median lethal dose with either Bcbva strain. Furthermore, host temperature responses and bacterial virulence factor expression were evaluated as function of treatment group and administered strain. The results from this study suggest that the current MCMs for anthrax would be effective at mitigating the consequences associated with exposure to Bcbva.

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