Learning to Care for Those in Harm's Way

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New Vaccine Development Platform Could Fight Deadly, Multi-Drug Resistant Bacteria

Bethesda, Md. – A new vaccine development platform has proven effective in protecting against deadly, hard-to-treat infections caused by multi-drug resistant (MDR) bacteria, thanks to a collaborative endeavor led by Dr. Michael J. Daly, a professor in the Uniformed Services University's (USU) Department of Pathology, Dr. Gregory J. Tobin, president of Biological Mimetics, Inc., and Dr. Daniel Zurawski at the Walter Reed Army Institute of Research. This could ultimately help prevent battlefield infections, as well as common hospital-acquired infections in patients undergoing routine surgeries.

This research, "Radiation-Inactivated Acinetobacter baumannii Vaccine Candidates" was published in the journal Vaccines, January 27, as part of a special issue 'Vaccines for Infectious and Chronic Diseases' and is available online: Abstract: https://www.mdpi.com/2076-393X/9/2/96; PDF Version: https://www.mdpi.com/2076-393X/9/2/96/pdf

The rapid vaccine development platform, now shown to be highly effective against MDR bacteria, has recently also been used to develop protective vaccines against RNA viruses: Venezuelan Equine Encephalitis Virus, Chickungunja Virus, and Sabin polioviruses. Importantly, the USU platform developed by Daly's team could be quickly adapted to generate inactivated whole-virus SARS-CoV-2 vaccines.

The MDR A. baumannii bacteria first became a major threat to U.S. troops during the Gulf War. The bacteria cause a range of life-threatening illnesses including pneumonia, septicemia, and wound infections, but there are few treatment options when it comes to MDR-bacteria. Since then, the World Health Organization (WHO) has listed A. baumannii in their highest category of pathogens posing an imminent threat to human health. Today in the U.S., there are about 45,000 hospital-acquired A. baumannii infections each year, and around one million globally.

"This will be a great benefit not only for our service members, as it could prevent trauma-related infections after battlefield injuries, but also to the general public, who are often exposed to this MDR pathogen in civilian hospital settings," Daly said.

Funding for this study was provided through an STTR Phase II contract HDTRA 1-17-C-0030 from the Defense Threat Reduction Agency (DTRA) of the U.S. Department of Defense to BMI, Inc. with USU as the US Government partner, managed by the Henry M. Jackson Foundation for the Advancement of Military Medicine (HJF).

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