

Antimicrobials, Multiple Drug Resistance & Antibiotics Resistance

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Universally-effective topical treatment for drug-resistant skin infections

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The evolution of drug-resistance is on the rise, with some 700,000-people dying globally each year due to multi-drug-resistant infections (MDR); the World Health Organization (WHO) estimates that by 2050, 10 million people will die every year from MDRs. Most bacterial infections start on the skin, therefore, the need for an effective antimicrobial treatment is critical. For example, in the United States alone, every year, nearly 100,000 people experience skin infections that can spread deeper into the body where they are even harder to treat despite the wide availability of antibiotics. In the past year, our New Mexico Tech research team developed OmniBac, a topical ointment which is universally effective against all different kinds of drug-sensitive and drug-resistant bacterial pathogens. Moreover, unlike several over-the-counter creams and prescription Mupirocin, OmniBac kills the bacterial population to completion, preventing further evolution of drug resistance and/or re-emergence of infection at the treated site. OmniBac has been extensively tested *in vitro* against dozens of the most serious human pathogens (MRSA, VRE, CRE etc.) and has proven highly effective against a broad-spectrum of Gram-positive and Gram-negative bacteria as well as mycobacteria. The active ingredients in OmniBac have preliminarily shown to be safe for human topical application or have preliminarily been demonstrated to be safe to animals upon injection and have a promising *in vitro* pharmacokinetic profile. A reduction of antimicrobial resistance by just 20% would save approximately \$5 billion in the US alone; therefore, our pursuits in the development of OmniBac towards clinical use have multiple and multifaceted health, medical care, social and financial implications

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