

An Innovative Method to Generate New Antibiotics against Multiple Drug Resistant Microbes

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Keywords: Antibiotic Resistance, Chimera, Clostridia spp., multiple drug resistant bacteria (MDR)

Abstract: The emergence of antimicrobial resistance is a serious global problem. This is due to the exposure of a large human population and domestic animals to antibiotics (i.e., chicken, cow, pork, etc.). The pharmaceutical companies had been developing and modifying new classes of antibiotics for decades but appeared to have exhausted the sources (i.e., microbes) that produce novel antibiotics. In search of new antibiotics, we have utilized an innovative method to generate new kinds of antibiotics. We have developed a unique fusion of protoplasts from two species of microbes that recombine and generate genetic chimeras that can produce novel products (i.e., enzymes, chemicals and antimicrobials) not produced by either of the donor species before. Using this method, over 800 new species of Clostridia were created in the laboratory. In order to determine if any of the by-products would exhibit antibacterial effects on MDRs, we have tested three different Gram positive and Gram negative bacteria with the supernatants of ~800 of chimeras. The initial screening has identified approximately 98 chimeras that have exhibited strong zones of inhibitions against various MDRs. We believe that this method will bring about safe, efficient and effective new class of antibiotics to fight against MDRs.