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## Scientists develop a fatty 'kryptonite' to defeat multidrug-resistant 'Super bugs'

***New research in the FASEB Journal suggests that combining a specific mixture of lipids with antimicrobial agents synergistically thwarts multidrug-resistant bacteria***

Bethesda, MD— "Super bugs," which can cause wide-spread disease and may be resistant to most, if not all, conventional antibiotics, still have their weaknesses. A team of Canadian scientists discovered that specific mixtures of antimicrobial agents presented in lipid (fatty) mixtures can significantly boost the effectiveness of those agents to kill the resistant bacteria. This discovery was published online in *The FASEB Journal*(<http://www.fasebj.org>).

According to a researcher involved in the study, Richard Eband, Ph.D. from the Department of Biochemistry and Biomedical Science at McMaster University in Hamilton, Ontario, Canada, "This study may contribute to overcoming the lethal effects of drug resistant bacteria that is becoming an increasing clinical problem, particularly in hospitals."

To make their discovery, Eband and colleagues conducted experiments using groups of mice infected with lethal doses of multidrug-resistant *Escherichia coli* (E. coli). Researchers then treated the mice with conventional drug combinations or drug combinations encapsulated in lipid mixtures. They found that certain lipid mixtures caused the drugs to act together in a synergistic manner. In this form, the drugs were much more effective in increasing the survival rate of the mice because they overcame the cellular mechanisms used by these bacteria to defeat therapeutic agents. This study also demonstrated a novel use of a new family of antimicrobial agents called oligo-acyl-lysyls, which have the potential to be combined with other drugs and lipid mixtures with similar properties to yield a platform for other specific applications.

"As we've seen in the recent E.Coli outbreak in Germany, bacteria can mutate to become super bugs that resist antibiotics," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*, "Thanks to this new, lipid-based antibiotic therapy. multidrug-resistant bacteria may begin to look more like Jimmy Olsen and a lot less like Superman."

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FASEB comprises 24 societies with more than 100,000 members, making it the largest coalition of biomedical research associations in the United States. FASEB enhances the ability of scientists and engineers to improve—through their research—the health, well-being, and productivity of all people. FASEB's mission is to advance health and welfare by promoting progress and education in biological and biomedical sciences through service to its member societies and collaborative advocacy.

Details: Hadar Sarig, Dafna Ohana, Raquel F. Eband, Amram Mor, and Richard M. Eband. Functional studies of cochleate assemblies of an oligo-acyl-lysyl with lipid mixtures for combating bacterial multidrug resistance. *FASEB J*; doi:10.1096/fj.11-183764 ;<http://www.fasebj.org/content/early/2011/06/15/fj.11-183764.abstract>