

E. coli bacteria more likely to develop resistance after exposure to low levels of antibiotics

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Microbial Drug Resistance is an authoritative peer-reviewed international journal published quarterly in print and online that covers the growing threat and global spread of antibiotic resistant microbial pathogens and resistance genes. Led by Editor-in-Chief Alexander Tomasz, Ph.D., the Rockefeller University (New York, NY), the journal covers topics that include the molecular biology of resistance mechanisms, virulence genes, and disease, as well as molecular epidemiology, drug design, infection control and medical practice. Credit: © Mary Ann Liebert Inc., publishers

E. coli bacteria exposed to three common antibiotics were more likely to develop antibiotic resistance following low-level antibiotic exposure than after exposure to high concentrations that would kill the bacteria or inhibit their growth, according to a timely article in *Microbial Drug Resistance*, a peer-reviewed journal published by Mary Ann Liebert, Inc.

E. coli bacteria in food and water supplies have been responsible for disease outbreaks and deaths around the world in recent years. The current outbreak in Europe has sickened thousands of individuals and caused multiple deaths and life-threatening complications in hundreds of persons infected with a new strain of *E. coli*.

[Bacterial resistance](#) to commonly prescribed antibiotics is an enormous and growing problem, largely due to misuse of antibiotics to treat non-bacterial infections and environmental exposure of the bacteria to low levels of antibiotics used, for example, in agriculture. In the article "De Novo Acquisition of Resistance to Three Antibiotics by *Escherichia coli*," the authors studied the mechanisms by which *E. coli* acquire resistance to three common antibiotics: amoxicillin, tetracycline, and enrofloxacin. Depending on the antibiotic and the level of exposure, different mechanisms may come into play. The authors report that exposure to antibiotics at relatively low levels--below those needed to inhibit growth of the bacteria--are more likely to result in the development of [antibiotic resistance](#). "Exposure to low levels of antibiotics therefore clearly poses most risk," a finding that "contradicts one of the main assumptions made questioning the threat of usage of antibiotics in food animals," conclude the authors.

More information: The article is available free online at www.liebertpub.com/mdr

Provided by Mary Ann Liebert, Inc.

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