

Mcr-1 gene isolated from human for the first time in Brazil

August 8 2016

August 8, 2016 - For the first time in Brazil, a particular antibiotic resistance mechanism conferring resistance to the important antibiotic, colistin, has been detected in a human. It was in a strain of *Escherichia coli* that was isolated from a diabetic patient's foot infection. The mechanism, called MCR-1, was incorporated into a plasmid, a short piece of DNA that exists independent of the genome, which can jump from one bacterium to another, spreading the resistance. The research is published ahead of print August 8 in *Antimicrobial Agents and Chemotherapy*, a journal of the American Society for Microbiology.

In earlier research, these investigators showed that *E. coli* harboring the *mcr-1* gene had been present in food-producing livestock in Brazil since at least 2012. "In spite of this, we had previously recovered no isolates from humans that were positive for *mcr-1*," said coauthor Nilton Lincopan, PhD, Assistant Professor in the Department of Microbiology, Institute of Biomedical Sciences, Universidade de São Paulo, Brazil.

The research was motivated by the investigators' desire to track the spread of the [resistance gene](#). They feared it might be spreading into Brazil from abroad, and they worried that it could also spread in the opposite direction. Lincopan noted that Brazil is the most populous country in South America, with more than 200 million inhabitants, many of whom travel abroad. Additionally, Brazil receives large numbers of foreign visitors (most recently for the Olympics). The patient in the study had no history of travel abroad, suggesting that the plasmid was already in Brazil.

Further abetting possible spread, Brazil is a major producer and exporter of chicken meat, and agribusiness there, as in much of the world, commonly uses large quantities of antibiotics, including colistin, to promote growth, said Lincopan.

Prior to this study, the particular *mcr-1*-harboring plasmids had been identified in *E. coli* and in *Klebsiella pneumoniae* in Europe, Asia (China), North America, and in South Africa. "Surprisingly," the investigators concluded, the plasmids bearing the *mcr-1* gene "are highly similar in the plasmid backbone sequences," despite having been found in different species of bacteria, on different continents, and isolated from different clinical conditions.

"This strongly suggests that the self-transmissible IncX4-type plasmids may be contributing to the intercontinental spread of the *mcr-1* gene," said Lincopan.

Provided by American Society for Microbiology

Citation: *Mcr-1* gene isolated from human for the first time in Brazil (2016, August 8) retrieved 24 April 2024 from

<https://medicalxpress.com/news/2016-08-mcr-gene-isolated-human-brazil.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--