Researchers 'fish new pond' for antibiotics

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Researchers at McMaster University are addressing the crisis in drug resistance with a novel approach to find new antibiotics.

"We have developed technology to find new antibiotics using laboratory conditions that mimic those of infection in the human body," said Eric Brown, professor in the Department of Biochemistry and Biomedical Sciences.

He is the lead author of the paper published in the online edition of *Nature Chemical Biology* today. Brown is also a member of the Michael G. DeGroote Institute for Infectious Disease Research (IIDR).

The findings report on the discovery of chemical compounds that block the ability of bacteria to make vitamins and amino acids, processes that are emerging as Achilles' heels for bacteria that infect the human body.

"The approach belies conventional thinking in antibiotic research and development, where researchers typically look for chemicals that block growth in the laboratory under nutrient-rich conditions, where vitamins and amino acids are plentiful," said Brown. "But in the human body these substances are in surprisingly short supply and the bacteria are forced to make these and other building blocks from scratch."

Brown's research group targeted these processes looking for chemicals that blocked the growth of bacteria under nutrient-limited conditions.

"We threw away chemicals that blocked growth in conventional nutrient-

rich conditions and focused instead on those that were only active in nutrient-poor conditions," he said.

"We're taking fresh aim at bacterial vitamin and amino acid production and finding completely novel antibacterial compounds."

The approach and the new leads discovered by Brown's lab have potential to provide much-needed therapies to address the growing global threat of antibiotic drug resistance.

"When it comes to this kind of new drug discovery technology, Brown's group are fishing in a new pond," said professor Gerry Wright, director of the IIDR. "These leads have real prospects as an entirely new kind of antibacterial therapy."

More information: Metabolic suppression identifies new antibacterial inhibitors under nutrient limitation, DOI: 10.1038/nchembio.1361

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