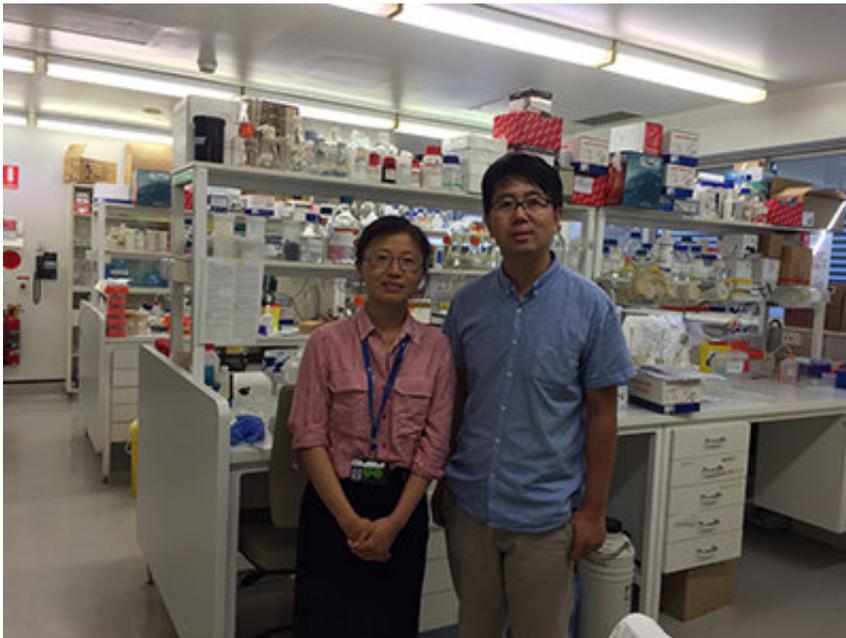


Antidepressants may cause antibiotic resistance

September 7 2018



Credit: University of Queensland

A key ingredient in common antidepressants such as Prozac could be causing antibiotic resistance according to new University of Queensland research.

A study led by Dr Jianhua Guo from UQ's Advanced Water Management Centre focused on fluoxetine, a prescription drug used to help people recover from depression, obsessive-compulsive disorder or eating disorders.

Dr Guo said while overuse and misuse of [antibiotics](#) is generally considered the major factor contributing to the creation of 'superbugs', researchers were often unaware that non-antibiotic pharmaceuticals could also cause [antibiotic resistance](#).

"Our previous study reported that triclosan, a common ingredient in toothpaste and hand wash can directly induce antibiotic resistance," he said.

"We also wondered whether other non-antibiotic pharmaceuticals such as fluoxetine can directly induce antibiotic resistance."

Up to 11 percent of the fluoxetine dose a patient takes remains unchanged and makes its way through to the sewer systems via urine.

"Fluoxetine is a very persistent and well-documented drug in the wider environment, where strong environmental levels can induce multi-drug resistance," said Dr Guo.

"This discovery provides strong evidence that fluoxetine directly causes multi-antibiotic resistance via genetic mutation."

Fellow researcher Dr Min Jin said that under laboratory conditions, the higher the exposure concentration was, the faster the mutation frequency increased with time.

"It has previously been an invisible factor in the spread of antibiotic resistance, but we should consider this a warning.

"Further work is required to investigate effects of [fluoxetine](#) on antibiotic resistance in [human gut microbiota](#)."

Antimicrobial [resistance](#) has become a major threat to public health

globally with approximately 700,000 people a year dying from antimicrobial-resistant infections.

This is predicted to reach 10 million people by 2050 unless global action is taken now.

The study is published in *Environment International*.

More information: Min Jin et al. Antidepressant fluoxetine induces multiple antibiotics resistance in *Escherichia coli* via ROS-mediated mutagenesis, *Environment International* (2018). [DOI: 10.1016/j.envint.2018.07.046](https://doi.org/10.1016/j.envint.2018.07.046)

Provided by University of Queensland

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