Bacteria in the Gut May Absorb Some Medicines

Gut bacteria soak up certain drugs, which might end up weakening the effectiveness of medications.

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Previous scientific evidence shows that gut bacteria can alter the drugs people take. Now recent findings published in the scientific journal Nature indicate that some strains found in the human gut actually absorb the chemicals in some medicines, such as antidepressants, painkillers, heart medication and others, which might reduce the efficacy of these drugs. What's more, this could alter the behavior and the balance of the microbes in the gastrointestinal system, possibly causing side effects, reports ScienceAlert.com.

For the study, researchers from the Medical Research Council (MRC) Toxicology Unit at the University of Cambridge in the United Kingdom and the European Molecular Biology Laboratory in Germany evaluated the interplay between 25 bacterial strains commonly found in the human gut and 15 different drugs, for a total of 375 group pairings, in an animal model.

Scientists observed 29 new interactions between 18 bacterial strains and seven medications. Of these previously unknown reactions, 17 occurred because of drug absorption by the bacteria, a process known as bioaccumulation. The other 12 interactions resulted from bacterial modification of the drugs, known as biotransformation. One common antidepressant drug wound up stored in four gut bacterial strains.

"We discovered that some of the commonly used drugs, including [the] antidepressant duloxetine [Irenka, Cymbalta], are bioaccumulated by gut bacteria without chemical modification," said Kiran Patil, PhD, a researcher at the MRC and one of the study's authors, to MedicalNewsToday.com. "The choice of duloxetine was due to its extensive use, previously known links to GI tract–related side effects, such as weight gain, and due to variability in response across individuals."

Scientists explained that bacterial drug absorption of medicines might also generate side effects, which is why future studies must be conducted on human patients.

"The next steps for us will be to take forward this basic molecular research and investigate how an individual's gut bacteria tie in with the differing individual responses to drugs such as antidepressants—differences in whether you respond, the drug dose needed and side effects like

weight gain," said Patil.

"If we can characterize how people respond depending on the composition of their microbiome, then drug treatments could be individualized," he added.

To learn more about how gut bacteria affect different physical processes, read "Can Gut Bacteria Affect Weight Loss?"
