

Study: Antibiotics destroy immune cells and worsen oral infection

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New research shows that the body's own microbes are effective in maintaining immune cells and killing certain oral infections.

A team of Case Western Reserve University researchers found that antibiotics actually kill the "good" bacteria keeping infection and inflammation at bay.

Scientists have long known that overuse of antibiotics can do more harm than good. For example, overuse can cause antibiotic resistance. But research into this phenomenon in oral health was uncharted territory.

Pushpa Pandiyan, an assistant professor of biological sciences in the School of Dental Medicine, led a team of researchers to examine "resident" bacteria, their [fatty acids](#) and their effect on certain types of [white blood cells](#) that combat infections in the mouth. Specifically, researchers looked at the "short-term maintenance" of Tregs and Th-17 cells in fighting fungal infections, such as Candida, in a laboratory setting.

They found that those natural defenses were very effective in reducing infection and unwanted inflammation—and antibiotics can prevent such natural defenses.

Their work was recently published in *Frontiers in Microbiology*.

"We set out to find out what happens when you don't have bacteria to fight a [fungal infection](#)," Pandiyan said. "What we found was that antibiotics can kill short-chain fatty acids produced by body's own [good bacteria](#).

"We have good bacteria doing good work every day, why kill them?" Pandiyan added. "As is the case with many infections, if you leave them alone, they will leave on their own."

"Of course, antibiotics are still needed for life threatening infections. No question about that. Our bodies have many natural defenses that we

shouldn't meddle with," she said.

However, needless overuse of antibiotics is not helpful, she said.

"Also, we know there is a definite link between oral health and overall health," she added.

Pandiyan said the study could have broader implications on protective effects of "resident microbiota" in other types of infections.

Pandiyan is concurrently working on a National Institutes of Health research project examining HIV patients who have developed [oral-health](#) conditions as a result of weakened immune systems.

More information: Natarajan Bhaskaran et al. Role of Short Chain Fatty Acids in Controlling Tregs and Immunopathology During Mucosal Infection, *Frontiers in Microbiology* (2018). [DOI: 10.3389/fmicb.2018.01995](#)

Provided by Case Western Reserve University

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