Key molecule for keeping oral microorganisms in check discovered

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A University of Oklahoma research team has uncovered a key to arresting the growth of thrush—a type of oral yeast infection that sickens patients with compromised immune systems, diabetes and newborns as well as healthy individuals, who may contract the disease following antibiotic treatment of an illness.

An OU team of natural products chemists and microbiologists observed several clinical strains of *Streptococcus mutans* capable of arresting the growth of the pathogenic yeast Candida albicans. The bacteria species, S. mutans keeps other oral microorganisms in check by producing a chemical called mutanobactin A, which suppresses the growth of pathogenic microbes before they cause problems for humans.

Further tests are underway to evaluate the use of mutanobactin A as a drug for the treatment of thrush and related *Candida* infections. This compound may hold the key to understanding how microorganisms live cooperatively inside a human host. Also, these findings could provide clues to how the body's native microflora use naturally-occurring compounds to combat the invasion and spread of potentially pathogenic microbes.

These microbes strike an amazing balance between enhancing human health and causing devastating disease. Chemicals like mutanobactin A will help doctors carefully control microbial pathogens while preserving the integrity of important symbiotic organisms. This could lead to new and better drugs for treating infections and provide antibiotics that are

less susceptible to the development of resistance.

Research was performed by Robert H. Cichewicz and P. Matthew Joyner, OU Department of Chemistry and Biochemistry Natural Products Discovery Group; Cichewicz also represents the OU Ecology and Evolutionary Biology Graduate Program; and Felicia Qi, Jinman Liu, Zhijun Zhang and Justin Merritt, OU Health Sciences Center College of Dentistry.

Ultimately, the study of microbial chemical communication systems such as mutanobactin A will improve the way doctors fight disease and help maintain human well-being.

More information: Findings from this study were published in the online edition of the September 17 issue of the journal *Organic and Biomolecular Chemistry*.

Provided by University of Oklahoma