

Factors secreted by gut bacteria may help combat kidney stones

October 13 2016

Researchers have discovered that factors secreted by gut bacteria might help prevent or treat kidney stones. The findings appear in an upcoming issue of the *Journal of the American Society of Nephrology (JASN)*.

Kidney stones can pose serious health problems for people and can increase their risks of developing [chronic kidney disease](#) and [kidney failure](#). Oxalate is a small anion that can complex with calcium to form calcium oxalate kidney stones under certain conditions, and elevated urinary excretion of oxalate can be an indicator of increased risk. The intestines play a crucial role in oxalate balance, and *Oxalobacter formigenes* (Of) is an anaerobic bacterium that lives in the large intestine and utilizes oxalate as its exclusive energy source.

When studying this bacterium, Hatim Hassan, MD, PhD (University of Chicago) and his colleagues found that factors secreted by Of can stimulate oxalate transport by [human intestinal cells](#) grown in tissue culture. The team also revealed that the mechanisms of the observed stimulation involve the PKA signaling pathway and a protein transporter called SLC26A6. Importantly, Of factors reduced urinary oxalate excretion by >32.5% in mice by stimulating colonic oxalate secretion.

"Probiotic bacteria have several health benefits; however, the difficulties in determining intestinal bacterial bioavailability and biosafety concerns when administering live probiotics are potential problems facing current probiotics clinical applications. Developing probiotics-derived factors as novel therapeutic agents is an alternative approach that addresses such

concerns," said Dr. Hassan. "The fact that these factors retain their biological activity and can effectively reduce urinary oxalate excretion in mice indicates their significant potential as novel therapeutic agents, and provides a compelling reason for the aggressive pursuit of their characterization, which is currently underway."

More information: "Oxalobacter formigenes-Derived Bioactive Factors Stimulate Oxalate Transport by Intestinal Epithelial Cells," October 13, 2016; [DOI: 10.1681/ASN.2016020132](https://doi.org/10.1681/ASN.2016020132)

Provided by American Society of Nephrology

Citation: Factors secreted by gut bacteria may help combat kidney stones (2016, October 13) retrieved 25 April 2024 from <https://medicalxpress.com/news/2016-10-factors-secreted-gut-bacteria-combat.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.