Diets high in salt could deplete calcium in the body: research

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The scientific community has always wanted to know why people who eat high-salt diets are prone to developing medical problems such as kidney stones and osteoporosis.

Medical researchers at the University of Alberta may have solved this puzzle through their work with animal lab models and cells.

Principal investigator Todd Alexander and his team recently discovered an important link between sodium and calcium. These both appear to be regulated by the same molecule in the body. When sodium intake becomes too high, the body gets rid of sodium via the urine, taking calcium with it, which depletes calcium stores in the body. High levels of calcium in the urine lead to the development of kidney stones, while inadequate levels of calcium in the body lead to thin bones and osteoporosis.

"When the body tries to get rid of sodium via the urine, our findings suggest the body also gets rid of calcium at the same time," says Alexander, a Faculty of Medicine & Dentistry researcher whose findings were recently published in the peer-reviewed journal *American Journal of Physiology – Renal Physiology*.

"This is significant because we are eating more and more sodium in our diets, which means our bodies are getting rid of more and more calcium. Our findings reinforce why it is important to have a low-sodium diet and why it is important to have lower sodium levels in processed foods."

It's been known for a long time that this important molecule was responsible for sodium absorption in the body, but the discovery that it also plays a role in regulating calcium levels is new.

"We asked a simple question with our research – could sodium and calcium absorption be linked? And we discovered they are," says Alexander.

"We found a molecule that seems to have two jobs – regulating the levels of both calcium and sodium in the body. Our findings provide very real biological evidence that this relationship between sodium and calcium is real and linked."

In their research, the team worked with lab models that didn't have this important molecule, so the models' urine contained high levels of calcium. Because calcium was not absorbed and retained by the body, bones became thin.

A journal editorial written about this research discovery noted the molecule could be a drug target to one day "treat kidney stones and osteoporosis."

The primary funder of the research was the Kidney Foundation of Canada.

"We are proud to support the research of Dr. Todd Alexander," said Wim Wolfs, National Director of Research of The Kidney Foundation of Canada. "Data in the United States shows that nearly 10% of adults will have a kidney stone at least once in their life. The prevalence of kidney stones also seems to be increasing in the U.S., which may be attributed to high rates of obesity and diabetes, along with possibly increased salt intake."