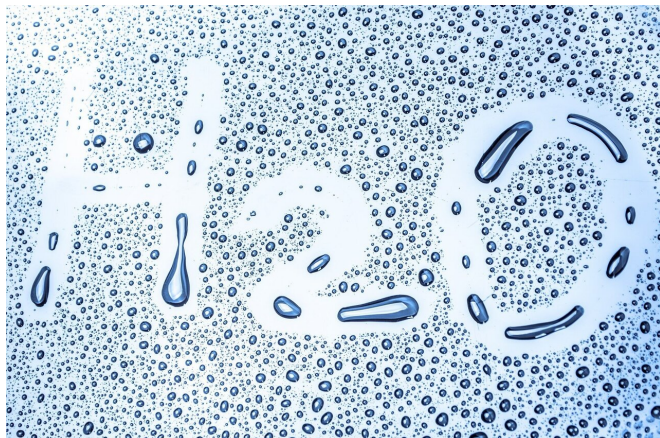


Water may be an effective treatment for metabolic syndrome

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Researchers at the University of Colorado Anschutz Medical Campus have discovered that fructose stimulates the release of vasopressin, a hormone linked to obesity and diabetes. They also found that water can suppress the hormone and alleviate these conditions in mice.

"The clinical significance of this work is that it may encourage studies to evaluate whether simple increases in [water intake](#) may effectively mitigate [obesity](#) and [metabolic syndrome](#)," said the study's lead author Miguel A. Lanaspá, Ph.D., an associate professor at the University of Colorado School of Medicine specializing in renal disease and hypertension.

The study was published today in the journal *JCI Insight*.

Lanaspá and his colleague, Richard Johnson, MD, also a professor at the CU School of Medicine, wanted to understand why vasopressin, which maintains the body's water levels, was elevated in those with obesity and [diabetes](#).

They fed mice sugar water, specifically fructose, and found that it stimulated the brain to make vasopressin. The vasopressin in turn stored the water as fat causing dehydration which triggered obesity. Treating the mice with non-sugary water reduced the obesity.

According to Lanaspá, this is the first time scientists have shown how vasopressin acts on [dietary sugar](#) to cause obesity and diabetes.

"We found that it does this by working through a particular vasopressin receptor known as V1b," he said. "This receptor has been known for a while but no one has really understood its function. We found that mice lacking V1b were completely protected from the effects of sugar. We also show that the administration of water can suppress vasopressin and both prevent and treat obesity."

The researchers also discovered that dehydration can stimulate the formation of fat.

"This explains why vasopressin is so high in desert mammals as they do not have easy access to water," Johnson said. "So vasopressin conserves water by storing it as fat."

This data fits with observations showing that obese people often have signs of dehydration. It also explains why high salt diets may also cause obesity and diabetes.

The researchers found that water therapy effectively protected against metabolic syndrome—a collection of conditions including [high blood pressure](#), high blood sugar and high triglyceride levels that increase the risk of heart disease, stroke and type 2 diabetes.

"The best way to block vasopressin is to drink water," Lanaspá said. "This is hopeful because it means we may have a cheap, easy way of improving our lives and treating metabolic

syndrome."

Johnson summed up the findings this way.

"Sugar drives metabolic syndrome in part by the activation of [vasopressin](#). Vasopressin drives fat production likely as a mechanism for storing metabolic [water](#)," he said. "The potential roles of hydration and salt reduction in the treatment of obesity and metabolic syndrome should be considered."

More information: Ana Andres-Hernando et al. Vasopressin mediates fructose-induced metabolic syndrome by activating the V1b receptor. *JCI Insight*. 2020. doi.org/10.1172/jci.insight.140848.

Provided by CU Anschutz Medical Campus

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