

Scientists find genetic link between sugary drinks and gout

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(Medical Xpress)—University of Otago and Auckland scientists have for the first time discovered a human gene variant that can "turn bad" when affected by sugary drinks, raising the risk of developing the common and debilitating arthritic disease gout.

Associate Professor Tony Merriman from the Department of Biochemistry at the University of Otago says: "This study shows that [sugary drinks](#) reverse the benefits of a gene variant which would usually protect against gout. The evidence is now even stronger against sugary drinks."

Gout is caused by high levels of uric acid in the blood. The acid crystallises in the joints and the painful inflammatory response is gout. It

is the most common form of arthritis in New Zealand, with particularly high rates in men; 3.7% in European men, 11.7% in Māori men and 13.5% in Pacific men. The disease has strong links with other 'metabolic' diseases such as diabetes, heart and [kidney disease](#).

The study, which appeared today online in the international journal *Annals of the Rheumatic Diseases*, shows that when the variant of the gene SLC2A9 behaves correctly, it helps transport uric acid out of the blood stream and facilitates its excretion through the kidney.

"But when people with this gene variant consume sugary drinks, it takes on Jekyll and Hyde characteristics; the apparent function of the [gene variant](#) reverses, such that we think uric acid is instead transported back into the blood-stream and the risk of gout is increased.

"So, not only does sugar raise uric acid in the blood due to processing in the liver, but it also appears to directly interfere with excretion of uric acid from the kidney. This was a quite unpredictable interaction," he says.

US researchers studying gout have so far proven that high-fructose corn syrup sweetened [soft drinks](#) increase the risk of gout for people of European ancestry. The second major finding of the new Otago study was that consuming sugar-sweetened soft drinks also increases the risk of gout in New Zealanders, including for Māori and Pacific people, independent of their weight.

"Each daily 300ml serving of sugar-sweetened drink increases the chance of gout by 13%," Associate Professor Merriman says.

The Otago researchers examined blood samples to specifically focus on the SLC2A9 gene in 1634 people of European, Maori and Pacific ancestry recruited between 2007 and 2012. Study participants were

recruited mainly from Auckland and Christchurch, through hospitals, community focal points, such as marae, and workplaces. A similar study was also done in Tairāwhiti (East Coast) in partnership with Ngāti Porou Hauora.

Participants also answered a question about their sugar-sweetened soft drink and fruit juice consumption, and medical information was collected to verify whether or not they had gout. Within the sample, 5% of European, 14.4% of Māori and 16.6% of Pacific Island people were drinking more than 1 litre of sugar-sweetened soft and/or fruit juice drink per day.

In the study done in Tairāwhiti, the message about the importance of avoiding sugary soft drinks and [fruit juice](#) was actively promoted from an early stage. This resulted in those participants with gout drinking almost one serving less of these drinks per day compared to others in New Zealand.

Dr Merriman says gout attacks can be prevented by the prescribed daily use of the medicine allopurinol, which lowers the production of [uric acid](#) in the blood. As a result of the new research, he further recommends that in addition to taking this medicine people with [gout](#) should not drink any sugary drinks.

Provided by University of Otago

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