

A simple mouth rinse could spot early heart disease risk

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What if we could identify the earliest warning signs of cardiovascular disease from a simple saliva sample? Scientists think they have found a way to do so. Gum inflammation leads to periodontitis, which is linked

with cardiovascular disease.

The team used a simple oral rinse to see if levels of [white blood cells](#)—an indicator of [gum inflammation](#)—in the saliva of healthy adults could be linked to warning signs for cardiovascular disease. they found that high levels correlated with compromised flow-mediated dilation, an early indicator of poor arterial health.

"Even in young healthy adults, low levels of oral inflammatory load may have an impact on cardiovascular health—one of the leading causes of death in North America," said Dr. Trevor King of Mount Royal University, corresponding author of the study published in *Frontiers in Oral Health*.

Tooth care for heart health

Periodontitis is a common infection of the gums which has previously been linked to the development of cardiovascular disease: scientists suspect that inflammatory factors may enter the bloodstream through the gums and damage the [vascular system](#). King and his colleagues set out to study currently healthy young people without diagnosed periodontal issues to determine whether lower levels of oral inflammation can be clinically relevant to cardiovascular health.

"We are starting to see more relationships between oral health and risk of cardiovascular disease," said Ker-Yung Hong, first author of the study, now studying dentistry at the University of Western Ontario. "If we are seeing that oral health may have an impact on the risk of developing cardiovascular disease even in young healthy individuals, this holistic approach can be implemented earlier on."

The team chose pulse-wave velocity, which can measure the stiffness of arteries, and flow-mediated dilation, a measure of how well arteries can

dilate to allow for higher blood flow, as key indicators of cardiovascular risk. These measure arterial health directly: stiff and poorly functioning arteries raise patients' risk of cardiovascular disease.

The scientists recruited 28 non-smokers between 18 and 30, with no comorbidities or medications that could affect cardiovascular risk and no reported history of periodontal disease. They were asked to fast for six hours, except for drinking water, prior to visiting the lab.

At the lab, participants rinsed their mouths with water before rinsing their mouths with saline which was collected for analysis. Participants then laid down for 10 minutes for an electrocardiogram, and stayed lying down for another 10 minutes so that the scientists could take their [blood pressure](#), flow-mediated dilation, and pulse-wave velocity.

"The mouth rinse test could be used at your annual checkup at the family doctors or the dentist," said Dr. Michael Glogauer of the University of Toronto, a co-author of the study. "It is easy to implement as an oral inflammation measuring tool in any clinic."

The heart of the matter

The scientists found that high white blood cells in saliva had a [significant relationship](#) to poor flow-mediated dilation, suggesting these people may be at elevated risk of [cardiovascular disease](#). However, there was no relationship between white blood cells and pulse wave velocity, so longer-term impacts on the health of the arteries had not yet taken place.

The scientists hypothesized that inflammation from the mouth, leaking into the vascular system, impacts the ability of arteries to produce the [nitric oxide](#) that allows them to respond to changes in blood flow. Higher levels of white blood cells could have a greater impact on vascular dysfunction; the levels found in the participants are usually not

considered clinically significant.

"Optimal oral hygiene is always recommended in addition to regular visits to the dentist, especially in light of this evidence," said King. "But this study was a pilot study. We are hoping to increase the study population and explore those results. We are also hoping to include more individuals with gingivitis and more advanced periodontitis to more deeply understand the impact of different levels of gingival inflammation on cardiovascular measures."

More information: Oral inflammatory load predicts vascular function in a young adult population: A pilot study, *Frontiers in Oral Health* (2023). DOI: [10.3389/froh.2023.1233881](https://doi.org/10.3389/froh.2023.1233881)

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