

NEW STUDY RAISES IMPORTANT QUESTIONS ABOUT XYLITOL, THE ORAL MICROBIOME AND WHOLE-BODY HEALTH

Researchers Report Oral Microbiome Changes and Unexpected Verbal Improvements in Some Children with Autism Following Xylitol Use



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Xylitol has been studied for decades for its ability to support oral health and reduce cavity-associated bacteria. Now, a recent study raises an intriguing new question: Could improving the microbial environment of the mouth have effects that extend beyond oral health?

The study, published in *Neurosci*, compared the salivary microbiome, gene activity and mitochondrial function of children and young people with autism spectrum disorder (ASD) with neurotypical controls. Researchers also examined changes after participants with ASD used xylitol-containing oral-care products followed by an oral probiotic.

The most surprising observation went far beyond dental health. Six of the 30 participants with ASD were reported by parents and healthcare providers to have substantially improved verbal skills following the xylitol intervention. Three participants demonstrated improved verbal skills following probiotic supplementation.

The researchers found differences in microbial activity between participants with ASD and healthy controls and additional changes following the xylitol intervention.

Verbal improvement was not a predetermined clinical endpoint, standardized speech testing was not performed, and the study was not a placebo-controlled clinical trial of xylitol. The findings are an intriguing observation that deserves follow-up research.

WHY XYLITOL?

During the 60-day intervention, participants used Spry® xylitol toothpaste, xylitol suckers or mints, and xylitol mouth rinse, targeting approximately five grams of xylitol per day.

Xylitol is more than a sugar substitute. Unlike ordinary sugars, it is poorly fermented by many cavity-associated bacteria. Decades of research have examined its ability to reduce mutans streptococci, interfere with bacterial adhesion and biofilm formation, reduce plaque and help create an oral environment less favorable to tooth decay.

That makes xylitol particularly interesting in the emerging field of microbiome-focused hygiene. Traditional oral hygiene has often focused on simply strengthening enamel and making it more resistant to acids. But the mouth contains a complex ecosystem of hundreds of microbial species, many of which are beneficial or harmless. The future of hygiene may increasingly focus on managing and supporting a healthy microbial community rather than simply making our teeth more resistant. Xylitol fits naturally into this approach.

ORAL HEALTH IS WHOLE-BODY HEALTH

The mouth is not isolated from the rest of the body. A growing body of research has linked poor oral health and periodontal disease with cardiovascular disease, diabetes, respiratory disease and other systemic conditions. This reinforces the importance of good oral and nasal hygiene and maintaining a healthy oral environment.

Research has also investigated xylitol for benefits extending beyond dental caries, including its effects on biofilms, bacterial adhesion, ear and respiratory health, inflammation and other biological processes. The strength of evidence differs substantially among these areas, and further clinical research is being done.

The American Heart Association's 2025 scientific statement concludes that periodontal disease is associated with increased cardiovascular events, including heart attack and stroke. It specifically identifies *Porphyromonas gingivalis* as a periodontal pathogen that can enter the bloodstream and contribute to vascular inflammation and endothelial dysfunction. The AHA describes both bacterial dissemination and chronic systemic inflammation as mechanisms connecting gum disease with cardiovascular disease. Importantly, This adds to the growing evidence that oral health influences systemic health and should be investigated further.

This autism study adds another fascinating reason to investigate xylitol and the oral microbiome. The appropriate response is not to claim that xylitol treats autism. It is to ask why these changes occurred—and conduct the controlled clinical research needed to find out.

If changing the microbial environment of the mouth can influence biological processes elsewhere in the body, the implications could extend far beyond dentistry. Better health may begin with something remarkably simple: better hygiene and better management of the microbial ecosystems in our mouths.

ABOUT THE STUDY

The study included 30 participants with ASD and 60 neurotypical controls. The reported verbal improvements were observational and were not a predefined or objectively measured clinical endpoint. The findings do not establish that xylitol prevents, treats or improves autism spectrum disorder.

Study: Cannon M, Toma R, Ganeshan S, et al. Salivary Transcriptome and Mitochondrial Analysis of Autism Spectrum Disorder Children Compared to Healthy Controls. *Neurosci.* 2024;5(3):276–290. doi:10.3390/neurosci5030022.

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