

Higher levels of several toxic metals found in children with autism

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In a recently published study in the journal *Biological Trace Element Research*, Arizona State University researchers report that children with autism had higher levels of several toxic metals in their blood and urine compared to typical children. The study involved 55 children with autism ages 5 years compared to 44 controls of similar age and gender.

The autism group had significantly higher levels of lead in their [red blood cells](#) (+41 percent) and significantly higher urinary levels of lead (+74 percent), thallium (+77 percent), tin (+115 percent), and tungsten (+44 percent). Lead, thallium, tin, and tungsten are [toxic metals](#) that can impair [brain development](#) and function, and also interfere with the normal functioning of other body organs and systems.

A [statistical analysis](#) was conducted to determine if the levels of toxic metals were associated with autism severity, using three different scales of autism severity. It was found that 38-47 percent of the variation of autism severity was associated with the level of several toxic metals, with [cadmium](#) and mercury being the most strongly associated.

In the paper about the study, the authors state "We hypothesize that reducing early exposure to toxic metals may help ameliorate symptoms of autism, and treatment to remove toxic metals may reduce symptoms of autism; these [hypotheses](#) need further exploration, as there is a growing body of research to support it."

The study was led by James Adams, a President's Professor in the School

for Engineering of Matter, Transport and Energy, one of ASU's Ira A. Fulton Schools of Engineering. He directs the [ASU Autism/Asperger's Research Program](#).

Adams previously published a study on the use of DMSA, an FDA-approved medication for removing toxic metals. The open-label study found that DMSA was generally safe and effective at removing some toxic metals. It also found that DMSA therapy improved some symptoms of autism. The biggest improvement was for children with the highest levels of toxic metals in their urine.

Overall, children with autism have higher average levels of several toxic metals, and levels of several toxic metals are strongly associated with variations in the severity of autism for all three of the autism severity scales investigated.

Provided by Arizona State University

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