

Diet changes brain activity in children with ADHD

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Children whose ADHD symptoms were drastically reduced after following a few-foods diet showed increased activity in a specific part of the brain. The more significant the change in behavior, the more the activity in this part of the brain increases. In finding this, researchers of Wageningen University & Research have, for the first time, shown a relationship between a decrease in ADHD symptoms and increased activity in the brain after a diet.

These results were published in the journal *Scientific Reports*. "It is an important step in research on nutrition and ADHD," says Saartje Hontelez of Wageningen University & Research. "We have shown that the subjective observation of behavior is objectively confirmed through a brain scan."

Precuneus activity

A brain scan (fMRI) was performed on the children at the start and end of the study. After the first scan, the children followed the few-foods diet: they were permitted to eat only a limited number of safe

foods for five weeks. A second scan was then done. In over sixty percent of the 53 children who had good scans both before and after the diet, the parents observed a [significant decrease](#) in ADHD symptoms after the few-foods diet. These children also showed a clear increase in precuneus activity, an area that is part of the default mode brain network and perhaps the most connected hub in the cortex.

Previous studies have shown that children with ADHD have lower brain activity in this area of the brain and that treatment with Ritalin increases this activity. Hontelez says that their "findings match the current knowledge on this area of the brain. We see a similar increase in activity when ADHD symptoms disappear after following the few-foods diet to that seen following medication with Ritalin."

ADHD and nutrition

Approximately six percent of all children in the Netherlands suffers from ADHD, an attention deficit disorder with hyperactivity. The symptoms are significantly reduced when these children follow the few-foods diet. Previous studies have shown that at least sixty percent of children no longer meet the criteria for ADHD after following this diet.

The few-foods diet is difficult to follow and cannot be applied simply. Therefore, it is important to understand the biological relation between nutrition and ADHD better. Wageningen University & Research is now also studying the role of the microbiota (the bacteria in the intestines) to further unravel how the diet works.

More information: Saartje Hontelez et al, Correlation between brain function and ADHD symptom changes in children with ADHD following a few-foods diet: an open-label intervention trial, *Scientific Reports* (2021). [DOI: 10.1038/s41598-021-01684-7](https://doi.org/10.1038/s41598-021-01684-7)

Provided by Wageningen University

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