

Diet quality is associated with metabolites indicative of cardiovascular health in childhood

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A healthier diet is associated with serum metabolite concentrations indicative of better cardiovascular health already in school-aged

children, a recent study from the University of Eastern Finland shows. [Published](#) in the *European Journal of Nutrition*, the findings are from the ongoing Physical Activity and Nutrition in Children study (PANIC).

Previous studies in adults have linked especially higher concentrations of saturated [fatty acids](#) in the blood to a higher risk of cardiovascular disease. The risk is also affected by the size of lipoprotein particles. For example, large VLDL particles have been associated with the formation of small LDL particles, which are detrimental to cardiovascular health.

The new study showed that a better overall diet quality—especially higher intake of plant-based fats and fiber-rich grains—was associated with a higher serum concentration of polyunsaturated fatty acids than monounsaturated and saturated fatty acids. Children who ate more fish had higher serum omega-3 fatty acid concentrations. In addition, a better overall diet quality, especially higher intake of plant-based fats and lower intake of sugary products, was associated with a smaller size of serum VLDL particles.

"An interesting finding from our study is that besides serum fatty acids, a healthier diet was also reflected in lower serum alanine, glycine and histidine concentrations. Some studies in adults have linked higher serum alanine levels to an increased risk of coronary artery disease," says Doctoral Researcher Suvi Laamanen of the University of Eastern Finland.

Metabolomics research provides new insight into the associations of lifestyles and diseases

Previous studies on the associations between diet and metabolites in [children](#) are scarce. The present study shows that diet is associated with several serum metabolites already in childhood. In other words, diet

quality may play a role in the development of diseases starting from childhood. Metabolomic methods that measure metabolites can provide new insight into the early mechanisms between diet and lifestyle-related diseases.

The study involved 403 children aged 6 to 8 years who participated in the Physical Activity and Nutrition in Children study, PANIC. Launched in 2007, PANIC is an ongoing lifestyle intervention study that provides new information on the lifestyles, health and well-being of children and adolescents.

Study participants' food consumption was assessed by four-day food records, and concentrations of metabolites were measured from [blood samples](#) using NMR spectroscopy. Diet quality was assessed using the Finnish Children Healthy Eating Index, which considers the consumption of vegetables, berries and fruit, plant-based fats, skimmed milk, fish and sugary products. The 16-year follow-up measurements of the PANIC study will begin in January 2024, at which time the participants will be [young adults](#).

More information: Suvi E. Laamanen et al, Associations of diet quality and food consumption with serum biomarkers for lipid and amino acid metabolism in Finnish children: the PANIC study, *European Journal of Nutrition* (2023). [DOI: 10.1007/s00394-023-03293-8](https://doi.org/10.1007/s00394-023-03293-8)

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