Adherence to diet can be measured from blood

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(Medical Xpress)—New results from the Nordic SYSDIET study show that it's possible to assess dietary compliance from a blood sample. This is especially useful in controlled dietary intervention studies investigating the health benefits of specific diets. So far, such studies have mainly relied on the participants' self-reported dietary intake, which is often biased, making it more difficult to assess the real health benefits.

In the recently published study authored by Dr Matti Marklund and coworkers, the researchers were able to identify the study participants with the greatest apparent compliance to a healthy Nordic diet by testing for a set of diet-related biomarkers in the blood. The beneficial effects of the diet on cardiometabolic risk factors, such as elevated blood pressure and blood lipids, were also greatest in this group. In all, there were 154 participants in the study.

Dietary biomarkers are compounds related to a certain food or nutrient that are measurable in bodily tissues and fluids, such as blood. In the SYSDIET study , the intervention group was advised to follow a healthy Nordic diet rich in berries, vegetables, fatty fish, canola oil, and whole grains. Several blood biomarkers were assessed to reflect the consumption of different key components of the diet, such as serum alpha linoleic acid as a biomarker of canola oil consumption, EPA and DHA reflecting fatty fish consumption, plasma beta carotene as a biomarker for vegetable intake and plasma alkylresorcinols reflecting whole grain consumption. High-fat dairy intake, which should be low in the healthy Nordic diet, was reflected by serum pentadecanoic acid.

The researchers conclude that when investigating the health effects of whole diets, it's useful to measure multiple biomarkers reflecting the intake of different components of the diet. This way of assessing compliance also helps to better detect changes in risk factors.

In future studies, the combined use of biomarkers and participants' dietary self-reports can improve dietary intake estimation and help to better evaluate the impact of the diet. In addition, informing participants that compliance will be assessed by dietary biomarkers might further motivate them to adhere to study diets.

More information: Marklund M, Magnusdottir OK, Rosqvist F, Cloetens L, Landberg R, Kolehmainen M, Brader L, Hermansen K, Poutanen KS, Herzig KH, Hukkanen J, Savolainen MJ, Dragsted LO, Schwab U, Paananen J, Uusitupa M, Akesson B, Thorsdottir I, Risérus U. "A Dietary Biomarker Approach Captures Compliance and Cardiometabolic Effects of a Healthy Nordic Diet in Individuals with Metabolic Syndrome." *The Journal of Nutrition* 07/2014; DOI: 10.3945/jn.114.193771.