

# Plant-based diets are better for your health, as well as for the climate, says new study

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Vegetarian and vegan diets are linked to lower levels of cholesterol and fats in your blood, according to an analysis of all the evidence from randomized trials published since 1982.

The authors of the study, which is published in the *European Heart Journal* today, say this means that plant-based diets can play a significant role in reducing blocked arteries, thereby lowering the risk of heart and blood vessel diseases, such as stroke and heart attacks.

The researchers looked at 30 randomized trials with a total of 2,372 participants, published between 1982 and 2022, that quantified the effect of vegetarian or vegan diets versus omnivorous diets on levels of all types of cholesterol (total cholesterol), low-density lipoprotein cholesterol (LDL cholesterol, often known as 'bad' cholesterol), triglycerides (a type of fat or 'lipid' found in the blood) and apolipoprotein B (apoB—a protein that helps to carry fat and cholesterol in blood and is a good indicator of the total amount of bad fats and cholesterol in the body).

Although previous meta-analyses have investigated this, none have been published since 2017, none have addressed the impact of continent, age, body mass index, and [health status](#), and none have looked specifically at the effect of diet on concentrations of apoB.

Professor Ruth Frikke-Schmidt, Chief Physician at the Rigshospitalet in Copenhagen, Denmark, who conducted the study together with medical student Ms Caroline Amalie Koch and Dr. Emilie Westerlin Kjeldsen, also from the Rigshospitalet, said, "We found that vegetarian and vegan diets were associated with a 14% reduction in all artery-clogging lipoproteins as indicated by apolipoprotein B.

"This corresponds to a third of the effect of taking cholesterol-lowering medications such as statins, and would result in a 7% reduction in the risk of cardiovascular disease in someone who maintained a plant-based diet for five years. Statin treatment is superior to plant-based diets in reducing fats and [cholesterol levels](#). However, one regimen does not exclude the other, and combining statins with plant-based diets is likely

to have a synergistic effect, resulting in an even larger beneficial effect.

"If people start eating vegetarian or vegan diets from an early age, the potential for reducing the risk of cardiovascular disease caused by blocked arteries is substantial. Importantly, we found similar results across continents, ages, different ranges of body mass index, and among people in different states of health."

The participants in the 30 studies were randomized to follow either a vegetarian or vegan diet or to continue with an omnivorous diet (which includes meat and dairy products). The length of time on the diets ranged from ten days to five years, with an average of 29 weeks.

Compared to people eating an omnivorous diet, those who were following a [plant-based diet](#) experienced an average reduction in total cholesterol levels of 7% from levels measured at the start of the studies, a 10% reduction in LDL cholesterol levels and a 14% reduction in apoB levels.

"We saw significant effects from both vegetarian and vegan diets and people ranging from a normal weight to obese," said Prof. Frikke-Schmidt.

Over 18 million people die from cardiovascular disease (CVD) each year around the world, making it the leading cause of death. The United Nations' Sustainable Development Agenda states that premature deaths from non-communicable diseases, such as CVD, should be reduced by a third by 2030. In addition, there is an increased focus on the effect of what we eat on the environment.

"Recent systematic reviews have shown that if the populations of high-income countries shift to plant-based diets, this can reduce net emissions of greenhouse gases by between 35% to 49%. Our study provides robust

evidence that plant-based diets are good for our health for people of different sizes, ages and health conditions," said Prof. Frikke-Schmidt.

"Furthermore, populations globally are aging and, as a consequence, the cost of treating age-related diseases such as atherosclerotic cardiovascular disease is increasing. Plant-based diets are key instruments for changing food production to more environmentally sustainable forms, while at the same time reducing the burden of cardiovascular disease. We should be eating a varied, plant-rich diet, not too much, and quenching our thirst with water."

The meta-analysis by Prof. Frikke-Schmidt and her colleagues could not assess potential benefits of diets that directly compare fish versus omnivorous diets due to lack of such studies in the scientific literature. "However, the Mediterranean diet is rich in plant-based foods and fish and is well-established as being beneficial in dietary guidelines," she said.

Professor Kevin Maki, of Indiana University School of Public Health Bloomington, and Midwest Biomedical Research, U.S., and Professor Carol Kirkpatrick, of Midwest Biomedical Research and Idaho State University, U.S., who were not involved in the research, comment in an accompanying editorial: "The results reported by Koch et al add to the body of evidence supporting favorable effects of healthy vegan and vegetarian dietary patterns on circulating levels of LDL-C [LDL cholesterol] and atherogenic lipoproteins, which would be expected to reduce ASCVD [atherosclerotic CVD] risk. While it is not necessary to entirely omit foods such as meat, poultry, and fish/seafood to follow a recommended dietary pattern, reducing consumption of such foods is a reasonable option for those who prefer to do so."

A strength of the study is that, to the authors' knowledge, it is the largest systematic review of the topic, and the first to include apoB. However,



limitations include the fact that the individual randomized controlled trials were relatively small, the length of time participants were on diets was under a year in many studies, and it was impossible to blind the participants to which [diet](#) they were placed on, and this could have influenced their other behaviors that might affect [cholesterol](#) and fat levels.

The researchers and the authors of the editorial say that more, larger studies with longer duration, and which include apoB and other biomarkers for conditions such as inflammation and insulin resistance are needed.

**More information:** Ruth Frikke-Schmidt, Vegetarian or vegan diets and blood lipids: a meta-analysis of randomized trials, *European Heart Journal* (2023). [DOI: 10.1093/eurheartj/ehad211](https://doi.org/10.1093/eurheartj/ehad211)

Plant-based dietary patterns and atherogenic lipoproteins. *European Heart Journal* (2023). [DOI: 10.1093/eurheartj/ehad239](https://doi.org/10.1093/eurheartj/ehad239)

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