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Eating healthy fats in place of carbs or saturated fats improves risk factors for diabetes

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Eating more unsaturated fats, especially polyunsaturated fats, in place of either dietary carbohydrate or saturated fats lowers blood sugar levels and improves insulin resistance and secretion, according to a new meta-analysis of data from 102 randomised controlled feeding trials in adults.

The study, led by Dariush Mozaffarian M.D., Dr.P.H., dean of the Friedman School of Nutrition Science and Policy at Tufts University, and Fumiaki Imamura, Ph.D., at the Medical Research Council (MRC) Epidemiology Unit, University of Cambridge, provides novel quantitative evidence for the effects of dietary fats and carbohydrate on the regulation of glucose and insulin levels and several other metrics linked to type 2 diabetes.

The results were published in *PLOS Medicine* on July 19.

Rates of insulin resistance and type 2 diabetes are rising sharply worldwide, highlighting the need for new, evidence-based preventive strategies. While a healthy diet is clearly a cornerstone of such efforts, the effects of different dietary fats and carbohydrate on metabolic health have been controversial, leading to confusion about specific dietary guidelines and priorities.

"The world faces an epidemic of insulin resistance and diabetes," said Mozaffarian, who is senior author on the study. "Our findings support

preventing and treating these diseases by eating more fat-rich foods like walnuts, sunflower seeds, soybeans, flaxseed, fish, and other vegetable oils and spreads, in place of refined grains, starches, sugars, and animal fats."

"This is a positive message for the public," he added. "Don't fear healthy fats."

In their study, Imamura, Mozaffarian and colleagues performed the first systematic evaluation of all available evidence from trials to quantify the effects of different types of dietary fat (saturated, monounsaturated and polyunsaturated) and carbohydrate on key biological markers of glucose and insulin control that are linked to development of type 2 diabetes.

The team identified and summarized findings from 102 randomised controlled trials, involving a total of 4,660 adult participants, which provided meals that varied in the types and amounts of fat and carbohydrate. The team then evaluated how such variations in diet affected measures of metabolic health, including blood sugar, blood insulin, insulin resistance and sensitivity, and ability to produce insulin in response to blood sugar.

The researchers found that exchanging dietary carbohydrate or saturated fat with a diet rich in monounsaturated fat or polyunsaturated fat had a beneficial effect on key markers of blood glucose control. For example, for each five percent of dietary energy switched from carbohydrates or saturated fats to mono- or polyunsaturated fats, there is an approximately 0.1 percent reduction in HbA1c, a blood marker of long-term glucose control. The authors note that based on prior research, each 0.1 percent reduction in HbA1c is estimated to reduce the incidence of type 2 diabetes by 22 percent and cardiovascular diseases by 6.8 percent.

"Among different fats, the most consistent benefits were seen for

increasing polyunsaturated fats, in place of either carbohydrates or saturated fat," said Imamura, who is first author on the study.

Given the current global pandemic of type 2 diabetes, the authors hope that these findings will help inform scientists, clinicians, and the public on dietary priorities related to dietary fats and carbohydrates and metabolic health.

"Until now, our understanding of how dietary fats and carbohydrate influence glucose, insulin, and related risk factors has been based on individual studies with inconsistent findings," Imamura said. "By combining results from more than 100 trials, we provide the strongest evidence to-date on how major nutrients alter these risks."

More information: Imamura F, Micha R, Wu JHY, Otto MC de O, Fadar O. Otite, Abioye AI, et al. Effects of Saturated Fat, Polyunsaturated Fat, Monounsaturated Fat, and Carbohydrate on Glucose- Insulin Homeostasis: A Systematic Review and Metaanalysis of Randomised Controlled Feeding Trials. *PLoS Med*. 2016;13(7):e1002087. DOI: 10.1371/journal.pmed.1002087

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