

Study adds to evidence that increasing dietary fiber reduces the risk of developing diabetes

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New research published today in *Diabetologia* (the journal of the European Association for the Study of Diabetes) indicates that consuming greater quantities of dietary fibre reduces the risk of developing type 2 diabetes.

Over 360 million people worldwide are estimated to be affected by [diabetes](#), and this number is projected to increase to more than 550 million by 2030, with serious consequences for the health and economy of both developed and developing countries. While previous research has found an association between increased dietary fibre intake and a reduced risk of developing [type 2 diabetes](#), most of these data come from the United States, and amounts and sources of fibre intake differ substantially between countries. In this article the authors evaluated the associations between total fibre as well as fibre from cereal, fruit, and vegetable sources, and new-onset type 2 diabetes in a large European cohort across eight countries, in the EPIC-InterAct Study. They also conducted a meta-analysis where they combined the data from this study with those from 18 other independent studies from across the globe.

Dagfinn Aune, a PhD student affiliated with the Norwegian University of Science and Technology and Imperial College London, analysed data from EPIC-InterAct together with colleagues. The EPIC-InterAct study is the world's largest study of new-onset type 2 diabetes, and is coordinated by the MRC Epidemiology Unit at Cambridge University. EPIC-InterAct includes 12,403 verified incident cases of type 2 diabetes, and, for comparison, a sub-cohort of 16,835 individuals deemed representative of the total cohort of the European Prospective Investigation into Cancer and Nutrition (EPIC) study including some 350,000 participants.

The authors divided the study participants into four

equally sized groups from lowest to highest fibre intake, and assessed their risk of developing type 2 diabetes over an average of 11 years' follow-up.

They found that participants with the highest total fibre intake (more than 26 g/day) had an 18% lower risk of developing diabetes compared to those with the lowest total fibre intake (less than 19g/day), after adjusting for the effect of other lifestyle and dietary factors. When the results were adjusted for body mass index (BMI) as a marker of obesity, higher total fibre intake was found to be no longer associated with a lower risk of developing diabetes, suggesting that the beneficial association with fibre intake may be mediated at least in part by BMI. In other words, dietary fibre may help people maintain a healthy weight, which in turn reduces the chances of developing type 2 diabetes.

When the authors evaluated the different fibre sources, they found that cereal fibre had the strongest inverse association: those with the highest levels of cereal and vegetable fibre consumption had a 19% and 16% lower risk of developing diabetes respectively, compared with those with the lowest consumption of these types of fibre. Again, these associations disappeared when the results were adjusted for BMI. By contrast, fruit fibre was not associated with a reduction in diabetes risk. Cereals accounted for 38% of the total fibre intake, and were the main source of fibre in all the countries involved in the study (with the exception of France where vegetables were the main source).

The authors also undertook a meta-analysis, where they pooled the data from this EPIC-InterAct study with those from 18 other independent studies (eight in the United States, four in Europe, three in Australia, and three in Asia). The meta-analysis included over 41,000 new-onset cases of type 2

diabetes and found that the risk of diabetes fell by 9% for each 10g/day increase in total fibre intake, and by 25% for each 10g/day increase in cereal fibre intake. They did not find a statistically significant relationship between increasing either fruit or vegetable fibre and reducing diabetes risk.

Dagfinn Aune said: "Taken together, our results indicate that individuals with diets rich in fibre, in particular cereal fibre, may be at lower risk of type 2 diabetes. We are not certain why this might be, but potential mechanisms could include feeling physically full for longer, prolonged release of hormonal signals, slowed down nutrient absorption, or altered fermentation in the large intestine. All these mechanisms could lead to a lower BMI and reduced risk of developing type 2 diabetes. As well as helping keep weight down, dietary fibre may also affect diabetes [risk](#) by other mechanisms—for instance improving control of blood sugar and decreasing insulin peaks after meals, and increasing the body's sensitivity to insulin."

Professor Nick Wareham, senior author on the paper and Director of the MRC Epidemiology Unit, University of Cambridge, added: "This work adds to the growing evidence of the health benefits of diets rich in fibre, in particular cereal fibre. Public health measures globally to increase fibre consumption are therefore likely to play an important part in halting the epidemics of obesity and of type 2 diabetes."

Provided by Diabetologia

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