



## Whole Grains Protect Against Diabetes

**Whole grains may help prevent type 2 diabetes, with consistent results across studies, researchers said.**

The risk of developing type 2 diabetes dropped 21% with every two additional servings of whole grain per day, reported Rob M. van Dam, Ph.D., of Harvard, and colleagues, in the August issue of the journal *PLoS Medicine*.

Their analysis of two Nurses' Health Study cohorts and four other cohort studies showed a significant benefit to whole grain, particularly its bran component, in five of the studies.

"The consumption of whole grains in many populations is very low, an average of one serving per day for U.S. adults and even less in British adults, suggesting that increased consumption has the potential to contribute substantially to reducing risk of type 2 diabetes in these populations," Dr. van Dam and colleagues wrote.

Most previous studies defined food as whole grain if it consisted of at least 25% whole grain or bran by weight.

But, a new food composition database allowed the researchers to directly calculate grams of whole grains in participants' daily diet and to analyze intake of bran and germ constituents separately.

They analyzed both cohorts of the Nurses' Health Study. The first included food frequency questionnaires completed every two years from 1984 by 73,327 female registered nurses. The second included the same for a group of 88,410 female nurses starting in 1991.

The women self-reported 4,747 cases of incident type 2 diabetes in the first cohort and 1,739 cases in the second.

The researchers found that women with the highest daily whole grain intake (median 31.2 g) in the first cohort had 37% lower relative risk of incident diabetes than women with the lowest intake (median 3.7 g) even after adjustment for potential confounders (RR 0.63, 95% confidence interval 0.57 to 0.69,  $P < 0.001$  for trend).

In the second cohort, women with the highest, median 39.9 g daily whole grain intake had 32% lower odds of developing diabetes (RR 0.68, 95% CI 0.57 to 0.81,  $P < 0.001$  for trend) than women in the lowest, median 6.2 g daily intake quartile.

After further adjustment for body mass index, higher whole grain consumption remained significantly linked to lower diabetes risk though the association was somewhat attenuated.

In the first cohort, the BMI-adjusted risk was 25% lower for women in the highest intake quartile compared with those in the lowest intake quartile (RR 0.75, 95% CI 0.68 to 0.83,  $P < 0.001$  for trend).

In the second cohort, it was 14% lower (RR 0.86, 95% CI 0.72 to 1.02,  $P=0.03$  for trend).

Adjusting for magnesium intake did not appear to explain the association either.

But, bran appeared to be the most important constituent of whole grain for reducing diabetes risk with associations similar to those for total whole grain. Germ was not associated with lower diabetes incidence in the second cohort ( $P=0.95$  for trend) or in the first cohort after adjustment for bran (RR 1.01, 95% CI 0.90 to 1.14,  $P=0.91$  for trend).

The researchers also did a literature search through January 2007 for published cohort studies on the association of whole grain intake with type 2 diabetes incidence.

They found four studies for data extraction: the Iowa Women's Health Study, the Health Professionals Follow-up Study, a Finnish population study, and the Black Women's Health Study.

All but one showed a significant benefit for whole grain. The Black Women's Health Study showed a similar trend (RR 0.65, 95% CI 0.36 to 1.18), though nonsignificant, possibly because of a higher median intake even in the lowest intake group than in other studies, Dr. van Dam and colleagues noted.

Pooled analysis of all six studies showed a 21% lower diabetes risk for each two-serving increase in daily whole grain consumption (RR 0.79, 95% CI 0.72 to 0.87).

"These data provide further support for recommendations to increase consumption of whole grains," they concluded.

In an accompanying editor's summary it was noted that a study showing an association can never prove causation, compared with a comparative trial. "Nevertheless, the research does strongly suggest that a healthy diet that reduces the risk of developing type 2 diabetes should include the consumption of several servings of whole grains daily."

de Munter JSL, et al ["Whole Grain, Bran, and Germ Intake and Risk of Type 2 Diabetes: A Prospective Cohort Study and Systematic Review"](#)

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