

## Mediterranean Diet May Protect Against Breast Cancer Too

Nick Mulcahy | September 15, 2015

A Mediterranean diet (MeDiet) appears to protect against more than just cardiovascular disease — it might also prevent breast cancer, according to results from the randomized controlled Prevención con Dieta Mediterránea (PREDIMED) trial.

The diet is characterized by an abundance of plant foods, fish, and olive oil, and has been repeatedly shown to be cardioprotective in major clinical trials.

The PREDIMED study — conducted from 2003 to 2009 — is one of those trials. It was stopped early because of the cardiovascular benefit seen with a MeDiet, compared with a low-fat diet.

The researchers now report on breast cancer incidence — a secondary outcome. And the news is promising.

"The results of the PREDIMED trial suggest a beneficial effect of a MeDiet supplemented with extra-virgin olive oil in the primary prevention of breast cancer," write the study authors, led by Miguel Á. Martínez-González, MD, from the Instituto de Salud Carlos III in Madrid.

Importantly, this is the first randomized trial to see the effect of a long-term dietary intervention on breast cancer incidence.

Of the 4282 postmenopausal women involved in the three-group trial, there were 35 confirmed incident cases of breast cancer. Median follow-up was 4.8 years.

The observed rates for breast cancer (per 1000 person-years) were 1.1 for those assigned to the MeDiet supplemented with extra-virgin olive oil, 1.8 for those assigned to the MeDiet supplemented with nuts, and 2.9 for those assigned a low-fat diet.

The risk for malignant breast cancer was 62% lower in women randomized to the MeDiet supplemented with extra-virgin olive oil than in those randomized to the low-fat diet (hazard ratio, 0.38;  $P = .02$ ).

The MeDiet supplemented with nuts was also associated with a lower risk, but it was not statistically significant.

"The number of observed cases of breast cancer is small, but the results are statistically significant," summarized Dr Martínez-González in an interview with *Medscape Medical News*.

This is the first nutritional intervention study to evaluate the effect of the MeDiet on breast cancer, say the researchers.

The study findings were published online September 14 in *JAMA Internal Medicine*.

Mitchell Katz, MD, one of the journal's editors, reports that the study design caught their eye. "We were immediately impressed that it was a randomized clinical trial of diet," he writes in accompanying editorial.

The study has a "high-quality structure," according to Dr Katz, who is director of the Los Angeles County Department of Health Services.

Dr Katz and PREDIMED team acknowledge that the study has multiple limitations. For example, the women were not all screened for breast cancer with mammography, and they were all white and postmenopausal. Furthermore, to be enrolled in the trial, the women had to be at high risk for cardiovascular disease.

The researchers caution that longer-term, larger trials with more cases of breast cancer are needed. However, this will be a tall order, given the associated time and expense, Dr Martínez-González explained.

In the meantime, he is advising his female patients that a MeDiet might be protective against invasive breast cancer.

### More Study Details

Dietitians ran individual and group lessons on the MeDiet for study participants.

The women in the two MeDiet groups were given supplementary foods for free — either extra-virgin olive oil (1 L/week for the participant and her family) or mixed nuts (walnuts 15 g, hazelnuts 7.5 g, and almonds 7.5 g) — depending on their assigned diet.

Initially, funding for the supplements came from the Instituto de Salud Carlos III, which is the equivalent of the National Institutes of Health. "At first, we went to the supermarket for supplies," said Dr Martínez-González.

### At first, we went to the supermarket for supplies.

But over time, the organizers received bulk shipments of products donated by olive oil producers in Spain and nut producers in California and Spain.

The supplements were supplied to participants to ensure a high consumption of the key components of a traditional MeDiet and to promote a better overall adherence to the intervention.

Participants completed questionnaires annually to provide information on adherence to diet, food intake, and lifestyle in general.

Other prospective cohort studies have evaluated the association between adherence to a MeDiet and breast cancer risk, but none have been randomized controlled trials, the researchers report.

Furthermore, a meta-analysis of case-control studies concluded that the consumption of olive oil, including extra virgin and other common types, was inversely associated with breast cancer incidence (*Lipids Health Dis.* 2011;10:127).

However, at least one major study — the European Prospective Investigation Into Cancer and Nutrition (EPIC) study — did not find any such association (*Int J Cancer.* 2012;131:2465-2469).

The PREDIMED researchers explain that all types of olive oil provide a high supply of monounsaturated fatty acids, mainly oleic acid, as well as squalene. Extra virgin, which is a thinner, more viscous oil, also contains various biologically active compounds, such as the polyphenols oleocanthal, oleuropein, hydroxytyrosol, and lignans.

"In vitro studies have suggested that oleic acid has an antiproliferative effect by affecting the expression of human oncogenes," they write.

The potential beneficial effect of the MeDiet is likely explained by several mechanisms, including a reduction in DNA oxidative damage, the team says.

*The PREDIMED trial was supported by Instituto de Salud Carlos III, the US National Institutes of Health, and other agencies. The supplemental foods were donated by Patrimonio Comunal Olivarero and Hojiblanca (olive oil), the California Walnut Commission (walnuts), Borges SA (almonds), and La Morella Nuts (hazelnuts). Some of study authors report financial relationships with the food industry, including the International Nut and Dried Fruit*