

JUST THE FLAX

A "MIRACLE" SEED COMES DOWN TO EARTH

BY DAVID SCHARDT

"Studies have shown that a person who consumes flax seeds on a regular basis may significantly lower his or her risk of developing heart disease, cancer, diabetes, dementia, depression, high cholesterol, anxiety, and stroke," says www.flaxusa.com ("FREE MEASURING SCOOP WITH EVERY ORDER").

That *would* make flaxseed the "nutritionally perfect food," as flaxusa.com puts it. Unfortunately, no such studies exist. Flaxusa.com is exaggerating the research on fish oil and attributing it to flax.

Still, flaxseed contains high levels of two ingredients, alpha-linolenic acid (ALA) and lignans, "that really distinguish it from all other foods," says nutritionist Wendy Demark-Wahnefried, an associate professor at Duke University's Comprehensive Cancer Center in Durham, North Carolina.

Researchers are studying the ingredients in flax for their impact—good or bad—on heart disease and cancer. Here's what we know so far.

Alpha-Linolenic Acid

"Flaxseed is the richest plant source of alpha-linolenic acid," says Duke University's Wendy Demark-Wahnefried.

The Institute of Medicine, which establishes nutrient requirements, says that people should get 1.1 to 1.6 grams a day of alpha-linolenic acid (ALA). That's about what the typical American adult currently consumes.

While flaxseed oil has far more alpha-linolenic acid, ounce for ounce, than any other food, we probably get most of our ALA from soybean oil, simply because we eat so much more of it than flaxseed oil. Think salad dressing, mayonnaise, frying oil, etc.

ALA is an omega-3 fat that our bodies can convert into small amounts of the better-known omega-3 fats DHA and EPA. They're the ones that are plentiful in fish and fish oil and that may reduce the risk of suffering sudden cardiac death.

Could ALA do the same? "It might, but there's no hard evidence," says Michael Leitzmann, a researcher at the National Cancer Institute in Bethesda, Maryland.

There are some intriguing hints, though. The Nurses' Health Study followed 76,000 women for 10 years. Those who consumed the most ALA (an average of 1.4 grams a day) had about half the risk of dying from a fatal heart attack as those who consumed the least ALA (an average of 0.7 grams a day).¹

ALA's impact on men was less impressive. Among the 45,000 men in the 14-year Health Professionals Follow-up Study, those who consumed more than 1.1 grams of ALA a day had an 11 percent lower risk of coronary heart disease than those who consumed less.²

But those studies weren't designed to tease out cause and effect. So it could be something about the lifestyles of people who get more alpha-linolenic acid from their diets—not the ALA itself—that's protecting their hearts.

Only two studies have looked at what happens when people with moderately high cholesterol or other risk factors for heart disease start consuming large amounts of ALA. Neither found much to get excited about.

■ Every day for two years, Dutch men and women were given either a specially formulated ALA-rich margarine or a margarine without added ALA. After two years, the blood of those eating the ALA-rich margarine showed some encouraging changes (lower levels of a blood-clotting factor) and some discouraging changes (lower HDL and higher triglycerides), but nothing dramatic.³

■ The blood of men and women who were given 9.5 grams a day of ALA—most of it from flaxseed oil—for six months was no less likely to clot than the blood of similar people who weren't given ALA.⁴ Blood clots can lead to heart attacks.

That's the *good* news.

In the Health Professionals Follow-up Study, which analyzed the diets of more than 45,000 men, those who consumed the most ALA were twice as likely to be diagnosed with advanced prostate cancer over a 14-year period as those who consumed the least ALA.⁵

"Several other epidemiological studies have found a similar link to all stages of prostate cancer," notes study coauthor Michael Leitzmann, who adds that "it's important to remember that we didn't study flax itself."

"We couldn't find any particular food that was responsible, so we concluded that it was the total ALA intake from all food sources and not any one food that was linked to advanced prostate cancer."

How might ALA promote cancer? "It's just a complete puzzle," says omega-3 expert William Harris of the University of Missouri-Kansas City. "It just doesn't make any sense. But a lot of things don't make any sense when you don't understand them."

Does the increased risk of prostate cancer, not yet proven, trump the decreased risk of heart disease, also not yet proven?

"I know that people want to know the answer," says Leitzmann, "but there's no real hard data on which to make a firm recommendation."

Harris, who is codirector of the Lipid and Diabetes Research Center at the Mid America Heart





Lignans

Institute of St. Luke's Hospital in Kansas City, shares Leitzmann's uncertainty.

"It's a messy deal," he notes. "The evidence comes from following large groups of people, asking them what they're eating, teasing out from what they say they eat how much ALA they're actually eating, and then making assumptions about their continuing to eat that much."

While that's far from solid proof, it's too troubling to dismiss either.

Harris's bottom line: "Men shouldn't go out of their way to get more ALA to reduce their risk of heart disease because, number one, we don't really know if it will, and, number two, they're taking an equivalent increased risk of prostate cancer."

As for women, "I'm a little more comfortable saying that they should increase their ALA intake if it's low."

"Flaxseed has 800 times more lignans than any other food," says Duke University's Wendy Demark-Wahnefried.

Lignans are phytoestrogens that appear to help plants grow and protect themselves against predators. They may also function as mild estrogens in people after the lignans have been altered by the bacteria in the large intestine.

Like the other major source of plant estrogens, soy isoflavones, researchers have tested whether flax and its lignans can prevent or slow the progression of cancer.

"We've fed rats and mice flaxseed before and after they've been exposed to cancer-causing chemicals and after they've been implanted with already-developed breast tumors," reports Lilian Thompson

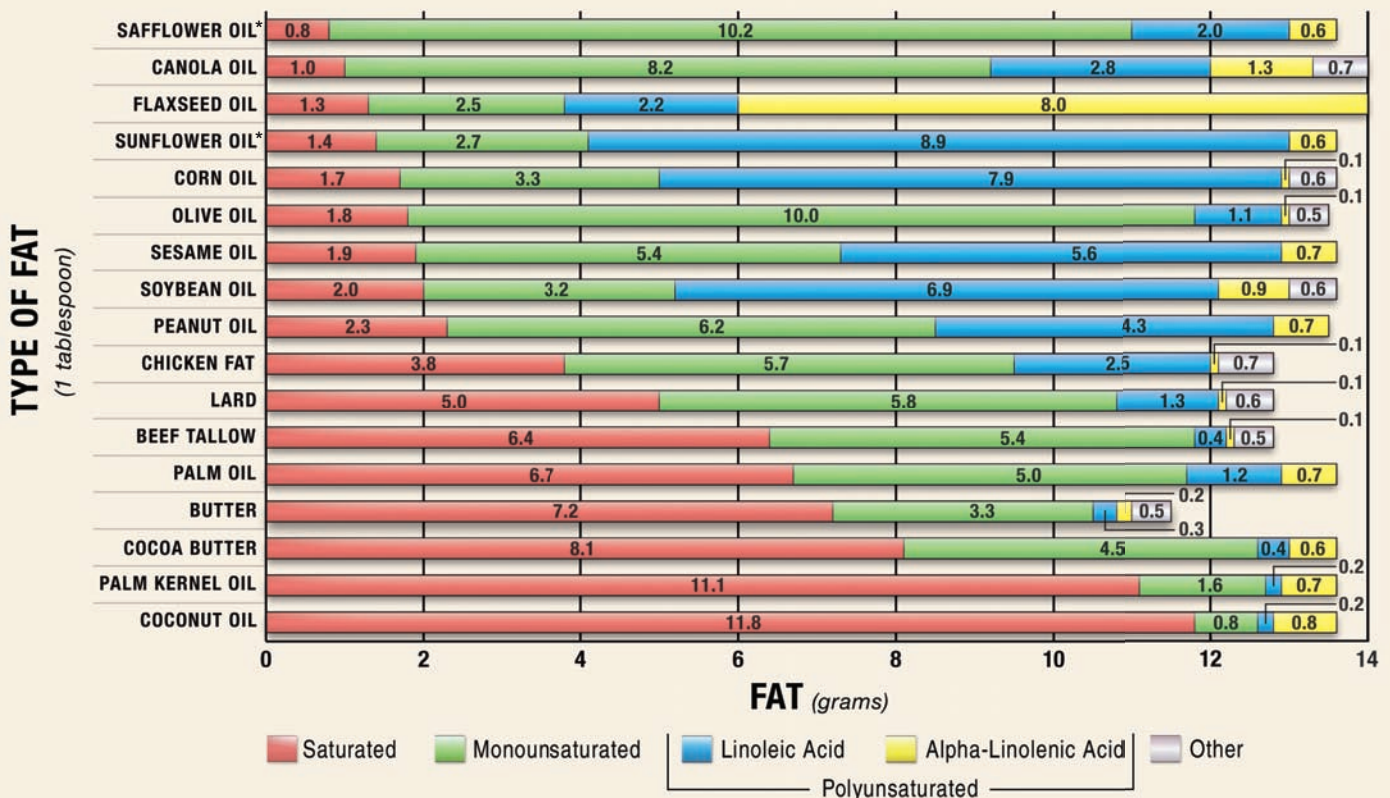
of the University of Toronto. "Flaxseed seems to consistently protect against the development and spread of cancer in these animals."

Only one study has looked at flaxseed and cancer in humans. Thompson and her colleagues gave a flaxseed muffin to 19 postmenopausal women with newly diagnosed breast cancer every day during the month before their surgery.⁶ Each muffin contained 25 grams of ground flaxseed. Thirteen similar women got flax-free muffins.

"Biopsies of the flax eaters' breast tissue showed that their cancer cells weren't proliferating as fast as those of the control women," says Thompson. What's more, the cells in their tumors were experiencing higher rates of programmed cell death.

ALA Carte

Every fat contains a mix of saturated, monounsaturated, and polyunsaturated fatty acids. The two most common polyunsaturated fats are alpha-linolenic acid (an omega-3 fat) and linoleic acid (an omega-6 fat).



* Safflower and sunflower oils can be high in polys or monos. Most safflower oil sold in bottles is the high-oleic (high-mono) variety shown here, but some brands that are sold in healthfood stores are the high-linoleic (high-poly) variety. The sunflower oil sold in bottles is usually high in polys (as shown here), but most chips and other packaged foods that are made with sunflower oil use the high-mono variety.

Sources: USDA Nutrient Database for Standard Reference (Release 14), the National Sunflower Association, and the Flax Council of Canada.

Oil in the Family

“Both suggest that their prognosis may be better.”

But she cautions that it's too early to recommend that women eat flaxseed to prevent or treat breast cancer.

“Our results are encouraging, but we had only a small number of patients for a short period of time,” she says. “We don't know what would happen over a longer term.”

Researchers at Duke University are planning a similar study in men with prostate cancer.

“We got started on flax when we were testing the effect of fish oils in men with prostate cancer,” recalls Wendy Demark-Wahnefried. “The men were having so much trouble with belching and flatulence that we decided to try flaxseed instead.”

The Duke researchers fed 25 men with prostate cancer a low-fat diet and 30 grams (three rounded tablespoons) of ground flaxseed every day during the month before their prostates were removed.⁷ “Compared to other men with prostate cancer, the flaxseed group had lower proliferation rates, increased cancer cell death rates, and their PSAs declined,” says Demark-Wahnefried.

“We're now recruiting men for a randomized, controlled trial that will test the effect of flaxseed with and without a low-fat diet.”

What about the studies that show an *increased* risk of prostate cancer in men who consume high levels of alpha-linolenic acid?

“They were looking strictly at ALA consumption in the diet, not at any particular food,” says Demark-Wahnefried. “We tested whole flaxseed, which has a host of nutrients—lignans as well as ALA.”

The Bottom Line

There's only limited evidence that alpha-linolenic acid, one of the main ingredients of flaxseed, can protect the heart. But men shouldn't go out of their way to eat more flaxseed, because ALA may raise the risk of prostate cancer. It's too early to say whether flaxseed can lower the risk of breast cancer. 🌱

¹ *American Journal of Clinical Nutrition* 69: 890, 1999.

² *Circulation* 111: 157, 2005.

³ *American Journal of Clinical Nutrition* 75: 221, 2002.

⁴ *Journal of Nutrition* 133: 2210, 2003.

⁵ *American Journal of Clinical Nutrition* 80: 204, 2004.

⁶ *Clinical Cancer Research* 11: 3828, 2005.

⁷ *Urology* 58: 47, 2001.

If there's a food that promises even a whiff of a health benefit, someone's going to make it into a pill or powder and sell it as a supplement. Here's how you'll see companies hawking flaxseed's ALA and its lignans.

Flaxseed oil softgels. Most are capsules with about 1 gram (1,000 milligrams) of flaxseed oil. Each contains 500 to 600 mg of alpha-linolenic acid (ALA), so the manufacturers usually recommend two or three capsules a day, which equals the “adequate daily intake” (1.1 to 1.6 grams a day) recommended by the Institute of Medicine. Of course, the typical American gets that much from food alone, so a supplement is unnecessary for most people.

Flaxseed oil contains no fiber and little or no lignans. Researcher Lillian Thompson of the University of Toronto found that flaxseed oil didn't prevent breast tumors in animals as well as ground flaxseed, which contains both ALA and lignans.

Lignan-fortified flaxseed oil softgels. Manufacturers add ground-up flaxseed hulls, called “particulate,” to their flaxseed oil to boost its lignan content. But the companies can't (or won't) say how much lignans their oils contain.

Concentrated lignans in pills. Concentrated lignans from flax have helped prevent cancer in animals, according to Lillian Thompson. But there are no published studies in people, she notes. Guess that makes the folks who buy products like Brevail the guinea pigs.

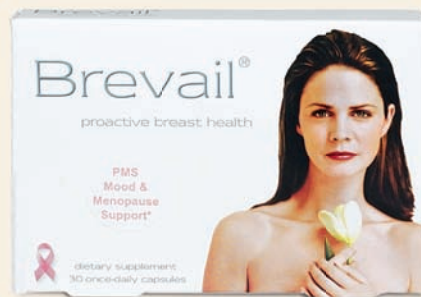
“The first all-natural breast health product to address the maintenance of orderly cellular division in the preservation of healthy breast tissue,” says www.brevail.com.

That's a euphemism for “prevents breast cancer,” and it's what the makers of Brevail want you to believe. They can't mention cancer because then they'd have to substantiate their claim to the Food and Drug Administration. And they don't have the evidence for that.

Each Brevail capsule contains 50 milligrams of lignans from flaxseed. The manufacturer, Lignan Research of San Diego, recommends that women take one a day with juice or water. The company claims that Brevail boosts lignan concentrations in the blood to levels “found in women who collectively demonstrate an extraordinary history of breast health.”

That would be women living in eastern Finland in the early 1990s, according to Lignan Research. In a study published in 2001, Finnish researchers compared 194 women with breast cancer with 208 similar women free of cancer.¹ On average, those who had the highest blood levels of lignans (mainly from eating rye bread and berries) were 60 percent less likely to have breast cancer.

That's the part the company wants you to know about. What it doesn't mention on its Web site is that 29 of the 194 women with breast cancer were among those with the *highest* blood levels of lignans. Or that when the same researchers repeated their study three years later—using different women and a better design—lignans had no impact on breast cancer.²



¹ *Cancer Epidemiology Biomarkers & Prevention* 10: 339, 2001.

² *International Journal of Cancer* 108: 277, 2004.