



## *Question:*

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What role does flaxseed intake play in prostate cancer?

## *Answer:*

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Many studies suggest that prostate cancer risk is related to diet and nutrition. At this point, however, we don't yet know all the details. We aren't sure which specific nutrients might increase or decrease prostate cancer risk. Researchers are looking at connections between prostate cancer and a variety of dietary factors, including selenium, vitamin E, type and amount of dietary fat, soy foods, omega-3 fats, and lignans. Lignans are a group of nutrients found in berries, nuts, and seeds, particularly flaxseeds. More studies are needed to better clarify how nutrition may relate to prostate cancer risk and prevention.

### **Flaxseeds and prostate cancer**

Flaxseeds are rich in lignans, which are commonly referred to as "phytoestrogens." Other foods, such as soy, contribute phytoestrogens to the diet as well. Many health experts suspect that because phytoestrogens resemble our own estrogens, having them in the diet may affect our risk of hormone-related cancers, including prostate cancer.

Studies in Western populations, such as in the United States and Europe, haven't given clear answers on the relationship between phytoestrogens in the diet and prostate cancer risk. Most people in these places don't eat a lot of phytoestrogens, so the question is tough to study there.

However, in many Asian countries, where much of the population eats phytoestrogen-rich foods on a regular basis, particularly soy foods, rates of hormone-related cancers are lower. This doesn't prove cause and effect. In other words, we don't know if it is the phytoestrogens in the diet or some other food or lifestyle factor that protects against certain cancers, including prostate cancer. However, it does appear that phytoestrogen-rich foods, such as soy and flaxseeds, may offer prostate cancer-protective effects.

## Summary of the research

Health experts don't yet understand exactly how flaxseeds and lignans are related to prostate cancer. Observational studies—the type of study in which researchers ask people what they are eating, and then follow them over time to see who develops cancer—generally suggest that lignans in the diet do not protect against prostate cancer.

Results from a large study out of Europe, called the EPIC-Norfolk study, at first seemed to suggest that dietary lignans may *increase* prostate cancer risk, which was surprising. However, once the researchers took into account other dietary factors which are believed to be related to prostate cancer risk, the study did not show a connection between lignans in the diet and prostate cancer risk.

However, there is some research on how eating flaxseeds can affect prostate tumor growth in men who have the disease, and blood levels of a substance called prostate specific antigen, or PSA, in men who eat this food.

### **Flaxseeds, PSA levels, and prostate cancer tumor aggressiveness**

Clinical trials in men who already have prostate cancer or who have prostate intraepithelial neoplasm, or PIN, show that adding flaxseeds into the diet may provide some health benefits. PIN is a condition that is believed to be a “precursor” to prostate cancer. This means that if untreated, PIN can become more invasive, and develop into prostate cancer.

These studies give us the best evidence that flaxseeds may help men with prostate cancer, because they have collected blood samples and prostate tumor tissue samples both before and after adding flaxseed into the diet. This type of approach allows researchers to see whether flaxseeds have any observable effects on how prostate cancer tumors grow in men.

These studies have suggested that flaxseeds may reduce levels of prostate specific antigen, or PSA. PSA is one measure of how effective prostate cancer treatments are. The goal is to keep PSA blood levels as low as possible. If PSA remains low, this is an indication that treatment is working to prevent the tumor from growing and spreading.

One study published in 2013 followed 147 men who added flaxseeds into the diet. This study found that the men who had the highest levels of flaxseed nutrients excreted in their urine—an indication of eating and absorbing the

nutrients found in flaxseed—had the lowest levels of tumor proliferation. Proliferation refers to how quickly tumor cells are growing and reproducing. Less proliferation is better.

A 2008 study by the same research group also found that adding flaxseeds into the diet reduced tumor proliferation. Combining flaxseeds with a low-fat diet had the added benefit of reducing cholesterol levels as well.

However, a study published in 2011, again by this same research group, suggest that a low-fat diet may be even more effective than flaxseeds for reducing the aggressiveness of prostate tumors in men who have the disease. Some of the benefit of a low-fat diet seems to come from the fact that the men who followed a low-fat diet also lost weight. Weight loss itself may reduce prostate cancer aggressiveness.

In 2015, a systematic review was published to take another look at past studies which explored potential links between lifestyle factors and the prevention of prostate cancer progression and mortality (9). A total of 44 studies investigating a multitude of lifestyle and nutritional interventions were examined for quality of research, as well as bias. This review agrees with the study that showed consuming flaxseed in the diet may result in less tumor proliferation. However, the reviewers emphasized the need for further well designed studies in this field for better understanding and conclusiveness of how dietary, nutritional and physical activity may impact the development of this disease.

### **Use Caution with flaxseed oil**

Some studies have found that a type of fat found in flaxseeds, called alpha-linolenic acid, or ALA, actually may make prostate tumors more aggressive. This seems confusing: *how can the seeds provide benefit, but the fat from these seeds cause harm?*

Flaxseed oil doesn't contain lignans, the nutrients that are thought to potentially reduce prostate tumor aggressiveness. It only contains pure fat, and it's a type of fat that may cause more harm than good. Also, some health experts suspect that genetic differences in how men metabolize alpha linolenic acid may contribute to whether or not this fat is harmful in terms of prostate tumor growth.

The **most important take away** from all of this research is that if you are interested in eating flaxseeds, talk to your dietitian or doctor first, to determine if this could be a healthy addition to your diet. Further, if you do

decide to add flaxseeds into your diet, stick with ground flaxseeds, rather than flax oil.

There is no good reason to add flax oil into your diet. Also remember that a low-fat diet is another safe option for men with prostate cancer. A dietitian can help you design a healthy, balanced, low-fat diet that meets all of your nutrition needs.

### **Bottom line**

Current observational research does not support that dietary flaxseeds can reduce the risk of developing prostate cancer. However, some studies do suggest that flaxseeds may provide benefits to men who already have prostate cancer. More research is needed to clearly define how flaxseeds may help men with prostate cancer.

For patients already undergoing treatment for prostate cancer, flaxseeds can be a heart-healthy addition to their daily diet. Some research has shown that flaxseeds may help decrease PSA levels, and reduce aggressiveness of prostate tumors. Other benefits of flaxseed include important micronutrients such as magnesium, manganese, thiamin, and selenium. It is an excellent source of fiber, and also contains protein. Flaxseeds in their whole food form are likely a safe addition to a healthful diet, but before we have more clear research, it is advisable to avoid flaxseed oils, which do not hold the same nutritional benefits.

Ground flaxseeds can easily be added to top off salads, yogurt, cereals, smoothies or mixed into your favorite baked good. 1-2 tablespoons of ground flaxseed per day is considered safe.

Always consult your health care team prior to making any changes to your diet or the dietary supplements you are using.

***The original question and answer were generously donated by Diana Dyer, MS, RD a cancer survivor, registered dietitian, organic garlic farmer, and the author of "A Dietitian's Cancer Story: Information & Inspiration for Recovery & Healing from a 3-time Cancer Survivor.***

Question and Answer updated and revised by Erin Laverty, RDN, CSO, LDN on behalf of ON DPG

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Updated April 2019