

The Role of Flax in the Diet — Learn About Its Nutritional Content and Potential to Help Prevent and Manage Various Medical Conditions
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Although flax has been around for thousands of years in the form of flaxseeds, ground flax, and flax oil, only in the past decade has it begun appearing more commonly on grocery and health food store shelves. It's also been cropping up in a variety of food products and supplements and has been studied for potential health benefits.

This continuing education course reviews the nutritional content of flax and explores its potential to assist in preventing and managing various medical conditions. It also guides dietitians in making recommendations about the use of flax in the diet.

About Flax

The scientific name for flax is *Linum usitatissimum*. Also called linseed, flax is cultivated in many parts of the world and has been used for thousands of years as food for humans and livestock and as a component of fabric. Nonfood-grade flax is often used in paint, wood finishes, and varnishes.

Flax has become a popular functional food due to its high omega-3 fatty acid content as well as its dietary lignans and fiber. Flax may be consumed in oil form, whole seed form, or as a ground meal. It can be incorporated into foods such as baked goods (eg, bars, cookies, breads), breakfast cereals, and beverages, as its nutty flavor complements a variety of foods.

The two main types of flaxseeds are brown and golden (or yellow). These two varieties are very similar in structure and nutritional profile.

One tablespoon of ground flaxseeds provides 37 calories, 1.28 g protein, 1.9 g fiber, 2 g carbohydrate, and 2.95 g fat (0.3 g saturated, 0.5 g monounsaturated, and 2 g polyunsaturated), as well as 1,597 mg omega-3 fatty acids and 414 mg omega-6 fatty acids. It also provides a good source of thiamin (8% DV), magnesium (7% DV), and manganese (9% DV).^{1,2} In addition, flax is one of the richest known sources of the dietary lignan secoisolariciresinol diglucoside (SDG).³

The primary type of omega-3 found in flax is alpha-linolenic acid (ALA; 18:3n-3). ALA is the direct precursor of EPA (20:5n-3) and DHA (22:6n-3), making it a good source of plant-based omega-3 fatty acids.^{1,2}

Flax also contains numerous phenolic compounds such as phenolic acids, phytoestrogens, and flavonoids that have been studied for their antioxidant properties.³⁻⁶

Flax and Cardiovascular Disease

Flax has been researched as a potential treatment for and preventive measure against cardiovascular disease. The anti-inflammatory action of the lignans and omega-3 polyunsaturated fats found in flax are thought to be the main contributors.

Numerous studies have shown that flax supplementation is associated with a decrease in total cholesterol.⁷⁻¹⁴ Decrease in LDL cholesterol has also been consistently demonstrated.⁷⁻⁹ However, many studies have found that it has little, if any, positive effect on HDL cholesterol, and it has not consistently been shown to have an impact on triglyceride levels.⁷⁻¹¹

A meta-analysis of randomized, controlled trials of flaxseed or its derivatives on lipid profiles in adults found the most pronounced cholesterol and LDL reduction (though not HDL or triglyceride) in postmenopausal females and those with the highest initial cholesterol levels. Whole flaxseeds and ground flaxseed meal, but not flaxseed oil, were found to have this effect.¹²

A study involving 62 firefighters compared flax oil, fish oil, and sunflower oil (placebo) supplementation on lipid profile over 12 weeks. Fish oil was found to produce a rapid increase in blood levels of DHA and total omega-3s. The flax oil was also shown to increase total omega-3s, including EPA and DHA. Researchers attributed the increase to ALA's function as a precursor of EPA and DHA. This increase was not observed with the sunflower oil capsules.¹⁵

A randomized, controlled trial involving 55 postmenopausal Native American women with mildly to moderately high cholesterol looked at supplementation with 30 g flaxseeds or a combination of flaxseed and fiber in the form of oat bran. Both flaxseed interventions were found to significantly reduce total and LDL cholesterol (by 7% and 10%, respectively), but did not alter triglycerides. Research in other ethnic groups would provide insight as to the appropriateness of this amount of ground flax—either alone or with a source of fiber—as a treatment for cardiovascular disease across a variety of populations. Similar studies on a larger scale would also shed more light on the use and mechanisms of flax.⁸

There are few studies exploring the use of flax in a pediatric population, but one small Canadian study of 32 children aged 8 to 18 suggests caution should be used when deciding whether flax supplementation is appropriate for children. In this study, subjects from a specialized dyslipidemia clinic were given either a control diet or a diet that contained flax-fortified bread and muffins (equivalent to about 2 T per day) for four weeks. The control group had bread and muffins with whole wheat flour instead of flax. Though researchers did not note a significant impact on total cholesterol or LDL levels, they observed a decrease in HDL levels and an increase in triglycerides. This suggests that the risks may outweigh potential benefits, but more research is needed.⁹

Research looking exclusively at the effect of flax supplementation on blood pressure is somewhat limited. However, several studies have observed a correlation between

supplementation and lowered blood pressure, suggesting that the anti-inflammatory effect of the omega-3s and the antioxidant activity of the lignans may be part of the mechanism.⁷⁻²²

A prospective, double-blinded, placebo-controlled, randomized trial showed that 30 g of ground flax meal per day had a beneficial effect on blood pressure and markers of peripheral artery disease. Researchers pointed to the ALA in the flax and the antioxidant, anti-inflammatory effect of the lignans present in the flax.¹⁸ Other studies have also highlighted anti-inflammatory effects related to the omega-3 and polyunsaturated fats in flax.^{10,11,16}

Omega-3 Levels in Flax Compared With Other Food Sources

(Based on a 200-kcal serving)

FOOD	TOTAL OMEGA-3 CONTENT (MG)
Flaxseed oil	12,059
Flaxseeds	8,543
Fish oil, salmon	7,828
Chia seeds, dried	7,164
Fish oil, sardine	5,341
Fish oil, cod liver	4,375
Fish, salmon, coho silver, raw	3,062
Fish, salmon, wild Atlantic, raw	2,843
Walnuts	2,776
Fish, mackerel, Atlantic, raw	2,605
Fish, salmon, Atlantic, farmed, raw	2,409
Oil, vegetable, canola	2,067
Oyster, Eastern, wild, raw	1,977
Fish, trout, raw	1,444
Arugula, raw	1,360

— Source: USDA

Flax and Cancer

Flax may hold some promise in preventing cancer and slowing its progression. The antioxidant activity of the lignans in flax has been noted as a potential factor. Isoflavones and lignans are two phytoestrogens shown to protect against various types of cancers.²³⁻²⁵ Another factor is the phytoestrogen enterolactone, which has been shown to protect against prostate and breast cancers.²³⁻²⁵ The fatty acid profile and phytoestrogen content of flax makes it attractive to researchers as a potential anticancer food.

A Canadian study involving an age-stratified random sample of women explored intake of phytoestrogens (isoflavones and lignans) and breast cancer incidence using a food frequency questionnaire expanded to capture information on phytoestrogen-rich foods. The Ontario phytoestrogen database was used to estimate intake. Lignan intake was associated with a reduced breast cancer risk for all women, though this was statistically significant only in overweight women (BMI >25). Total phytoestrogen consumption was associated with reduced risk in overweight women only. Among premenopausal women, total phytoestrogen intake was associated with a significant reduction in breast cancer risk only for overweight women. There was no statistically significant association noted between breast cancer risk and phytoestrogen intake in postmenopausal women. Though phytoestrogen-rich foods may be beneficial for all women to include in their usual diets, this study demonstrates that it is especially important for overweight women.²⁶

Another study, which utilized the Ontario Cancer Registry, used a food frequency questionnaire to assess whether phytoestrogen intake in adolescence protected against breast cancer in adulthood. Higher phytoestrogen intake (both isoflavones and lignans) during adolescence was found to be associated with a reduced breast cancer risk.²⁷

In a controlled, double-blind, crossover study of 80 volunteers, subjects were randomized to either diet sequence AB or BA. Diet A meals contained 1.3 g/100 g ground flaxseed and 5 g/100 g flaxseed oil supplementation. Three to 4 g/100 g of inulin and wheat fiber were added. These supplemented foods contained more fiber and polyunsaturated fatty acids (ALA, in particular) than foods in the B diet, which were not supplemented. The B diet, which served as the control, did not involve supplemented foods. Subjects received each diet for four weeks, with a four-week washout period between the two. Serum lipids, fatty acids, and enterolactone levels were measured at baseline and after both intervention diet periods. Fifteen subjects went on to complete an open phase for another four months in which they followed the flax diet only. Labs were drawn at baseline and then at two and four months. Though no significant lipid changes were noted, ALA, EPA, and DHA all increased significantly with flax supplementation, and serum enterolactone levels doubled. Researchers suggested this demonstrated the ability of ground flax or flax oil, when included in one or two meals daily, to significantly impact ALA and enterolactone.¹⁹

Enterolignans in flax show potential to fight cancer. Flax is a source of enterolactone and enterodiol, which have been shown to inhibit tumor growth through deactivating expression of certain tumor genes. A study of 147 patients with prostate cancer examined possible links between urinary enterolactone and enterodiol and the expression of genes associated with prostatic tumors. Patients participated in a 30-day presurgical trial of flaxseed

supplementation (30 g per day). Urinary enterolignans and tissue biomarkers—Ki67, vascular endothelial growth factor (VEGF), and nuclear factor kappa B—were measured before and after supplementation. A correlation was observed between intake of the plant lignans present in flax and urinary concentrations of total enterolignans, enterolactone, and enterodiol. Additionally, total urinary enterolignans and enterolactone were associated with a reduction in Ki67, a biomarker of proliferation in the tumor tissue. A near-significant inverse association was observed for enterodiol. An inverse association was also noted between enterolactone and VEGF, though it was not statistically significant. Researchers believe these results suggest that flaxseed-derived enterolignans may hinder cancer cell proliferation via VEGF-associated pathways.²⁸

Animal studies have looked at the effect of flax on the expression of tumor genes. In one study, mice were divided into three treatment groups. The first group was fed a diet with 10% defatted flaxseed meal. The second group was fed the same flax-supplemented diet with defatted flaxseed meal, and then researchers induced precancerous colon lesions in this group. The third group was given a standard chow diet without flax supplementation. Lesions were induced in this third group as well. Researchers measured the tumor suppressor proteins and incidence of oxidative processes. The mice consuming the flax meal had reduced lesions overall and lesions that did not grow as much as in the other groups, suggesting that supplementation with defatted flaxseed meal was protective against precancerous lesions in the distal colon.²⁹

Several studies involving hens have also shown flax supplementation to affect tumor expression in ovarian cancer. Using bioinformatics to compare pathways known to be dysregulated in tumors, researchers compared hens fed a control diet with hens fed a diet with 10% flaxseed. Expression of tumor genes were reduced 40% to 75% in tumors from flax-fed hens. Researchers believe the flaxseed intervention targeted branching morphogenesis, a process that influences the progression of ovarian cancer.^{30,31}

In another hen study, a flax-enriched diet was associated with a reduction in ovarian cancer severity, possibly due to a reduction in expression of cyclooxygenase enzymes and concentration of prostaglandins, proinflammatory lipids associated with the development of certain cancers.³²

Flax and Blood Glucose Control

Ground flax has been studied as a potential aid to blood sugar management. The glycemic index (GI) is a measure of how a carbohydrate-containing food raises blood glucose. A food's score, or rank, is based on how it compares to a reference food, such as white bread. Foods with a score of 55 or lower are considered low-GI, and foods with a score of 70 or higher are considered high-GI.³³ Flax, with a score of 51, is low on the GI index, which is thought to be due to its high fiber content and the presence of lignans. Additionally, the antioxidant activity of these lignans may fight oxidative stress that contributes to inflammation and insulin resistance.^{5,34}

Obesity is a factor contributing to glucose intolerance, as it is associated with inflammation and insulin resistance. In a randomized crossover study, nine obese individuals with glucose

intolerance consumed two diets for 12 weeks each—one with 40 g ground flaxseed and one with 40 g wheat bran daily. There was a four-week washout period between the two phases. Biomarkers of inflammation and insulin resistance were measured before and after each phase. The flax supplementation was found to be associated with increased glucose tolerance. Researchers suggest that the antioxidant activity of the flax may be behind the increased tolerance; however, because this was a small study, more research is needed to establish clear guidelines, specifically studies exploring the lignans in flax.³⁵

Another small study of obese individuals assessed the impact of varying levels of flax on glucose tolerance and insulin resistance. In this randomized crossover study, 25 overweight or obese men and postmenopausal women with prediabetes consumed 0 g, 13 g, or 26 g of ground flaxseed as part of their usual diets for 12 weeks. All flax intake was shown to decrease glucose and insulin and improve insulin sensitivity when compared with those consuming no flax, although the 13 g dose showed the most significant change. Researchers believe other factors in the diet may have been part of this difference. Overall, however, the results of the study suggested that including flax in the diet may aid in blood glucose control among obese individuals with prediabetes.³⁶

Because of its omega-3 content, flax has been studied for its potential to assist in perinatal growth and development. Because maternal diabetes can impair fetal development, researchers have also looked at the role supplementation might play in counteracting those detrimental effects.

Animal studies have looked at the use of flax by mothers with diabetes. In one small study, the offspring of diabetic rats fed a high-fat diet with flaxseed flour throughout gestation and lactation had the same body mass at birth as those born to diabetic rats fed a diet without flax, suggesting that flax could safely be used to control maternal blood glucose without contributing to low birth weight. However, researchers noted a more severe decrease in body mass in the flax-fed group after weaning compared with the control group.³⁷

Another study involving rats explored the use of flaxseed oil in mothers with diabetes to assess whether it could prevent pancreatic alterations in offspring, as maternal hyperglycemia can cause damage in utero to the pancreas. After being induced to diabetes and mated, female Wistar rats were separated into groups in which they were fed a high-fat diet, a diet including flaxseed oil, or a control diet. Offspring (researchers looked only at male offspring) were fed standard chow after weaning and euthanized at either 100 or 180 days, after which their pancreas tissues were analyzed. Rats born to mothers fed the flax oil were found to have reduced damage to the pancreas.³⁸

Although these results are promising, it should be noted that they are small animal studies, so further research is warranted to assess whether flax supplementation is a viable treatment in humans.

Flax in Weight Management

Beyond their cardiovascular health benefits and blood glucose control, diets high in fiber have been recommended for weight loss and maintenance.^{7,39,40} Some dietitians and other health

care practitioners may recommend ground flax as a fiber supplement. Research continues to explore whether flax can be recommended as an aid to weight loss and whether any other of its components besides fiber have an effect on BMI.

In a parallel, controlled trial, 34 obese individuals with type 2 diabetes were randomized into groups and received either no flax (control), milled flaxseed, or flaxseed. For 12 weeks, individuals in the intervention group received the equivalent of 7.4 g of ALA per day. Caloric intake was similar among all groups. At the end of the study, the control group had a 4% weight gain compared with baseline, while both flax groups maintained their weight. The flax group also experienced an increase in omega-3 levels.⁴¹ While further research would help establish guidelines related to the use of flax in weight management, these results are encouraging in terms of recommending flax as part of a high-fiber, calorie-controlled diet.

Flax Consumption in Hemodialysis Patients

Malnutrition and chronic inflammation are two factors that may affect survival prognosis in patients undergoing hemodialysis. Lipid abnormalities are also a risk factor for cardiac disease in this population. Research studying the effect of flax on inflammatory markers in individuals on hemodialysis suggests it may be a safe and appropriate low-risk intervention.

A randomized, double-blind, multicenter, placebo-controlled trial investigated the effects of flaxseed oil on the inflammatory state of 145 hemodialysis patients, 89 of whom (61%) had inflammation at the beginning of the study. Subjects blindly consumed either flax oil (1 g twice per day) or a placebo (1 g mineral oil twice per day) for 120 days. Inflammation was measured via C-reactive protein (CRP). BMI and HDL cholesterol levels were also measured. Researchers found that flax oil supplementation significantly decreased CRP levels over time. A correlation was also noted between CRP levels and BMI and decreased HDL. Thirty-three percent of the subjects on the flax oil intervention moved from the inflammation to the noninflammation category compared with 16.9% of subjects in the placebo group. Researchers believe these results suggest flax oil may be used to decrease CRP levels and that inflammation in hemodialysis patients appears to be related to BMI and reduced HDL levels.⁴²

In an unblind, randomized clinical trial, 30 hemodialysis patients with dyslipidemia (triglyceride >200 mg/dL and/or HDL cholesterol <40 mg/dL) were randomly assigned either to a flaxseed or a control group. The patients in the flaxseed group received 40 g per day of ground flaxseed for eight weeks, and the control group received a diet without any flaxseed. Fasting serum concentrations of triglycerides, total cholesterol, LDL cholesterol, HDL cholesterol, and CRP were measured at baseline and at the end of week eight. In the flaxseed group, researchers noted significantly decreased triglyceride levels and CRP as well as a significant increase in HDL.¹⁴

In a study of 30 nutritionally healthy subjects on hemodialysis (18 men and 12 women), participants consumed a mix of milled sesame (6 g), pumpkin seeds (6 g), and flaxseeds (18 g) in addition to their habitual diets. An increase in total omega-3 and omega-6 levels were noted after 12 weeks of supplementation, along with a significant decrease in triglyceride levels, glucose, insulin, and inflammatory markers.²⁰

Flax and Mental Health

Flax as a potential aid in depression treatment has been studied, as has its possible role in the management of other behavioral, psychological, and neurological conditions. Flax's omega-3 content is of particular interest to researchers. Deficiency in omega-3 fatty acids has been linked to developmental delay, impaired cognitive function, and depression, among other conditions.

Numerous studies have linked fish intake and fish oil supplementation to improved mental and emotional status, using blood phospholipid fatty acid status and arachidonic acid (AA)-to-EPA ratio as a measurement. Flax, however, has not been as extensively studied as fish oil. A study of 30 adults with ADHD, a condition commonly associated with decreased blood levels of omega-3 fatty acids, compared the effects of high-dose flax or fish oil supplementation with a control group to determine phospholipid fatty acid status and AA/EPA ratio. Participants were randomized to daily supplementation with olive oil (control), flax oil, or fish oil for 12 weeks. Blood was drawn at baseline and at the conclusion of the study. The flax oil supplementation correlated with an increase in ALA and a slight decrease in the ratio of AA/EPA. The fish oil supplementation, however, resulted in increases in EPA, DHA, and total omega-3 fatty acids, as well as a decrease in the AA/EPA ratio similar to values seen in other studies involving populations with high fish consumption. This suggested fish oil may be more effective than flax oil in increasing levels of EPA and DHA in adults with ADHD, and decreasing the AA/EPA ratio. However, this was a small study and more research is warranted.⁴³

The antioxidant activity of the lignans present in flax is also of interest to researchers.^{5,44,45} For example, a small study of mice looked at whether the antioxidant activity of SDG, the predominant lignan in flaxseed, mediated the impact of stress hormones, which might make flax a useful, food-based tool to help manage depression. Mice in this study were exposed to unpredictable chronic mild stress procedures and given an SDG supplement of either 80 mg per kg or 160 mg per kg for 21 days. Levels of stress hormones were measured. High-dose SDG supplementation was found to reverse the stress-induced increase in stress hormones in the mice. Researchers believe these effects may be related to SDG's modulating effects on neuroendocrine-immune network and neurotrophin factor expression.⁴⁶

However, this is an area that warrants further research, especially in humans, to establish clear guidelines for the use of flax in mental health management.

Contraindications

Although flax is generally considered a low-risk intervention, there are some populations for whom it may not be appropriate. Those with sensitivity to high-fiber foods should exercise caution about consuming flax. This could include those with gastrointestinal conditions such as colitis or Crohn's disease, particularly during a flare-up, or those having episodes of diarrhea or vomiting. Individuals with ileostomy or colostomy bags should check with their physicians before adding flax to their diets.⁴⁷ Testing tolerance with small doses can help avoid unpleasant symptoms such as gas, bloating, and blockage. For patients suffering from early satiety, it may be beneficial to limit high-fiber foods such as flax. Caution should also be used in individuals with malabsorptive conditions such as celiac disease, cystic fibrosis, and other diseases affecting the stomach, intestines, liver, pancreas, and gallbladder.^{47,48}

Additionally, patients on blood-thinning medications may need to exercise caution. The Academy of Nutrition and Dietetics suggests these patients consume less than 3 g of omega-3 fatty acids per day to avoid interactions with medications such as those for diabetes and anticoagulants. In general, it is best to discuss dietary concerns related to medications with a physician or pharmacist.^{40,48}

Flax in the Diet

Flax has a place in a balanced diet to help meet individual omega-3 fatty acid needs and may be a low-risk intervention for a variety of health conditions.

Because the ALA present in flax is a precursor to omega-3s EPA and DHA, flax may help meet that need. This makes it an especially attractive choice for vegans and vegetarians or those with fish allergies.

The amount of flax that should be suggested depends on the amount of omega-3 fatty acids recommended for a particular age or medical population.

For most healthy adults, the recommended intake for omega-3 fatty acids is 500 mg per day, according to the American Heart Association. Up to 3 g per day is generally considered safe, though it's important for clients to consult with a health care provider about potential medication interactions when considering using high doses. The American Heart Association recommends that people with heart disease consume 1 g of omega-3 fatty acids from a combination of EPA and DHA per day.³⁹

There are a number of ways clients can incorporate flax into their diets. Whole flaxseeds and ground flax meal are widely available and may be added to foods such as yogurt, cold or hot cereal, and grain dishes. It should be noted that consuming the ground form allows the body to absorb the nutrients more readily than by eating the whole seeds, which are harder to digest and may pass through the gastrointestinal system whole. Clients can grind whole seeds in a coffee or spice grinder rather than purchasing preground flax if they prefer.

Ground or whole flaxseeds sold in sealed containers can usually be kept on the shelf over a year until opened, and are best refrigerated after opening. Flax oil is generally refrigerated until it is purchased and should be kept cool to prevent rancidity and oxidation of the fats.

Flax is increasingly popular as an ingredient in breads, cereal bars, and baked goods. Aside from contributing a rich, nutty taste, the viscosity of ground flax, when mixed with water, makes it a suitable vegan alternative to eggs as a binding agent in baked goods. Researchers have also looked at palatability of varying degrees of flax supplementation to determine whether and how flax may be added to products without compromising appearance or flavor.⁴⁹⁻⁵¹

Khouryieh and Aramouni tested the acceptability of bars and cookies fortified with flaxseed flour using a nine-point hedonic scale. Products containing 0% (control), 6%, 12%, and 18% flax were evaluated for palatability based on taste, texture, and overall acceptability as compared with the control product. In the cereal bars, the 12% flax bars were deemed acceptable from a sensory and quality viewpoint while also enhancing nutritional value. In the

cookies, the 12% flax level was also deemed acceptable. When cookie dough formulations containing 0%, 6%, 12%, or 18% were assessed and baked, the 12% had the highest sensory rating of all the varieties.⁴⁹⁻⁵¹

Another team of researchers assessed the sensory quality of bagels containing 23% ground flax (equivalent to about 6 g of ALA per serving, and roughly double the amount typically found in baked goods that contain flax) using a panel trained by the research team plus outside participants using a consumer test. When compared to bagels without flax, the flax-containing products were less acceptable, but the cinnamon raisin flax flavor was more acceptable than the sesame and sunflower seed varieties. This study showed that supplementing cinnamon raisin bagels with flax can enhance ALA intake without sacrificing sensory quality or causing gastrointestinal distress.⁵²

Flax oil supplements, either as a liquid or in capsule form, are also available. These items can usually be found in the vitamin section of a health food store and may be used as a therapeutic tool for the conditions described in this course.

In conclusion, flax has a place in a balanced diet to help meet individual omega-3 fatty acid needs and may be a low-risk intervention for a variety of health conditions.

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Quiz

1. How many types of flax are there?

- A. One
- B. Two
- C. Four
- D. Six

2. How many calories are in one tablespoon of ground flax?

- A. 18
- B. 37
- C. 50
- D. 77

3. What are the benefits of ground flax vs whole seeds?

- A. Ground flax is higher in fiber.
- B. Ground flax has a higher amount of omega-3 fatty acids.
- C. Grinding flaxseeds makes the nutrients more available to the body since the husk doesn't have to be broken down.
- D. There's no difference between the two forms of flax.

4. What is the main type of omega-3 fatty acid found in flax?

- A. Alpha-linolenic acid (ALA; 18:3n-3)
- B. EPA (20:5n-3)
- C. DHA (22:6n-3)
- D. Secoisolariciresinol diglucoside (SDG)

5. What is the glycemic score of flax?

- A. 15
- B. 28
- C. 51
- D. 86

6. What is the lignan in flax noted for its antioxidant activity?

- A. Arachidonic acid
- B. ALA
- C. SDG
- D. EPA

7. Numerous studies have shown that flax lowers total cholesterol.

- A. True
- B. False

8. Flax has been consistently shown to lower triglyceride levels.

- A. True
- B. False

9. How many milligrams of omega-3 fatty acids per day does the American Heart Association recommend for most healthy people?

- A. 2,000
- B. 1,500
- C. 4,000
- D. 500

10. One tablespoon of flax provides approximately how many grams of fiber?

- A. Two
- B. Three
- C. Five
- D. Six