

# New FLAX FACTS

## FOOD SOURCES OF ALPHA-LINOLENIC ACID

by Dr. Diane H. Morris

Alpha-linolenic acid (ALA) is the true essential omega-3 fatty acid, being required in our diets because our bodies cannot make it. ALA has important functions in the body. It is used for energy and converted to long-chain omega-3 fats such as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). ALA helps prevent heart disease and stroke and reduces inflammation.<sup>1</sup>

Flax seeds are a renewable and rich source of ALA. Using flax in food preparation, whether at home or in commercial settings, increases the omega-3 fat content of popular foods.

### Food Sources of ALA

Today's health-conscious consumers can choose among many different foods containing ALA. Some foods are naturally rich in ALA, while others have been enriched to increase their ALA and total omega-3 content. The main sources of dietary ALA are described below.

**Flax and Flax Ingredients.** Flax is the richest source of ALA in the North American diet. One tablespoon (8 g) of milled flax contains 1.8 g of ALA. One tablespoon (15 mL) of flax oil contains 8 g of ALA.

Various forms of flax are available in the consumer food market – whole flax seeds, milled flax, roasted flax and flax oil. Novel flax ingredients such as encapsulated flax and flax kernel (a dehulled flax product) are some ways in which food processors add flax to their food products. Food processors add milled flax and flax kernel to products as diverse as energy bars, salad dressings, soups, sausages, yogurt and baked goods.<sup>2</sup>

#### A Word about Flax Meal

Consumer products labeled "flax meal" are made by grinding whole flax seeds to produce traditional milled flax. Milled flax has all the goodness consumers expect – omega-3 fat, dietary fibre and lignans – in their proper proportions.

**Other Oilseeds, Nuts and Plants.** ALA is found in the fats and oils of canola, wheat germ and soybeans; in nuts such as butternuts and walnuts; and in red and black currant seeds. Leafy green plants like purslane contain a great deal of ALA, but because their overall fat content is low, leafy plants do not contribute significant amounts of ALA to our diets.<sup>3</sup>

**Fish, Meat and Poultry.** Fish contain trace amounts of ALA. Oily fish like salmon and herring contain more ALA (113-132 mg per 100 g portion) than do white fish like cod and haddock (1-3 mg per 100 g portion).<sup>4</sup>

Beef and pork generally contain more ALA than white fish. A broiled New York strip beef fillet contains 210 mg ALA per 100 g portion. A regular, all-beef large hamburger

patty and roasted cured ham both contain about 25-45 mg ALA per 100 g portion. Chicken contains about 26 mg ALA per ½ roasted breast. Chicken with a milled flax seed breading is another tasty way for consumers to enjoy flax and chicken.<sup>5</sup>

**Omega-3-Enriched Eggs.** Omega-3-enriched eggs are derived from hens fed flax or other sources of omega-3 fats. Omega-3-enriched eggs are widely promoted for their DHA content, but they are also good sources of ALA. On average, one omega-3-enriched egg provides 340 mg of ALA – 10 times more than a regular egg and nearly one-third of the Adequate Intake of ALA for women aged 19 years and older.<sup>6</sup> A regular, large chicken egg contains about 20 mg of ALA.

**Omega-3-Enriched Pork.** Consumers in the Canadian, U.S. and Japanese markets can enjoy omega-3-enriched pork derived from hogs fed flax in their rations.<sup>7</sup> The pork product was developed by a company based in Winnipeg, Manitoba,<sup>8</sup> and contains between 400 mg and 2 g of ALA per 100 g serving. Traditional retail shoulder and loin cuts of pork contain about 20 mg of ALA per 100 g serving. [Canadian consumers can look for Prairie Orchard Farms Omega 3 Enriched Pork products; U.S. consumers can look for the product under the Verdancia Farms label.]

#### ALA Content of Commonly Eaten Foods

If you are interested in the ALA content of other foods, consult the Flax Council of Canada's book, *Flax—A Health and Nutrition Primer*, which is available on the Council's website at [www.flaxcouncil.ca](http://www.flaxcouncil.ca). Table 11 in Chapter 3 of the Primer shows the ALA content of many leading food sources of this essential omega-3 fat.

### Adding Flax to Food Products Increases Their Omega-3 Fat Content

The food industry has turned to flax to meet consumers' demand for foods that taste good, are nutritious and provide health benefits. Food companies continue to be creative in developing new flax food products – for families and their pets.<sup>1,10</sup>

**Baked Goods and Dry Mixes.** Bakers add milled flax to hearth breads – that is, breads baked in open hearths, not in pans. Whole flax seed or milled flax is added to variety and multigrain breads, bagels, tortilla shells, muffins, crackers and cookies. Milled flax is added to dry mixes for muffins, waffles and pancakes.<sup>2</sup>

**Beverages.** Flax adds texture and omega-3 fat in the form of ALA to energy drinks and smoothies. Milled flax is added to dry beverage mixes.<sup>2</sup>



**Cereals and Pasta.** Both hot and cold cereals are made with flax. Flax combined with soy in a granola-type cereal appears to be popular. Pasta products made with flax are found in most supermarkets and health food stores.

**Energy Bars.** Energy bars containing milled flax are increasing in popularity. Consumers can enjoy energy bars made with flax seeds and other ingredients such as soy, hemp, nuts, berries and whole grains.<sup>2</sup>

**Spreads and Salad Dressings.** Mayonnaise-type and buttery spreads made with flax oil are convenient for delivering omega-3 fats. Both heart-healthy and vegan spreads made with flax oil are available in numerous outlets. Flax oil-based salad dressings have been marketed in North America for several years.

**Dairy Products.** An omega-3 fortified milk has been available in Canada since 2004. Its omega-3 fat source is flax oil. Other products available globally include soy-based beverages with added flax oil, providing 500 mg omega-3 fatty acids per 250 mL (1 cup). Milled and whole flax seeds are used as a source of omega-3 fat in yogurts, cottage cheese and cheese spreads. Flax adds texture to these products.

**Meatless Meal Products.** Interest in vegan meals has increased steadily in recent years. Vegans can now enjoy a meatless smoked bratwurst, soy-based ham, hamburger and chicken cutlets made with added flax seed or milled flax.<sup>2</sup>

**Miscellaneous Food Products.** Some snack foods are formulated with flax. Crisps, popcorn, rice cakes and confectionary like chocolate bars contain added flax.

**Prepared Meals.** Several classic dinner favourites such as pizza, meat pies and lasagna now contain added flax. Pizza crust formulated with milled flax was introduced in 2007.<sup>2</sup>

**Pet Foods.** Pet food manufacturers recognize the health benefits of flax for pets – after all, if it’s good for the family, it must be good for the family’s pet. Many premium dry dog and cat foods and treats contain added flax.

## Flax at Home – An Easy Way to Increase Your ALA Intake

Increase your ALA intake by buying flax products at local supermarkets, health food stores or through the Internet. At home, use flax regularly in food preparation. Here are simple suggestions for enjoying the great taste of flax at home:

- Sprinkle whole flax seeds or milled flax on yogurt, hot or cold cereals and salads.
- Whisk a little flax oil (2 mL/1/2 tsp) into a homemade or store-bought salad dressing or vinaigrette.
- Add 8-16 g (1-2 tbsp) of milled flax to family soups, stews and chilies.
- Add milled flax to homemade quick breads, muffins and cookies.
- Mix whole flax seeds and/or milled flax into bread doughs.
- Mix milled flax with hamburger for meat loaf.

Not sure how to get started? Try this simple breakfast treat or snack – mix about 3 g (1 tsp) of milled flax with 15 mL (1 tbsp) of honey and spread on warm toast. There are as many ideas on how to cook with flax as there are people in the kitchen!

## References

1. Morris DH. *Flax – A Health and Nutrition Primer*, 4th ed. Winnipeg, MB: Flax Council of Canada, 2007.
2. Thomas J. Payne Market Development. *Flax Products* 2007. [cited 2008 Feb 18] Available from: <http://www.tjpm.com>
3. Cunnane SC. In: *Flaxseed in Human Nutrition*, 2nd ed. Thompson LU, Cunnane SC, eds. Champaign, IL: AOCS Press, 2003, pp. 63-91.
4. U.S. Department of Agriculture, Agricultural Research Service. 2007. *USDA National Nutrient Database for Standard Reference*, Release 20. [cited 2008 Feb 25] Nutrient Data Laboratory Home Page, available from: <http://www.nal.usda.gov/fnic/foodcomp/>
5. Elmira Poultry. ‘BalanceWise’ fillet with flax. [cited 2008 Feb 25] Available from: <http://www.elmirapoultry.com>
6. Institute of Medicine. *Dietary Reference Intakes, Part I*. Washington, DC: National Academies Press, 2002, pp. 8-1 – 8-97.
7. Canadian Pork Market Review, June 22, 2006. [cited 2008 Feb 25] Available from: <http://www.prairieorchardfarm.com>
8. Tizzard I. Prairie pride. *Ciao!* 2007;Oct/Nov, pp. 19-20. [cited 2008 Feb 25] Available from: <http://www.prairieorchardfarm.com>
9. Hisey P. Omega-3 pork products approved by USDA. 2006. [cited 2008 Feb 25] Available from: [www.prairieorchardfarm.com](http://www.prairieorchardfarm.com)
10. Fitzpatrick KC, Morris DH. Flax 2015 – Health Benefits. Report to Agriculture and Agri-Food Canada, 2004.