



Healthy North Dakota Oils: Agriculture to Health

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Production

In the United States, North Dakota ranked first in the production of canola, flaxseed and sunflowers for 2006. North Dakota produced 94 percent of the nation's total for flaxseed, 92 percent of the canola and 52 percent of the total sunflower seed (both oil and nonoil varieties). The greatest production of canola, flaxseed and sunflower crops is in the northern tier and central area of the state.

2005 Dietary Guidelines

The 2005 Dietary Guidelines make specific recommendations to include healthy oils based on caloric need. A daily intake of 6 teaspoons of oil from all food sources is suggested for a 2,000 calorie level. One teaspoon of fat/oil has about 5 grams of fat and 45 calories.

Healthy oils contain essential fatty acids and vitamin E, a vitamin that is often found in less than recommended amounts in the American diet. Sunflower seeds and oil are a particularly rich source of vitamin E.

Canola, corn, flaxseed, soybean, and sunflower oils are suggested as healthy plant based oils. Whole foods that are naturally high in oil, such as nuts, seeds and "fatty-fish," also can be used to meet the daily amount.

Processed foods containing healthy oils may also be included, such as mayonnaise, salad dressings and soft margarines. Look at the list of ingredients on the food label to determine the food source of the fat. Look at the nutrition label to determine the serving size, number of calories and grams of fat (total and types). Select products with oils having higher levels of monounsaturated fat and polyunsaturated fat. Foods that list "hydrogenated oil" will be more saturated and contain some trans-fat compared to non-hydrogenated oil.

NDSU
Extension Service

North Dakota State University, Fargo, North Dakota 58105

AUGUST 2005

Reviewed and Reprinted June 2007

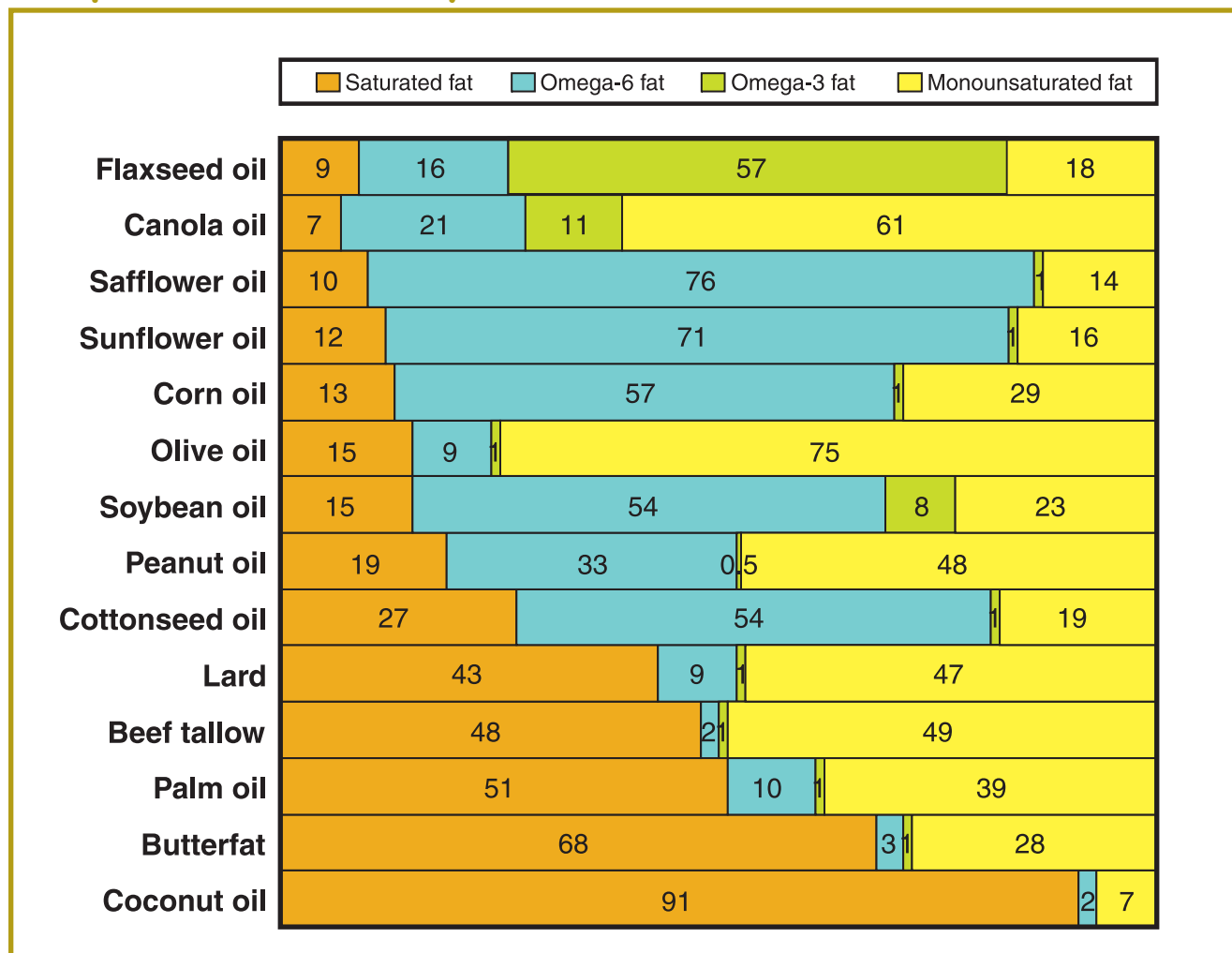
Healthy Weight

About 64 percent of North Dakota adults either are obese or overweight. Obesity increases the risk of developing chronic diseases, such as heart disease, certain types of cancer and type 2 diabetes. The increased prevalence of obesity and overweight is related to an imbalance between energy intake (calories from food) and energy output (from physical activity). Fat provides more than twice as many calories per unit weight (9 calories per gram) than does either carbohydrate or protein (4 calories per gram). High fat intake, providing more calories than can be balanced by physical activity, may contribute to weight gain.

Profiles of Fats/Oils

Fats and oils have varying proportions of various fatty acids referred to as saturated, monounsaturated or polyunsaturated. A fat or oil usually contains all three types of fatty acids, but is characterized by the fatty acid found in the largest amount. Plant oils are good sources of monounsaturated and polyunsaturated fats. Canola and olive oils are good sources of monounsaturated fat. Polyunsaturated fats include omega-6 and omega-3 kinds. Oils from soybean, sunflower and corn are good sources of omega-6 fat. Oils from flaxseed, canola, soybean and walnuts are good plant sources of omega-3 fats.

Comparison of Dietary Fats and Oils



Essential Fatty Acids

The body cannot make the polyunsaturated fats (omega-6s and omega-3s) that are found primarily in plant and fish oils. These fats have essential roles in the body and must be supplied in the diet. The essential polyunsaturated fats are found in cell membranes and are converted to biologically active substances that play a role to help prevent chronic disease. Within cell membranes the essential fatty acids also have important roles in helping with communication across the membranes. The polyunsaturated fats are also critical in the development of the central nervous system. Omega-3 fats are found in high concentration in the brain and retina of the eye.

Ratio of Omega-6 to Omega-3 Fat

The recommended ratio of dietary omega-6 to omega-3 for good health is 5:1 to 10:1. Getting the recommended amount of omega-3 fat in the diet is more difficult since omega-3 is found in smaller amounts than omega-6 in most oils. Adding plant oils to the diet with a higher content of omega-3 fat (such as oils from flaxseed, canola, soybeans or walnuts) can help provide the recommended ratio. Fish oil is another excellent source of omega-3 fat.

Biological Potency of Omega-3 Fat

Many of the biological benefits attributed to omega-3 fat are from the “longer-chain” type found in “fatty” fish such as salmon, mackerel and sardines. The human body can convert the “plant-type” omega-3 fat to the “fish-type.” However, the body’s conversion to the longer-chain omega-3 fat is not very efficient. Thus, the “fish-type” omega-3 fat has a higher level of biological potency, but on a daily basis it is much easier to include oils containing “plant-type” omega-3 (such as flaxseed, canola or soybean).

Heart Health

Monounsaturated fat (61 percent of canola oil) helps maintain healthy blood cholesterol levels. The omega-6 type of polyunsaturated fat (71 percent of sunflower oil, 57 percent of corn oil and 54 percent of soybean oil) also helps maintain healthy levels of blood cholesterol. The omega-3 type of polyunsaturated fat (57 percent of flaxseed oil, 11 percent of canola oil, 8 percent of soybean oil, 8 percent of walnut oil and 35 percent of fish oil) contributes to overall heart health.

Diabetes

Monounsaturated fats and polyunsaturated fats (found in various percentages from canola, soybean, flaxseed, sunflower, corn, nut and fish oils) have been found to improve insulin sensitivity when eaten within an overall balanced diet. Saturated fats (found in animal fats and tropical oils), as well as trans fat (found in hydrogenated oils and fats/oils used for deep-fat frying) have been found to reduce insulin sensitivity. A progressive decline in the level of insulin sensitivity occurs during the development of type 2 diabetes.

Cancer

Within a healthy diet pattern, both monounsaturated fat and polyunsaturated fat have been found to reduce the risk for many types of cancer. For polyunsaturated fat, a balanced ratio of omega-6 to omega-3 fat appears to reduce cancer risk. Higher intakes of total fat and saturated fat may increase risk for some types of cancer.

Applesauce Muffins

12 servings

- 1¾ c. whole-wheat flour
- ¼ c. **ground flaxseed**
- ¼ tsp. salt
- 2 tsp. baking powder
- ¼ tsp. baking soda
- 1 tsp. ground cinnamon
- ¼ tsp. ground cloves
- ½ tsp. allspice
- 1 c. applesauce, unsweetened
- ¼ c. **canola oil**
- ¼ c. nonfat plain yogurt
- ½ c. honey
- 1 egg
- ½ c. raisins
- ½ c. **sunflower kernels**, lightly salted

Preheat oven to 350 F. Spray 12-muffin tin with cooking oil. Combine and mix together the dry ingredients with the raisins and sunflower kernels. In another bowl, beat together the canola oil, yogurt, honey, egg and applesauce. Add applesauce mixture to the dry ingredients. Stir just until moistened. Pour into muffin tins. Bake for 20 minutes or until dry to an inserted toothpick.

Nutrient Analysis (each muffin)

226 calories, 35 g carbohydrate, 4 g dietary fiber, 5 g protein, 9 g fat [1 g saturated, 4 g monounsaturated, 4 g polyunsaturated (3 g omega-6 and 1 g omega-3)], 191 mg sodium

Exchanges: 2⅓ starch and 3 fat



Tango Bread Dipper

4 servings

- 1 tsp. dried rosemary
- 1 tsp. dried basil
- 1 tsp. garlic powder
- ¼ tsp. dried chili pepper flakes
- ¼ tsp. salt
- 2 tsp. balsamic vinegar
- ¼ c. **oil (canola, corn, flaxseed, soybean or sunflower)**
- 4 slices (or 4 oz.) fresh French or Italian bread, cut into pieces

Combine the first seven ingredients in a container with a tight-fitting lid. Shake well. Pour into a shallow dish suitable for dipping bread. Serve with bread pieces. *Note:* Discard any leftover dipper oil after use. A fresh recipe will keep in the refrigerator for two to three days.

Nutrient Analysis

(Using canola oil and 1 slice bread)

205 calories, 15 g carbohydrate, 1 g dietary fiber, 3 g protein, 15 g fat [1 g saturated, 8 g monounsaturated fat, 4 g polyunsaturated fat (3 g omega-6 and 1 g omega-3)], 314 mg sodium. (Types of fat do not add up to 15 g because of rounding.)

Exchanges: 1 starch and 3 fat

For more information on this and other topics, see:
www.ag.ndsu.nodak.edu/ag2health.htm