Healthy North Dakota Oils: Agriculture to Health

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Leader's Guide

Goal

To help North Dakota families develop eating patterns to promote health and prevent chronic disease based on food produced in the northern Plains. An increased focus on consuming foods produced in the Dakotas has the potential to expand the demand for agricultural products and to promote economic development. The specific goal of this lesson is to promote the health benefits of incorporating healthy oils into the diet.

Objectives

1. Identify the role of oilseed production in North Dakota
2. Identify types of healthy fats and food sources
3. Identify health benefits of healthy oils to reduce risk of chronic disease
4. Identify recommended amounts of healthy oils: 2005 dietary guidelines and dietary reference intakes

Audience

Adults

Before the Lesson

- Read through the leader's guide and handout.
- Select activities that will meet the interests and needs of the group. Also consider available time, meeting space and equipment.
- Obtain copies of the handout and evaluation form for each member.
- Order pads of tear-off sheets with the "Comparison of Dietary Fats" from Northern Canola Growers, (701) 221-2028.
- Decide which visual aids included with the lesson you will use: the PowerPoint presentation, overhead transparencies or small posters.
- Check with agricultural commodity groups related to oilseed production to determine whether they have educational materials, oil samples or recipes that can be downloaded or donated.

  www.ameriflax.com
  www.asa-europe.org
  www.canolainfo.org
  www.northerncanola.com
  www.sunflowernsa.com

NDSU Extension Service
North Dakota State University, Fargo, North Dakota 58105
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Leaders Packet

- Leaders guide
- Visual aids (PowerPoint slides, overhead transparencies or posters)
- Fact Sheet — Healthy North Dakota Oils: Agriculture to Health
- Pads of tear-off sheets with the "Comparison of Dietary Fats" (from Northern Canola Growers)
- Evaluation form

Introduction of the Lesson

Have participants recall experiences about oilseed crop production in North Dakota: planting and harvesting, food patterns and use in recipes, frequency of consumption, etc.

Meeting Format

Using the PowerPoint, overhead transparencies or posters, discuss the lesson objectives, definitions and concepts related to the use of various types of healthy oils in a diet pattern to promote health and prevent disease.

Meeting Activities

- Purchase small bottles of various types of healthy North Dakota oils: canola, soybean, sunflower and flaxseed for taste-testing with small pieces of bread. Have participants use the "Comparison of Dietary Fats" graph (from tear-off pad) to identify the type of fat (fatty acid) found in largest amount for each type of food fat.
- Select one of the 12 calorie levels (1,000 to 3,200) available on the MyPyramid Web site, for example a 2,000-calorie level. Print out the suggested number of servings of each food group for the calorie level selected. Download the "MyPyramid Worksheet" and have each participant write a day's food intake using the suggested pattern. Include North Dakota food products in the diet pattern with **6 teaspoons of healthy oils each day for a 2,000-calorie diet**. The DASH Diet pattern is the basis of the food patterns used in the 2005 dietary guidelines and MyPyramid recommendations.
- Check the Web sites below for information about the 2005 dietary guidelines, MyPyramid resources and DASH Diet:

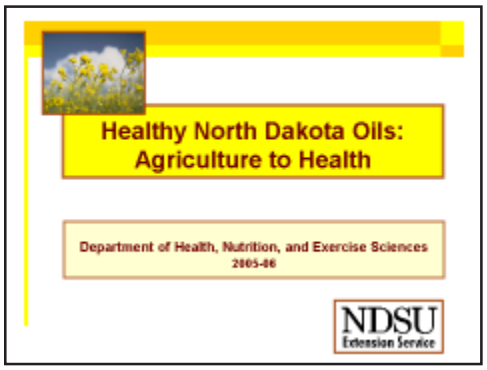
  www.MyPyramid.gov

  www.health.gov/dietaryguidelines/

  www.nhlbi.nih.gov/health/public/heart/hbp/dash/

Evaluation Form

Have participants complete the lesson evaluation form. Demographic information as well as questions concerning prior exposure to the "Agriculture to Health" lesson series are included. The form also helps identify current and projected eating patterns and behaviors for "healthy" oils.



Background Information

Health data

Do people in North Dakota need to be concerned with developing healthy eating patterns that will promote good health and prevent chronic disease?

Heart disease is the leading cause of death for North Dakotans, causing 211 deaths for every 100,000 people (age-adjusted 2001, NCHS, CDC). About 25 percent of North Dakotans indicated a

health professional had told them that their blood pressure was elevated (2002, BRFSS, CDC). About 30 percent of adults in North Dakota report having had a health professional tell them their blood cholesterol was elevated (2001, BRFSS, CDC).

Cancer, the second leading cause of death in North Dakota, accounted for 188 deaths for every 100,000 people (age-adjusted 2001, NCHS, CDC).

The prevalence of diabetes in North Dakota for adults has increased from 3.6 percent in 1994 to 6.2 percent (2003, BRFSS,CDC). For those age 55 or older, 14 percent of the population report having been told they have diabetes (BRFSS, CDC).

About 80 percent of the North Dakota adult population reports that they did not eat an average of five servings of fruits and vegetables each day (2003, BRFSS, CDC). About 24 percent of North Dakota adults reported not participating in any physical activity during the previous month (2003, BRFSS, CDC). From self-reported data, about 62 percent of the adult population is either obese (23.4 percent) or overweight (38.2 percent) (2002, BRFSS, CDC).

The 2005 dietary guidelines provide scientific evidence for the important role of a healthy dietary pattern in providing nutrients that will promote health and reduce the prevalence of chronic disease. The MyPyramid.gov Web site provides food guidance to follow the dietary guidelines. The "Food Intake Patterns" from the MyPyramid.gov Web site suggest daily amounts of "healthy oils" (from 3 to 11 teaspoons) for each of the 12 calorie levels from 1,000 to 3,200 calories. These calorie levels cover energy needs of males and females from age 2 to adult with consideration of various levels of physical activity.

Statistical data from:

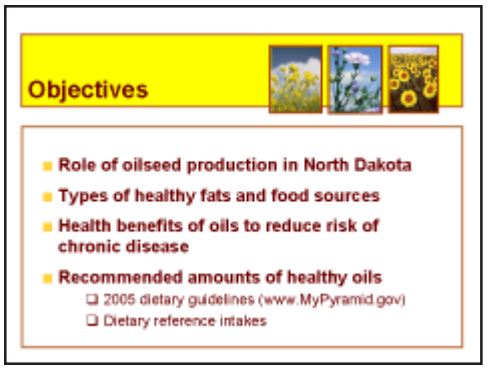
- Centers for Disease Control and Prevention, National Center for Health Statistics: Aries E., et al. Deaths: Final Data for 2001. National Vital Statistics Reports Vol. 52 (No. 3), Sept. 18, 2003.
- Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Behavioral Risk Factor Surveillance Survey at http://apps.nccd.cdc.gov/brfss

History

Canola: In the 1970s, Canadian plant breeders produced canola using traditional plant breeding methods specifically to enhance its nutritional qualities. Grown in Canada, Australia, Europe and the U.S., each canola plant grows anywhere from 1 meter (3 feet) to 2 meters (6 feet) tall and produces yellow flowers which, in turn, produce seed pods. The seed pods are about one-fifth the size of pea pods and contain about 20 tiny, round black or brownish-yellow seeds. Each canola seed is approximately 40 percent oil. The seeds are crushed to obtain canola oil for human consumption and the remainder is processed into canola meal, which is used as a high-protein livestock feed. Canadian plant breeders developed canola from rapeseed for its superior nutritional qualities. Early civilizations used the oil from rapeseed for a variety of purposes. A very small amount of rapeseed still is grown under contract specifically for industrial uses, including environmentally friendly lubricants.

Flax: Flax has been grown since the beginning of civilization both for its stem fiber (linen and paper) and as a food. Flax was brought to North America in the early 1600s. It traveled with the settlers as they moved westward and was planted on the prairie by the late 19th century. Flax was used commercially as a source of both fiber (linen and paper) and linseed oil. The unique composition of flaxseed (fat profile, lignan and dietary fiber) has increased the interest in its use for human diets.

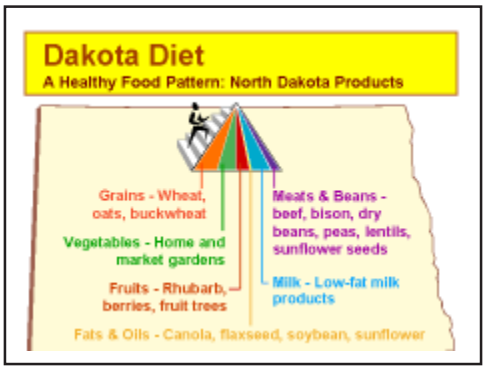
Sunflowers: Sunflower plants are native to North America and some American Indian tribes on the northern Plains used them as a source of food. They were carried to Europe, where Russian agronomists are credited with developing the first hybrids for agricultural production.



Visual No. 1
Objectives

Talking Points

The goal of this lesson is to promote the health benefits of incorporating healthy oils into North Dakotans' eating pattern. Foods produced in the Dakotas and northern Plains, when consumed in a pattern consistent with the scientific recommendations suggested in the 2005 dietary guidelines, can promote health and reduce the risk of chronic disease. This eating pattern also may benefit economic development by creating a new market for agricultural products within North Dakota and across the nation.

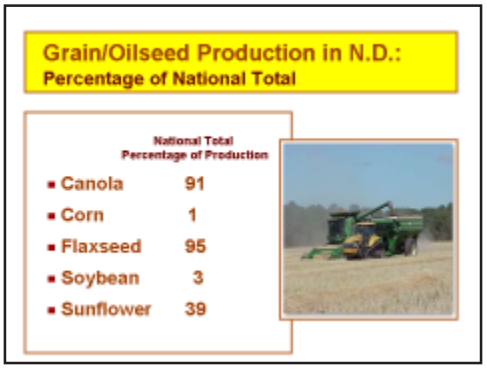


Visual No. 2

Talking Points

Gerald Combs, the director of the USDA's ARS Human Nutrition Research Center in Grand Forks, introduced the Dakota Diet concept at the Governor's Healthy North Dakota Summit in Bismarck in August 2002.

The 2005 dietary guidelines (MyPyramid.gov) have emphasized the identification of the important role of oils to overall health and suggest the inclusion of healthy oils on a daily basis as a component of an overall healthy diet pattern. Earlier editions of the dietary guidelines did not make a specific suggestion to include oils in the daily diet.



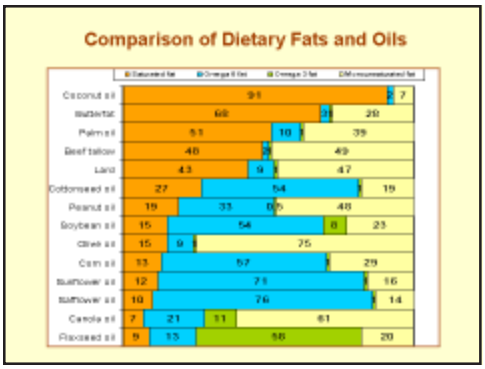
Visual No. 3
Grain/Oilseed Production in North Dakota

Talking Points

In the United States, North Dakota ranked first in the production of canola, flaxseed and sunflowers for 2004. North Dakota produced 95 percent of the nation's total for flaxseed, 91 percent of the canola and 39 percent of the sunflowers (total). Soybean and corn production in North Dakota represents a much lower percentage of the nation's total.

The greatest production of canola, flaxseed and sunflower crops is from the northern tier and central area of the state. Soybean production is highest in the eastern part of the state.

- Data from North Dakota Agricultural Statistics Service (www.nass.usda.gov/nd/pubstoc.htm)



Visual No. 4
Types of Fat: Food Sources

Talking Points

Fats and oils have varying proportions of various fatty acids referred to as saturated, monounsaturated or polyunsaturated. A food fat or oil usually contains all three types of fatty acids but is characterized by the fatty acid found in largest amount. For example, we usually characterize animal fat such as that found in beef, pork or dairy as "saturated fat" because it has a high percentage of saturated fatty acids. For example, lard (pork fat) has 43 percent of its fat as saturated fatty acids. Tropical oils are more saturated than animal fat (coconut oil is 91 percent saturated and palm oil is 51 percent saturated).

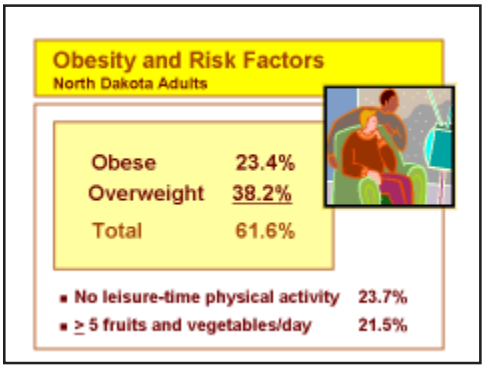
Other types of plant-based oils, such as canola, sunflower, corn, olive, soybean, etc., have a high content of unsaturated fat, either monounsaturated or polyunsaturated. Canola oil (61 percent) and olive oil (75 percent) have a high content of monounsaturated fat.

Polyunsaturated fat comes in two major kinds: omega-3 fatty acids and omega-6 fatty acids. The omega-6 kind of polyunsaturated fat is found in high amounts in sunflower oil (71 percent), corn oil (57 percent) and soybean oil (54 percent). The omega-3 type of polyunsaturated fat is found in high amounts in flaxseed oil (58 percent), canola oil (11 percent) and soybean oil (8 percent).

Cholesterol is another type of fat (not a fatty acid) that is found only in foods of animal origin.

(Suggestion: Use the "Comparison of Dietary Fats" tear sheets from Northern Canola Growers to discuss the "fatty acid" content of various food fats/oils.)

- Data on fatty acid compostion of foods: USDA National Nutrient Database for Standard Reference, Release 17. (www.nal.usda.gov/fnic/foodcomp)



Visual No. 5
Obesity and Risk Factors: North Dakota Adults

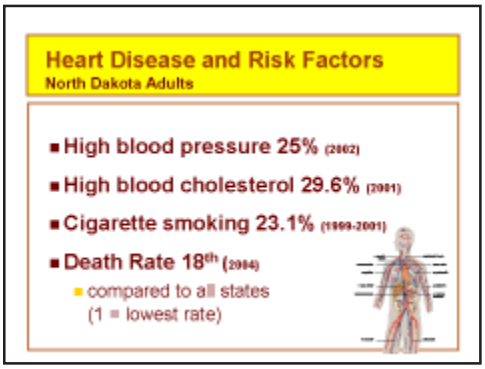
Talking Points

Lifestyle behaviors related to poor dietary choices and physical inactivity directly impact body weight and the prevalence of various chronic diseases. About 62 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. Almost one-fourth of the adult population in North Dakota reports getting no leisure-time physical activity. Almost 80 percent of North Dakota adults do not consume the suggested amount of five servings of fruits and vegetables per day.

The increased prevalence of obesity and being overweight is related to an imbalance between energy intake and energy output. Excessive energy intake or calorie intake is due to a variety of societal factors, including easy access to foods with a high fat content. Fat provides more than twice as many calories per unit weight (9 calories/gram) than do either carbohydrate or protein (4 calories per gram).

The recommended intake of fat is 20 to 35 percent of calories according to the Dietary Reference Intakes (2002). This translates to 44-78 g of fat (9-16 tsp) for a 2000 calorie diet. At this calorie level it is recommended that 6 tsp or 30 g of fat come from "healthy oils or oil-containing foods". At higher fat intakes (above 35 percent of calories) it may be difficult to maintain the caloric balance needed for healthy weight.

- Data obtained from the 2003 Behavioral Risk Factor Surveillance Survey (http://apps.nccd.cdc.gov/brfss)



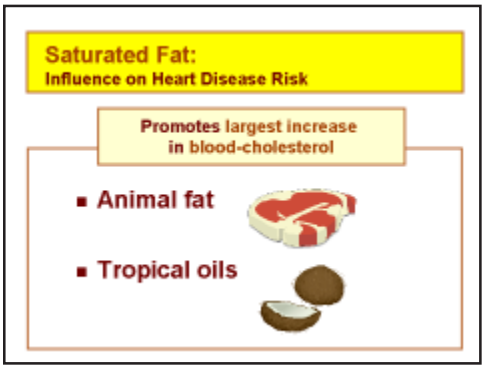
Visual No. 6
Heart Disease and Risk Factors

Talking Points

The leading cause of death in North Dakota is heart disease. About one in four adults in North Dakota has at least one of the major risk factors for heart disease: high blood pressure, elevated blood cholesterol and cigarette smoking. Lifestyle factors, including food intake and physical activity, are known to play a major role in prevention and treatment of this disease.

Data obtained from the following sources:

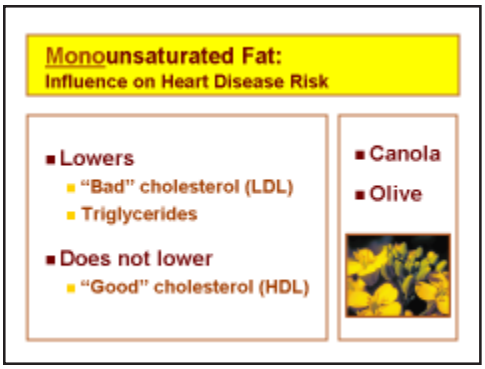
- Behavioral Risk Factor Surveillance Survey (http://apps.nccd.cdc.gov/brfss)
- Schoenborn, CA., et al. Health Behaviors of Adults: United States, 1999-2001. National Center for Health Statistics. Vital Health Stat 10(219). 2004.
- America's Health: State Health Rankings - 2004 edition at www.unitedhealthfoundation.org



Visual No. 7
Saturated Fat: Influence on Heart Disease Risk

Talking Points

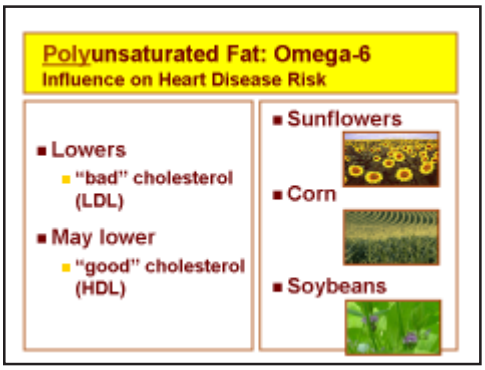
Saturated fat is the type of fat that has been found to increase blood cholesterol levels the most. Both animal fats and tropical oils (coconut and palm oil) have a high content of saturated fat. Moderate your intake of foods that contain a high content of saturated fat.



Visual No. 8
Monounsaturated Fat: Influence on Heart Disease Risk

Talking Points

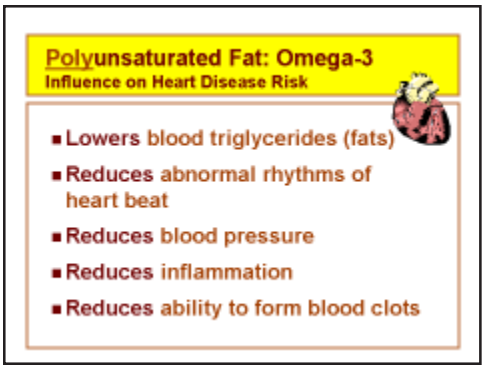
Monounsaturated fats help lower both "bad" cholesterol (LDL) and triglycerides in the blood. In addition, monounsaturated fats do not lower the "good" cholesterol (HDL). Good food sources of monounsaturated fat include both canola oil and olive oil.



Visual No. 9
Polyunsaturated Fat: Omega-6 Influence on Heart Disease Risk

Talking Points

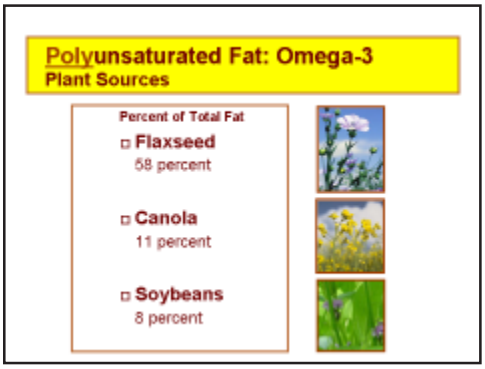
One type of polyunsaturated fat is omega-6. Although omega-6 fat helps lower "bad" cholesterol (LDL), it also may lower "good" cholesterol (HDL). Therefore, although this type of fat is necessary for good health (provides an essential fatty acid), you should moderate the total amount of polyunsaturated fat consumed (not to exceed 10 percent of the calories in the diet). Thus for a 2,000-calorie diet, do not exceed 22 grams per day of the omega-6 type of polyunsaturated fat in the diet. Twenty-two grams of omega-6 type of polyunsaturated fat would be found in 8 to 9 teaspoons of many types of plant oils (sunflower, corn and soybean).



Visual No. 10
Polyunsaturated Fat: Omega-3 Influence on Heart Disease Risk

Talking Points

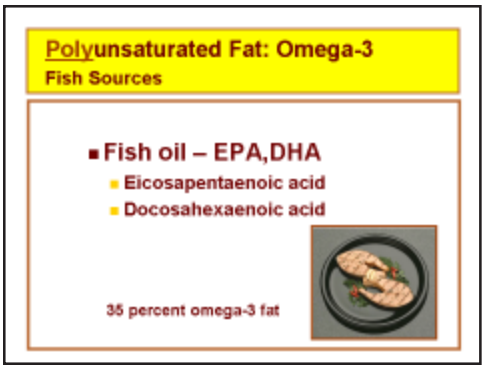
The omega-3 type of polyunsaturated fat has been found to reduce several risk factors related to heart disease: triglycerides (a type of blood fat), abnormal rhythms of the heart beat (arrhythmias of the heart), blood pressure, inflammatory processes (thought to play a central role in heart disease) and the ability to form blood clots. Many factors, including high blood pressure, smoking and high blood sugars, may initiate inflammation. Omega-3 fat reduces the ability of blood clots to form (by reducing blood platelet stickiness). Reducing the ability of blood to clot can help reduce the risk of a heart attack.



Visual No. 11
Polyunsaturated Fat: Omega-3 Plant Sources

Talking Points

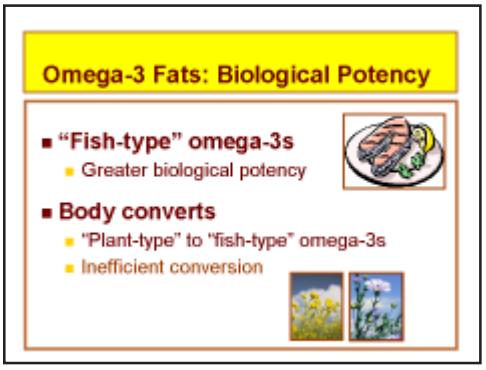
In plant-based oils, omega-3 polyunsaturated fat usually is found in smaller amounts when compared with amounts of omega-6 fat. The best sources of plant-based omega-3 fat are the following: flaxseed oil (58 percent of the total oil is omega-3 polyunsaturated fat), canola oil (11 percent of the total oil) and soybean oil (8 percent of the total oil).



Visual No.12
Polyunsaturated Fat: Omega-3 Fish Sources

Talking Points

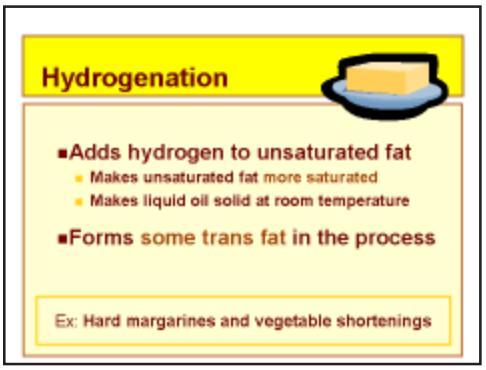
About 35 percent of the total fat in certain types of fish is made up of omega-3 polyunsaturated fat. Fatty fish, such as salmon, mackerel, herring and sardines, are good sources of omega-3 polyunsaturated fat. The omega-3 polyunsaturated fat found in fish has a longer chemical chain length, compared with that found in plants.



Visual No. 13
Omega-3 Fats: Biological Potency

Talking Points

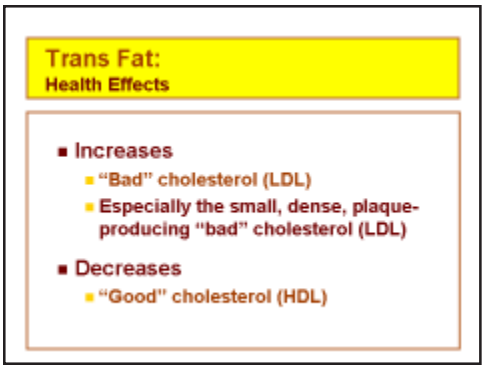
Many of the biological benefits attributed to omega-3 fat are from the longer-chain type found in fish. The human body can convert the "plant-type" of omega-3 fat to the "fish-type." However, the body's conversion to the longer-chain omega-3s is not very efficient (15 percent or less efficient). Thus fatty fish, such as salmon, mackerel and sardines, are an excellent source of longer-chain omega-3 fats. However, on a daily basis including plant-based sources of omega-3 fat, such as canola, soybean and flaxseed oils, is much easier.



Visual No. 14
Hydrogenation

Talking Points

Hydrogenation is the process of adding hydrogen to unsaturated fat in vegetable oils. The process of hydrogenation makes unsaturated fat more saturated and makes the liquid vegetable oils become more solid at room temperature. Examples of hydrogenated fats are hard margarines and vegetable shortenings. Some trans fat is formed during the process of hydrogenation.

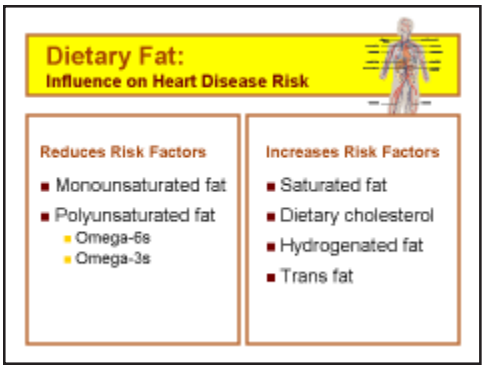


Visual No. 15
Trans Fat: Health Effects

Talking Points

Trans fat is formed during the hydrogenation process used to make margarines and vegetable shortenings. The high temperatures used during deep fat frying of restaurant foods also forms trans fat.

Trans fats act like saturated fat in the body. They increase the "bad" cholesterol (LDL), especially the small, dense type that contributes to the formation of plaque in arteries. Trans fats also have been found to reduce the levels of "good" cholesterol (HDL) in the blood.



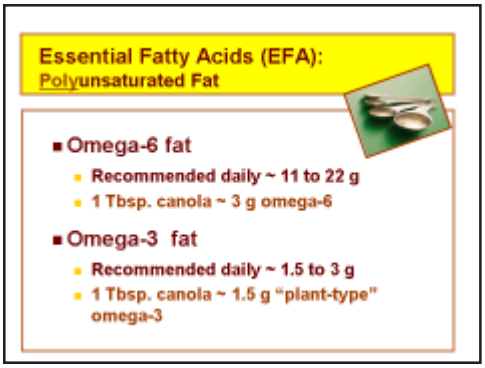
Visual No. 16
Dietary Fat: Influence on Heart Disease Risk

Talking Points

Both saturated fat and cholesterol in the diet will increase blood cholesterol. The process of hydrogenation makes fat more saturated and produces trans fat. Both hydrogenated fat and trans fat are types of fat that increase risk factors for heart disease.

Monounsaturated and the polyunsaturated fats (omega-6 and omega-3) promote heart health.

Moderate your total amount of omega-6 fat because of the concern with lowering “good” cholesterol (HDL) if it’s eaten in too high amounts (>10 percent of calories).



Visual No. 17
Essential Fatty Acids (EFA): Polyunsaturated Fat

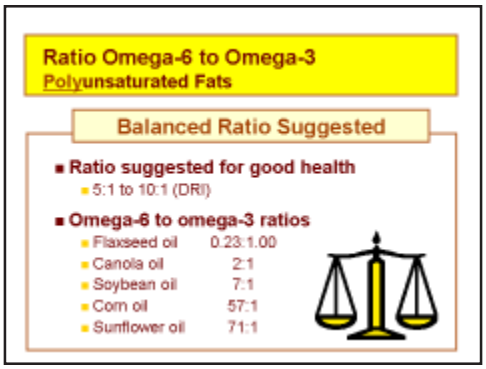
Talking Points

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. An essential fatty acid deficiency can result in symptoms such as scaly dermatitis, impaired wound healing and growth retardation.

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. The biologically active substances formed from essential fatty acids are involved in many different roles including the following: blood pressure regulation, ability of blood to clot (platelet aggregation or stickiness), and immune function. New research indicates that the essential fatty acids found within cell membranes 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. During pregnancy and while breast feeding, it is recommended to consume an adequate amount of essential fatty acids (both omega-6 and omega-3) to help ensure that the fetus and infant receive amounts required for normal development of the central nervous system.

The polyunsaturated or essential fats are found in high concentration in vegetable oils. For example, 1 tablespoon of canola oil contributes about 3 grams of omega-6s and 1.5 grams of omega-3a. The daily recommended amount of polyunsaturated fat for a 2,000 calorie diet according to the Dietary Reference Intakes is as follows: (1) omega-6 fat is 11-22 grams per day and (2) omega-3 fat is 1.5 to 3 grams per day. The 2005 dietary guidelines suggest 6 teaspoons of oils for a 2,000 calorie diet. One tablespoon (3 teaspoons) of canola oil [~3 g omega-6 and 1.5 g omega-3] plus 1 tablespoon (3 teaspoons) of soybean oil [~7.5 g omega-6 and ~1 g omega-3] would meet the suggested amount and balance of polyunsaturated fat for the 2,000 calorie level.

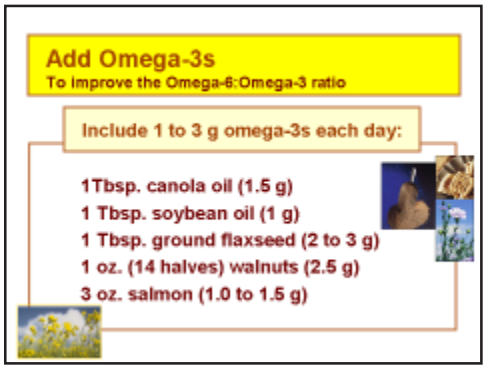


Visual No. 18
Ratio Omega-6 to Omega-3 Polyunsaturated Fats

Talking Points

Both omega-6 and omega-3 fats have different but essential roles in the body and need to be provided in balanced amounts. For good health, the suggested ratio in the diet is five to 10 parts of omega-6 fat, compared with one part of omega-3 fat. Omega-6 and omega-3 fats compete in the body. Too much of the omega-6 fat may interfere with the function of omega-3 fat, reducing some of the health benefits of omega-3 fats. Balance the intake of various kinds of oils by including some with a higher content of omega-3 fats (such as flaxseed and canola oils) along with those having a higher content of omega-6 fats (corn and sunflower). Soybean oil has higher amounts of omega-6 fat but also contains a good amount of omega-3 fat.

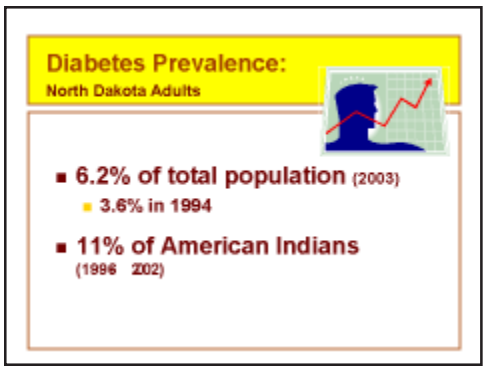
For example, flaxseed oil is unusual because it has about one-fourth the amount of omega-6 fat, compared with the amount of omega-3 fat. Canola oil has about two times the amount of omega-6, compared with the amount of omega-3 fat, whereas sunflower oil has about 71 times the amount of omega-6 fat, compared with the amount of omega-3 fat.



Visual No. 19
Add Omega-3s: To Improve the Omega-6 to Omega-3 Ratio

Talking Points

The amount of omega-3s is smaller, compared with the amount of omega-6s in most plant-based oils, but you need both types of polyunsaturated fat. For good health, include food sources that can contribute 1 to 3 grams of omega-3s each day to help balance the ratio between omega-6 and omega-3 fats. A tablespoon of canola or soybean oil or ground flaxseed will provide 1 to 3 grams of omega-3s, as will 1 ounce of walnuts or 3 ounces of salmon.

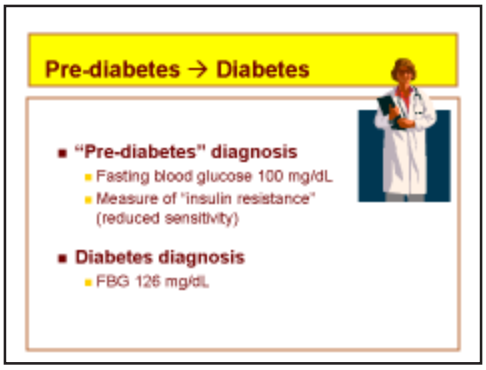


Visual No. 20
Diabetes Prevalence: North Dakota Adults

Talking Points

In North Dakota, the prevalence of diabetes has increased from 3.6 percent in 1994 to 6.2 percent in 2003. This represents a 72 percent increase in the prevalence of diabetes. American Indians have a prevalence of diabetes of 11 percent. Ninety-five percent of all people who have diabetes are diagnosed with type 2. Complications from diabetes include heart disease, stroke, vision loss, kidney failure and amputation, which then often result in early death.

- Data obtained from the 2003 Behavioral Risk Factor Surveillance Survey (http://apps.nccd.cdc.gov/brfss)

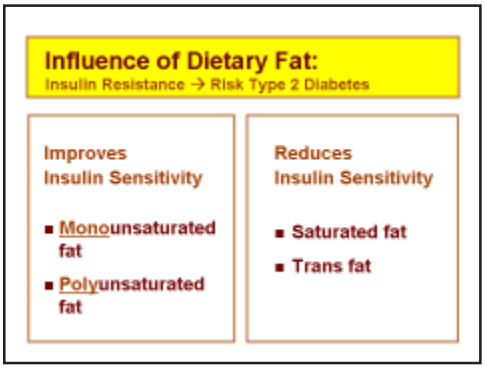


Visual No. 21
Pre-diabetes ->Diabetes

Talking Points

The diagnosis for pre-diabetes is a fasting blood-glucose (sugar) level of 100 mg/dL. This elevated level of fasting blood glucose is an indicator of "insulin resistance" (or reduced insulin sensitivity) by body cells. The diagnosis of diabetes occurs at a fasting blood-glucose level of 126 mg/dL.

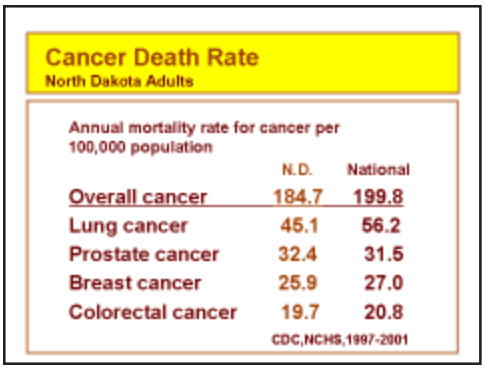
Lifestyle changes have been found to be effective in preventing the progression of pre-diabetes to diabetes. Increased physical activity and improved dietary intake (including types and amounts of fat) that will promote a weight loss of 5 percent to 7 percent (of original body weight) has been found to be effective in prevention of type 2 diabetes for those at risk. This translates to a weight loss of 10 to 14 pounds for someone who weighs 200 pounds.



Visual No. 22
Influence of Dietary Fat: Insulin Resistance -> Risk of Type 2 Diabetes

Talking Points

Monounsaturated fats and polyunsaturated fats have been found to improve insulin sensitivity when eaten within an overall balanced diet. Saturated fats and trans fat have been found to reduce insulin sensitivity. Improved insulin sensitivity will reduce the risk of the progression of pre-diabetes to diabetes.



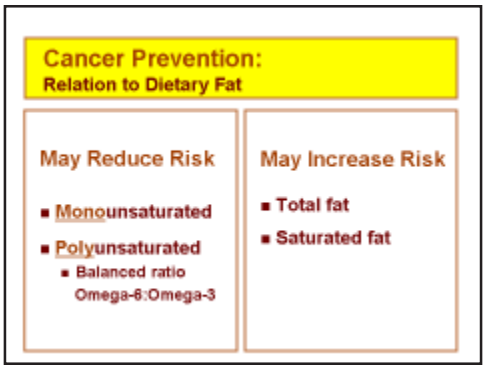
Visual No. 23
Cancer Death Rate: North Dakota Adults

Talking Points

Cancer is the second leading cause of death both nationally and in North Dakota. Death rates are highest for lung cancer, followed by prostate, breast and colorectal cancer. An estimated 30 percent to 40 percent of all cancers are directly linked to lifestyle factors, including food, exercise and body weight. The type of fat in the diet has been found to be one of the dietary factors related to the development of cancer.

Data sources:

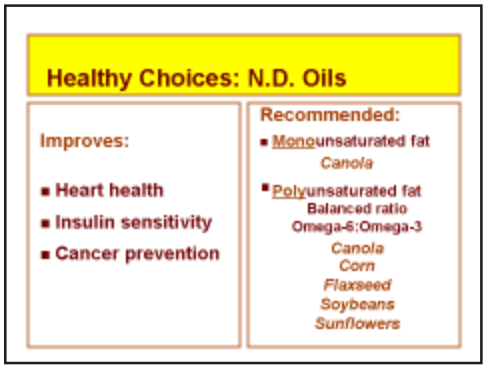
- Center for Disease Control, National Center for Health Statistics, 1997-2001. www.cdc.gov/cancer/CancerBurden/nd.htm
- www.aicr.org/diet.html



Visual No. 24
Cancer Prevention: Relation to Dietary Fat

Talking Points

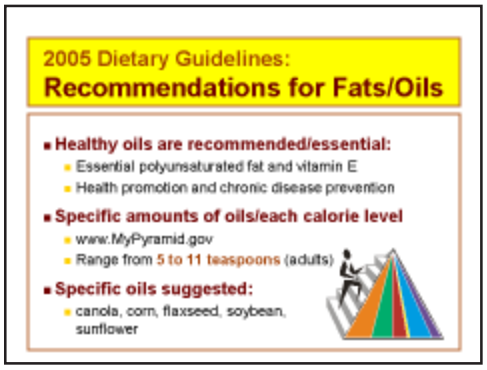
The current research indicates that both monounsaturated fat and polyunsaturated fat may help reduce risk of many types of cancer when consumed within a healthy diet pattern. For polyunsaturated fat, a balanced ratio of omega-6 to omega-3 fats appears to reduce cancer risk. An increased intake of total fat and saturated fat may increase risk for some types of cancer.



Visual No. 25
Healthy Choices: North Dakota Oils

Talking Points

When consumed within an overall balanced diet, the oils produced in North Dakota contain amounts of monounsaturated and polyunsaturated fats, both omega-6 and omega-3, which may help reduce the risk of chronic diseases (such as heart disease, type 2 diabetes and certain types of cancer). Food oils contribute different patterns of fat (saturated, monounsaturated, polyunsaturated) to the diet. Use several different kinds of oils to contribute to an overall healthy pattern of fat intake.



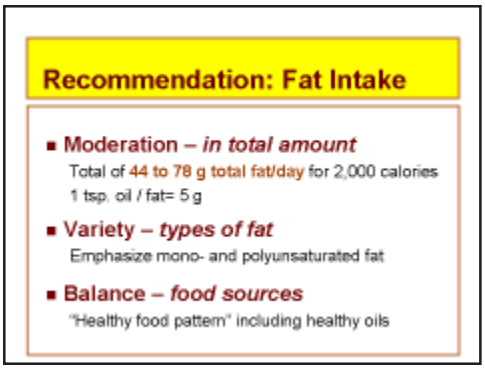
Visual No. 26
2005 Dietary Guidelines: Recommendations for Fats/Oils

Talking Points

The 2005 dietary guidelines make recommendations for healthy oils. Healthy oils contain essential fatty acids that are vital in the diet since the body cannot manufacture these required fats. Essential fatty acids have several important roles, including roles related to the prevention of chronic disease. Healthy oils also are a source of vitamin E, which may play a key role to help prevent chronic disease.

The interactive Web site (www.MyPyramid.gov), which the U.S. Department of Agriculture developed, translates the 2005 dietary guidelines into dietary guidance with 12 calorie levels specific for age, gender and physical activity level. It suggests specific amounts of healthy oils for each calorie level. Those amounts vary from 5 to 11 teaspoons per day for calorie levels appropriate for adults. The MyPyramid symbol has a “yellow strip” representing the suggestion to include healthy oils on a daily basis within the recommended calorie level for healthy weight.

The 2005 dietary guidelines specifically mention the healthy oils produced in North Dakota — canola, corn, flaxseed, soybean and sunflower oils.



Visual No. 27
Recommendation: Fat Intake

Talking Points

The dietary reference intakes (DRIs) recommend a wide range of total fat intake for each calorie level (20 percent to 35 percent of calories). For example, the range of fat intake suggested for 2,000 calories is 44 to 78 grams per day. One teaspoon of a fat or oil weighs approximately 5 grams. Thus the total amount of fat recommended would be the equivalent of 9 to 16 teaspoons per day for 2,000 calories. This total fat amount includes that found as a component within food, as well as that added as oil or butter.

All types of fat [saturated, monounsaturated, polyunsaturated (both omega-6 and omega-3) and trans fat] are consumed in the diet. Overconsumption of saturated and trans fat is related to increased chronic disease risk. A greater emphasis on intake of monounsaturated fat and polyunsaturated fat (with a ratio 5:1 to 10:1 of omega-6 to omega-3) within a balanced diet (with moderation of total calories and fat) will help to reduce the risk of chronic disease.

Including a balance of kinds of fat (including the healthy oils such as canola, corn, flaxseed, soybean, sunflower and others) that contain various types of fat will help promote good health and prevent chronic disease when consumed within an overall healthy food pattern.

Fat recommendations – example for 2,000 calories

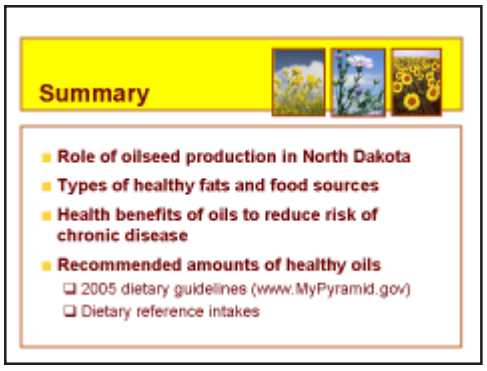
- **Moderation — *in total amount***
  20 % to 35 % of calories (Ex: 44 to 78 g/day)
- **Variety — *in types of fat***
  Saturated:
  <10 % of calories or <22 g/day

  Trans:
  <1 % of calories or <2 g/day

  Monounsaturated:
  No specific recommendation for amount

  Polyunsaturated:
  Omega-6 fat
  5 % to 10 % of calories or 11 to 22 g /day

  Omega-3 fat
  0.6 % to 1.2 % of calories or 1.3 to 2.7 g /day
- **Balance — *food sources of fat***
  A “healthy” food pattern including various food sources of fats/oils



Visual No. 28
Summary

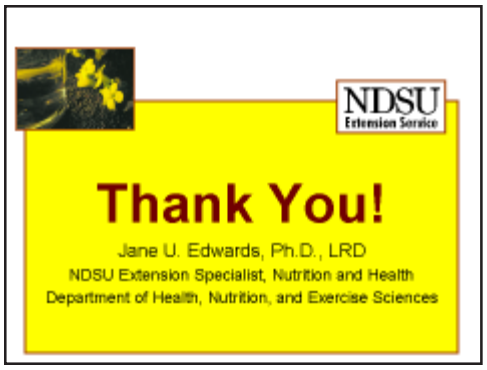
Talking Points

North Dakota is the leading national producer of canola, sunflower and flaxseed crops, with a much smaller percentage of the national production of soybean and corn. These crops are processed to produce a variety of oils for human consumption.

Canola oil has a high content of monounsaturated fat, with a good balance of polyunsaturated fat (omega-6 to omega-3). Flaxseed oil has a high content of the plant-type of omega-3 fat. Soybean oil has a good balance of polyunsaturated fat (omega-6 to omega-3). Sunflower and corn oil have higher concentrations of omega-6 polyunsaturated fat in relation to omega-3s.

The healthy food pattern suggested by the 2005 dietary guidelines will help reduce the risk of chronic disease. The recommendation for fat intake includes the following: a moderate total amount of fat; a variety of kinds of fat, including oils that contribute monoun-saturated fat and polyunsaturated fat (balanced ratio of omega-6 to omega-3); and a balanced variety of foods providing fats/oils.

The guidelines suggest a moderate amount of total fat each day. Include 5 to 11 teaspoons per day of a variety of oils, such as canola, corn, flaxseed, soybean, sunflower and others. The amount of oil added to the diet depends upon the total caloric need for energy balance.



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