California Walnuts

Naturally Nutritious

Grades 6-8

A partnership project of
California Walnut Board
California Foundation for Agriculture in the Classroom

Written by
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**Learning Objectives**

Students will interpret and compare nutrition labels to make healthy food choices.
Students will learn about the nutritional value of walnuts.

**Grade Level**

6th through 8th

**Time**

50 minutes

**Materials**

- Internet access
- Various food nutrition labels
- Naturally Nutritious student handout
- Raw, unshelled walnuts
- Nutcrackers

**Standards**

**California Health Education**

1.1N Describe the short- and long-term impact of nutritional choices on health
1.2N Identify various nutrients and their relationship to health

**Background Information**

Like a finely tuned engine, our bodies function best when we take good care of them. Choosing nutritious foods for our meals can help prevent certain diseases and obesity. A balanced diet should include protein, fat, carbohydrates, vitamins, minerals, and water.

Sources of protein include: fish, meat, poultry, dairy, eggs, nuts, and beans. Sources of carbohydrates include: fruits, vegetables, whole grains, and beans. Vitamins and minerals are found in most of these foods. For example, oranges are a good source of vitamin C, bananas are a good source of potassium, beef is a good source of iron, and milk is a good source of calcium.

A certain amount of fat is also an essential component of a healthy diet. Fat is the main energy storage molecule in the body. Our bodies require a certain amount of fat for cell growth, insulation from cold, energy production, and helps our body absorb vitamins A, D, E, and K until our body is ready to use them. Fat forms a protective layer around our internal organs and helps keep our skin and hair healthy.

Fat supplies calories and essential fatty acids to our diet. Sources of dietary fat are animal and dairy products, nuts, and oils. The Dietary Guidelines for Americans 2010 recommends that teenagers limit total fat intake to no more than 25 – 35% percent of total daily calories. For example, if a person eats 2,000 calories per day and 500 of those calories are from fat, this would fall in the 25 percent range. Fat has nine calories per gram. To find out how many grams of fat in 500 calories, divide 500 by nine to get 56 grams of fat.

There are different types of fat in food. **Unsaturated** (mono and poly unsaturated) fats are usually liquid at room temperature and are often referred to as oils. The Dietary Guidelines for Americans 2010 recommend getting the majority of necessary fat calories from unsaturated fat. Studies show that unsaturated fatty acid, when consumed in appropriate quantities, is associated with low blood cholesterol levels. This in turn leads to a lower risk of cardiovascular disease.

**Saturated** fat should be consumed in limited quantities but there is no dietary requirement for this kind of fat. Scientific research indicates there is evidence that the higher intake of most saturated fatty acids is associated with higher levels of blood total cholesterol and low density lipoprotein (LDL) cholesterol. This may be a risk factor for cardiovascular disease.
What Makes Walnuts Nutritionally Noteworthy?

- Walnuts are an excellent source of one type of unsaturated fat (polyunsaturated fat) Alpha-linolenic acid, an omega-3 fatty acid (2.5 grams/ounce). Research has shown that omega-3 fatty acids may help prevent coronary heart disease (CHD).
- One ounce of walnuts provides four grams of protein and two grams of fiber. Walnuts are also a good source of magnesium (10% DV) and phosphorus (10% DV) which are both important minerals involved in the body’s processes.

Sources

www.walnuts.org
www.nlm.nih.gov
www.mayoclinic.org

Standards (continued)

1.5N Differentiate between diets that are health-promoting and diets linked with disease

1.6.N Analyze the caloric and nutritional value of foods and beverages

1.8N Identify ways to prepare food that are consistent with current research-based guidelines for a nutritionally balanced diet
Good dietary fat is an important part of a diet or meal plan, and helps our bodies in many ways including:

- Storing and providing energy
- Cell growth
- Keeping warm
- Protective layer around internal organs
- Healthy skin and hair
- Storing vitamins A, D, E, and K until the body needs them
- All fats are 9 calories per gram

All fat is not processed in our bodies the same way. Unsaturated fats are structurally different than other kinds of fat and research has shown that they provide health benefits for our heart. Saturated fat is found in meat, dairy, coconut, and processed foods. Unsaturated fat is found in nuts, seeds, oils, olives, avocados and seafood. Eating fat doesn't make you fat. Eating more calories than your body can use causes your body to store the excess calories as fat. A typical teenager should limit total fat intake to 25 – 35% of total daily calories.

The Dietary Guidelines for Americans 2010 recommend getting the majority of necessary fat calories from unsaturated fat. Studies show that unsaturated fatty acid, when consumed in appropriate quantities, is associated with low blood cholesterol levels. This in turn, leads to a lower risk of cardiovascular disease.

Walnuts are an excellent source of a type of unsaturated fat called omega-3 fatty acids (2.5 grams/ounce). Consumption of omega-3 fatty acids may help protect your heart against coronary heart disease (CHD).

Some processed foods contain artificially made trans fats to increase the shelf life and improve the texture of the foods. These artificial trans fats should be limited in the diet because they can raise levels of the type of cholesterol that clogs arteries. Saturated fats should also be consumed in limited quantities. Check for this information on food nutrition labels.

**Nutrition Labels**

The Food and Drug Administration (FDA) requires a Nutrition Facts Panel on all packaged foods. Information about fat content, calories, and other nutrients can be found on food nutrition labels. Following is a sample nutritional label for walnuts.
California Walnuts, raw

<table>
<thead>
<tr>
<th>NUTRITION FACTS</th>
<th>[English walnuts]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size: 1 ounce (28g)</td>
<td></td>
</tr>
<tr>
<td>¼ cup shelled halves or pieces</td>
<td></td>
</tr>
<tr>
<td>12–14 halves</td>
<td></td>
</tr>
<tr>
<td>AMOUNT PER SERVING</td>
<td></td>
</tr>
<tr>
<td>Calories</td>
<td>190</td>
</tr>
<tr>
<td>Calories from Fat</td>
<td>160</td>
</tr>
<tr>
<td>% Daily Value</td>
<td></td>
</tr>
<tr>
<td>TOTAL FAT</td>
<td></td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>1.5g</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>0g</td>
</tr>
<tr>
<td>Monounsaturated Fat</td>
<td>2.5g</td>
</tr>
<tr>
<td>Polyunsaturated Fat</td>
<td>13g</td>
</tr>
<tr>
<td>Omega-3 Fatty Acids</td>
<td></td>
</tr>
<tr>
<td>Alpha-Linolenic Acid</td>
<td>2.5g</td>
</tr>
<tr>
<td>CHOLESTEROL</td>
<td>0mg</td>
</tr>
<tr>
<td>SODIUM</td>
<td>1mg</td>
</tr>
<tr>
<td>POTASSIUM</td>
<td>125mg</td>
</tr>
<tr>
<td>TOTAL CARBOHYDRATE</td>
<td></td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>2g</td>
</tr>
<tr>
<td>Sugar</td>
<td>&lt; 1g</td>
</tr>
<tr>
<td>PROTEIN</td>
<td>4g</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>0%</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>0%</td>
</tr>
<tr>
<td>Calcium</td>
<td>2%</td>
</tr>
<tr>
<td>Iron</td>
<td>4%</td>
</tr>
<tr>
<td>Copper</td>
<td>25%</td>
</tr>
<tr>
<td>Magnesium</td>
<td>10%</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>10%</td>
</tr>
</tbody>
</table>

9 = gram  | mg = milligram

Percent Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs. USDA National Nutrient Database for Standard Reference, Release 27, 2014.
Use the chart to record the nutritional value of walnuts.

<table>
<thead>
<tr>
<th>Serving Size</th>
<th>Calories</th>
<th>Saturated Fat</th>
<th>Monounsaturated Fat</th>
<th>Polyunsaturated Fat</th>
<th>Omega-3’s</th>
<th>Sodium</th>
<th>Sugar</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walnuts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Why are walnuts a nutritional snack? __________________________ Explain your reasoning using facts from the nutrition label.

2. Why are fats important in a human diet?

3. Which type of fat is more beneficial in our diet?

4. What types of fats should we consume in limited quantities? Why?

5. Why is it essential that we add Omega-3’s to our diet?
Answer Key

Naturally Nutritious

Use the chart to record the nutritional value of walnuts.

1. Why are walnuts a nutritional snack. Explain your reasoning using facts from the nutrition label. **Walnuts** have beneficial unsaturated fats instead of saturated fat, which does not have the health benefits of unsaturated fat. Walnuts provide Omega-3 fatty acids and very little sodium or sugar.

2. Why are fats important in a human diet? Our bodies require a certain amount of fat for cell growth, insulation from cold, and energy production. Fats help our body absorb vitamins A, D, E, and K.

3. Which type of fat is more beneficial in our diet? **Unsaturated fat**

4. What types of fat should we consume in limited quantities? **Saturated fats** Why? Saturated fats may be a risk factor for cardiovascular disease.

5. Why is it essential that we add Omega-3’s to our diet? **Omega-3 fatty acids have been shown to reduce the risk for coronary heart disease.**
Learning Objectives
Students will prepare a recipe and will learn the nutritional benefit of including walnuts as an ingredient.

Grade Level
6th through 8th

Time
One to two, 50-minute classes

Materials
For each student:
• Walnut Taste Testing sheet
• Walnut recipe sheets
• Raw walnut piece
• Toasted walnut piece
• Unshelled walnut
• Nutcracker
• Paper napkin or towel
• Pencil
• Taste Test Parent Permission Form

Standards
California Health Education

1.1N Describe the short- and long-term impact of nutritional choices on health
1.2N Identify nutrients and their relationship to health
1.8N Identify ways to prepare food that are consistent with current research-based guidelines for a nutritionally balanced diet

Background Information
Nutrient dense walnuts are part of a healthy diet. They have a high level of essential Omega-3 fatty acids (2.5 grams/oz.). Omega-3 fatty acids have been shown to reduce the risk of coronary heart disease.

Walnuts make an easy snack because they can be eaten with no preparation at all. Many people enjoy eating walnuts raw and toasted. The shell of the walnut helps to keep the kernels fresh before eating. Walnuts add flavor and crunch to salads, main dishes, breakfast dishes, and even desserts.

When buying walnuts, it is important to properly store them if you are not going to eat them right away. Store walnuts in airtight containers in the refrigerator or freezer to maintain freshness. If stored in a warm place, the oil in walnuts can chemically change, causing them to spoil over time.

Procedure
1. As a class, discuss the students' ideas about what types of foods should be included in a healthy diet. Make a list on the board. Reinforce that nutritious meals can help prevent certain diseases and obesity. A balanced diet should include protein, fat, carbohydrates, vitamins, minerals, and water.

2. Explain that the class will be conducting a taste test with walnuts which provide many nutritional benefits. Prior to the taste test, ask about any food allergies and send home the parent consent form for parents to approve.

3. Distribute the walnut tasting sheet and napkin. Instruct students to use their pencil to divide their napkin into three sections. Label the sections, raw, toasted, and in-shell.

4. Provide each student with a piece of toasted walnut, raw walnut, and a freshly shelled walnut.

5. Instruct students to taste each walnut and fill out the walnut tasting sheet.

6. Allow students to share their thoughts and opinions in a class discussion.
Walnut Taste Testing

Name ________________________________________

<table>
<thead>
<tr>
<th>WALNUT TYPE</th>
<th>TASTING SCALE 1-5</th>
<th>DESCRIBE TASTE USING WORD BANK BELOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOASTED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRESHLY SHELLED</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Word Bank

- Astringent
- Bitter
- Bland
- Chalky
- Crunchy
- Dry
- Fragrant
- Gritty
- Smooth
- Mouth-watering
- Odorless
- Pungent
- Rancid
- Rough
- Sweet
- Tangy
- Sour
- Creamy
- Delicious
- Flavorful
- Fresh
- Oily
- Nutty
- Rich
- Savory

1. What type of walnut would you most likely eat for snack?

2. Which type of walnut do you think would be best for cooking?
Cooking with Walnuts

Walnuts add a crunchy sweetness to any recipe. For breakfast, try tossing them on cereal, adding them to pancakes, or cooking them in muffins. For lunch, they are a nice addition to any salad, taste delicious in sandwiches, and can be added to your chocolate chip cookie recipe for a special treat! Walnuts make a terrific pesto sauce, a nice coating on fish and chicken, and a beautiful topping on a hot fudge sundae.

Below are a couple of fun recipes that you can make in class or at home.

**Fruity Walnut Slaw**

**Ingredients**

Makes approximately 30 – ½ cup servings

- 1½ cups toasted California walnut pieces
- ¼ cup walnut oil
- ½ cup canola oil (or similar oil)
- ¾ cup lime juice
- 2 tablespoons honey
- 3 12oz packages of chopped cabbage or coleslaw mix
- 3 grated apples
- Optional – parsley or cilantro
- Salt and pepper to taste

**Kitchen Materials**

- Cutting board
- Apple peeler
- Grater
- Measuring spoons
- Measuring cups
- Large bowl
- Large spoon

**Procedure**

1. In a small bowl whisk together lime juice, walnut oil, canola oil, and honey and set aside.
2. Peel and grate 3 apples.
3. Pour chopped cabbage and grated apples into a large bowl. Add dressing and toss.
4. If time permits, refrigerate for 1 hour to blend the flavors.
5. Toss with toasted walnuts before serving.
Cooking with Walnuts

Banana Split Trail Mix

Ingredients

½ cup brown sugar  
¼ cup water  
2 tablespoons butter  
2 tablespoons honey  
2 teaspoons vanilla extract  
2 cups rolled oats  
2 cups California walnuts, coarsely chopped  
1 cup freeze-dried bananas or banana chips  
1 cup dried cherries or apricots  
1 cup dark chocolate

Procedure

1. Preheat oven to 300F and line baking sheet with parchment paper  
2. Bring brown sugar, water, butter, honey and extract to a boil in a large saucepan for a few minutes, then stir in oats and walnuts.  
3. Spread on prepared baking sheet and bake for 10 minutes.  
4. Stir and bake 10 more minutes or until lightly browned.  
5. Cook completely. Stir in dried fruit and chocolate chips.  

Kitchen Materials

Sauce pan  
Baking sheet  
Parchment paper  
Measuring cup  
Large airtight storage container

Extension Ideas

1. Have students create their own recipe using walnuts.  
2. Instruct students to research the nutritional facts for ingredients in the Fruity Walnut Slaw in order to make a nutrition label for one serving of Fruity Walnut Slaw.