Chapter 4: Fruits

OXIDATION TRANSFORMATION

Most Americans do not eat the variety or amount of fruit they need for healthy living. For this reason, it is important to learn about the science and nutrition of fruits. In this chapter, students will explore fruit by learning about enzymatic oxidation, the functions of antioxidants, and the many health benefits associated with eating fruits.

FOOD EXPLORATION LABS

Lab I: Enzymatic Reactions

- Teacher Preparation
- Teacher Lab Answer Key
- Student Lab

Lab II: Hidden Antioxidants

- Teacher Preparation
- Teacher Lab Answer Key
- Student Lab

INVESTIGATING YOUR HEALTH

Amazing Antioxidants

- Teacher Answer Key

Try This At Home: Fruit Salad

SUPPLEMENTAL MATERIALS

Teacher Preparation Slides

Student Pre-Lab Slides & Videos

Food Explorations Lab I:
Enzymatic Reactions

TEACHER LESSON PREPARATION

Lesson Focus

Understand the concept of enzymatic browning and methods for decreasing enzymatic oxidation.

Lesson Description

This lesson is divided into two parts. In Part A, students will observe three types of fruit to determine whether or not they are affected by enzymatic browning. In Part B, students will place apple pieces in test substances to determine if the test substance decreases the enzymatic browning.

Academic Content Standards

ELA Common Core Standards for Literacy in Science and Technical Subjects (R-reading, W-writing, SL-speaking and listening, L-language) Grades 6-8

R-1 Cite specific textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

R-3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

R-4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical content relevant to grade (6-8) text and topics.

R-10 Read and comprehend complex literary and informational texts independently and proficiently.

W-2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

SL-1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade (6-8) topics, texts, and issues, building on others' ideas and expressing their own clearly.

L-1 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Next Generation Science Standards

Performance Expectations

MS-PS1-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

Disciplinary Core Ideas

PS1.A Structure and Properties of Matter

- Each substance has characteristic physical and chemical properties that can be used to identify it; and
- Substances react chemically in a characteristic way. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants.

Science and Engineering Practices

Analyzing and Interpreting Data: Analyze and interpret data to determine similarities and differences in the findings.

Scientific knowledge is based on logical and conceptual connections between evidence and explanation.

Crosscutting Concepts

Macroscopic patterns are related to the nature of microscopic and atomic-level structure.

Background Information

Fruits contain important disease-fighting compounds called antioxidants. **Antioxidants** aid in the prevention and repair of cells damaged from oxidation. **Oxidation** is a normal process that our body's cells undergo, but it can cause stress on our bodies. It is important to eat foods containing antioxidants to help keep our bodies healthy and to treat and prevent the stress caused by oxidation. Antioxidants can be found in fruits, vegetables, grains, nuts, and spices. Fruits containing the highest concentrations are berries, such as cranberries, blueberries, and blackberries. Including these foods in our diets may help prevent diseases, including cancer and heart disease.

Vitamins A, C, E, and the mineral zinc are antioxidants that can be found on the nutrition facts label. Vitamin C is the most common antioxidant, and it helps heal cuts and protect bones and teeth. Citrus fruits, including grapefruit, lemons, limes, oranges, and tangerines, are the highest in Vitamin C. Vitamin A is found in colorful fruits, like apricots and cantaloupe. Vitamin A helps your eyes. Vitamin E and zinc help your immune system and can be found in many different foods. The mineral selenium and the phytochemicals (see *Chapter 3: Vegetables*) lycopene, beta-carotene, and flavonoids are also antioxidants found in fruit.

Some of the antioxidants found in fruits (and some vegetables) have also been found to prevent other damaging processes, like enzymatic browning. Enzymatic browning occurs when enzymes

catalyze the oxidation of phenols causing a food's color to change to brown. **Enzymatic browning** can be both beneficial and detrimental for foods; however, it is not considered unhealthy to consume these foods after they have turned brown. For foods like tea and dried fruits, enzymatic browning is beneficial; it enhances their flavor and color. For foods like fresh fruits, vegetables and seafood, enzymatic browning is unfavorable because the brown color change causes them to appear aged.

Methods to Prevent Enzymatic Browning Reactions

Application of Heat: Blanching - Fruits and vegetables are often boiled for 1-5 minutes (depending on size of produce) before freezing. Blanching inactivates enzymes by causing these proteins to denature and lose function.

Sulfur Dioxide Dip: Sulfur dioxide is able to stabilize the color of fresh, and also processed fruits and vegetables. Sulfur dioxide stops the activity of oxidizing enzymes by removing the oxygen from the enzyme before pigments are formed. Sulfur dioxide also has antioxidant properties. It is often used in salad bars at restaurants to prevent unattractive browning.

Sugar Syrup Dip: This method is one of the oldest to prevent browning. The sugar syrup coats the fruit and prevents the fruit surface from contacting oxygen.

Vitamin C Dip: Vitamin C is a great antioxidant. It is oxidized instead of the catechol/tannin pigments that turn fruits brown when exposed to oxygen.

Citric acid and acetic acid: Acids work to lower the pH of fruit tissue and reduce the action of polyphenol oxidase (browning enzyme). If the pH falls below 3.0 the enzyme will be inactivated.

Materials

Teacher Materials

NOTE: Teacher material list is based on 6 groups of 4-5 students (24-30 students total).

Part A

2 bananas (¼ per group) + additional for student taste samples
2 apples – Organic *preferred* to ensure faster browning (1/3 per group) + additional for student taste samples (*See Part B)
2 oranges (¼ per group) + additional for student taste samples
paper towels
1 cutting board
1 knife
6 paper plates for student taste samples

Part B

*6 apples (1 per group)
6 beakers or measuring cups filled with water (needed for solutions)

Household Substances

NOTE: Specific needed amounts will vary based on the number of groups that choose each substance

vitamin C tablets (1 tablet per group)
cream of tartar (1/2 tsp. per group)
lemon juice (1/2 cup per group)
sugar (1/2 tsp. per group)
baking soda (1/2 tbsp. per group)
vinegar (1/2 cup per group)
salt (1/2 tsp. per group)

Student Materials

NOTE: Student material list is based on 1 group of 4-5 students. Refer to the "Equipment and Material Lists by Chapter" on page XIV of the FoodMASTER Middle Teacher Edition for whole class estimates (24-30 students divided into 6 groups) for perishable and nonperishable materials.

Part A

¼ apple, ¼ orange, ¼ banana
1 cutting board
3 plastic or blunt knives (or apple corer)
3 paper plates
1 kitchen timer or stopwatch
Paper towel
Safety goggles
Aprons (optional)
1 plastic sandwich bag if doing Part B on another day

Part B

1 apple
2 - 9oz. plastic cups
1 cutting board
kitchen timer or stopwatch
1 paper plate
1 apple sample from part A
safety goggles
2 household substances to test (chosen by group)
2 plastic spoons
1 plastic or blunt knife
1 beaker or measuring cup containing water
½ teaspoon measuring spoon
1 black permanent marker
aprons (optional)

Teacher Pre-Lab Preparation

IMPORTANT NOTE: If possible, it is recommended that both Parts A and B of Lab I be completed in one class period.

1. Review teacher background information, teacher preparation slides, student pre-lab slides/videos, student introduction, suggested instructional plan, and the student Food Exploration lab investigation procedures.

2. Prepare the following for each group:

Part A

Cut thin slices for students to taste and place them on paper plates. Slice apples, oranges, and bananas for the investigation in half. Each group will be given ¼ of a whole of each fruit type. If possible, this should be started at the beginning of the lesson so your students can observe the process.

TIP: The extra apples are needed for the second investigation in this lesson. It is important these apples remain in whole form until you are ready to begin the second investigation to prevent enzymatic browning from occurring. Additionally, classroom temperature can affect how quickly the apple will brown. If your classroom is generally cold, oxidation effects may be less obvious. You may need to increase the amount of time students wait prior to observing a large change in the color of the apple's flesh.

TIMESAVER: Prepare fruit for the students ahead of time. The apples will be the only exception, as they should brown quickly. For quicker preparation of apples, use an apple corer. You may also consider assigning fewer fruits to each group and allow data to be shared. However, be sure to provide each group with one oxidizing fruit and one non-oxidizing fruit (e.g. apple and orange, or banana and orange). Be sure to adjust materials needed.

Part B

Students will choose 2 treatments (e.g. vitamin C, baking soda, etc.) to include in their investigation. Organize materials in one location for easy distribution. Students will prepare their own solutions (if applicable). Have these substances available at different areas/stations in the room to maintain student flow and prevent crowding.

TIP: If desired, some student groups may need to be asked to test certain substances to be sure all substances are tested.

TIMESAVER: Prepare solutions ahead of time. Keep in mind each group will need to be able to test their prediction. This may require students to complete their predictions prior to the planned lab or the preparation of multiple samples for each possible substance.

Suggested Instructional Plan

1. Review scientific vocabulary and knowledge prerequisites:

Investigation Control	**Enzymatic Browning**	**Enzymes**
Antioxidants	**Oxidation**	

2. Before beginning the lab investigation:

   a. Ask students to read *Oxidation Transformation* and complete the focus questions for this lab investigation.

   b. Require students to wash their hands.

c. Allow students to taste a sample of apple, orange, and banana prior to beginning any investigation procedures. This process is important for increasing student exposure to healthy foods and decreasing the likelihood that students will be tempted to taste foods included as investigation materials.

d. Emphasize the importance of practicing good food safety behaviors by not consuming substances *during* the lab investigation.

3. Student Lab Materials for **Part A**:

   It is recommended that materials are organized into stations for easier distribution. Materials are recommended based on the amount needed for 1 class of 30 students. Students should be arranged in small groups of 4-5.

4. Launch **Part A** of the lab by asking students to prepare their fruit. Students should then observe and make a prediction about their unknown substances. Instruct students to pay special attention to the timer as they collect their data.

   a. *Apple:* Students should observe the apple's flesh turning a brown color. As time passes, the brown color will become more distinct.

   b. *Orange:* Students will not observe any browning on the flesh of the orange.

   c. *Banana:* Students should observe browning of the banana slices. Browning will likely be less intense compared to the apples. The peel of the banana will also brown.

5. Allow students to work in small groups on the Student Lab Investigation worksheet to further explore the topic and respond to lab questions.

6. After completing the observation of enzymatic browning among three types of fruit and the investigation's conclusions, students should be prepared to begin Part B. Be sure student groups set aside the apple sample from Part A of the lab investigation to serve as the control in Part B. If completing the lab over two class periods, store apple slices in sealed plastic bags.

7. Distribute Student Lab Materials for **Part B:**

   It is recommended that materials are organized into stations for easier distribution. Materials are listed based on the amount needed for 1 class of 30 students. Students should be arranged in small groups of 4-5.

8. If Part A and B are completed on separate days, Part B should begin by showing students the provided video lab demonstration (Part I: Enzymatic Reactions). As review, the video will also show the enzymatic browning reactions they should have observed in Part A.

9. As a group, students should choose two substances they predict would prevent enzymatic oxidation.

10. Students will prepare the chosen substances and test their prediction using an apple.

Fruit	Household Substance	Enzymatic Browning Reaction
Apple and Banana	Vitamin C	Little to no browning
	Cream of Tartar	Little to no browning
	Lemon Juice	Little to no browning
	Sugar-water	Some browning
	Baking Soda	Browning (faster than without)
	Vinegar	Little to no browning
	Salt Water	Some browning
	Water	Browning (will slow the process if kept in water)
Orange	Vitamin C	No browning/change
	Cream of Tartar	No browning/change
	Lemon Juice	No browning/change
	Sugar-water	No browning/change
	Baking Soda	No browning/change
	Vinegar	No browning/change
	Salt Water	No browning/change
	Water	No browning/change

a. *Vitamin C:* Little to no browning should occur due to the presence of vitamin C (antioxidant).

b. *Cream of Tartar:* Little to no browning should occur. Cream of Tartar is an acid and will lower the pH of the fruit's flesh.

c. *Lemon Juice:* Little to no browning should occur due to the presence of vitamin C (antioxidant).

d. Sugar-water: Some browning should be expected. Sugar water may coat the surface of the fruit's flesh to prevent extensive browning.

e. *Baking Soda:* Browning should be expected. Baking soda will increase the pH of the fruit's flesh and hasten the browning effect.

f. *Vinegar:* Little to no browning should occur. Vinegar is an acid and will lower the pH of the fruit's flesh.

g. *Salt Water:* Some browning should be expected. Salt water may coat the surface of the fruit's flesh to prevent extensive browning.

h. *Water:* Water can temporarily prevent browning if the fruit is submerged. It works by decreasing exposure of the fruit's flesh to oxygen. If fruit is simply dipped in water, oxidation will occur. This sample can be used as an investigation control.

11. Allow students to work in small groups on the Student Lab Investigation worksheet to further explore the topic and respond to lab questions.

12. Follow-up with a class discussion about enzymatic browning and oxidation. Follow-up this lesson with the *Investigating Your Health* investigation. See Teacher Bites for ideas on how to further extend this lesson.

Teacher Bites: Lesson Extension

- Students can take photos of the fruit at different time intervals and create a poster explaining the investigation.
- Explore enzymatic browning in different varieties of apples (e.g. Granny Smith versus Red Delicious).
- Students can create or bring in recipes that include antioxidant-containing fruit as a primary ingredient (e.g. fruit salad with lemon juice as ingredient).

Food Explorations Lab II:
Hidden Antioxidants

TEACHER LESSON PREPARATION

Lesson Focus

Understand the relationship between oxidation and antioxidants, and the role each plays in human health.

Lesson Description

Students will prepare and test four substances for antioxidant properties using iodine.

Academic Content Standards

ELA Common Core Standards for Literacy in Science and Technical Subjects (R-reading, W-writing, SL-speaking and listening, L-language) Grades 6-8

R-1 Cite specific textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

R-3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

R-4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical content relevant to grade (6-8) text and topics.

R-10 Read and comprehend complex literary and informational texts independently and proficiently.

W-2 Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

SL-1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade (6-8) topics, texts, and issues, building on others' ideas and expressing their own clearly.

L-1 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Next Generation Science Standards

Performance Expectations

MS-PS1-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

MS-LS1-7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

Disciplinary Core Ideas

PS1.A Structure and Properties of Matter

- Each substance has characteristic physical and chemical properties that can be used to identify it.
- Substances react chemically in a characteristic way. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants.

LS1.A Structure and Function

- Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, support growth, or release energy.

Science and Engineering Practices

Analyzing and Interpreting Data:

- Analyze and interpret data to determine similarities and differences in the findings.
- Scientific knowledge is based on logical and conceptual connections between evidence and explanation.
- Develop a model to describe an unobservable mechanism.

Crosscutting Concepts

- Macroscopic patterns are related to the nature of microscopic and atomic-level structure.

Background Information

See Teacher Lesson Preparation under *Food Lab Explorations Part I.*

Materials

Teacher Materials

NOTE: Teacher material list is based on 6 groups of 4-5 students (24-30 students total).

6 beakers or measuring cups filled with water (350mL or 1 ½ cups each)
Colored Iodine
6 – 2 oz. or similar size cups
6 medicine droppers
Mortar and pestle (or spoon) for crushing vitamin C tablet

Household Substances

NOTE: Specific needed amounts will vary based on the number of groups that choose each substance.

vitamin C tablets (1 tablet per group)
cream of tartar (1/2 tbsp. per group)
lemon juice (1/2 cup per group)
vinegar (1/2 cup per group)

Student Materials

NOTE: Student material list is based on 1 group of 4-5 students. Refer to the FoodMASTER Middle "Equipment and Material Lists by Chapter" for whole class estimates (24-30 students divided into 6 groups) on perishable and nonperishable materials.

Safety goggles
aprons (optional)
1 test substance chosen by group
1 beaker or measuring cup containing water
1 – 9 oz. plastic cup
1 plastic spoon
1 - 2 oz. cup containing colored iodine
1 medicine dropper
1 black permanent marker

Teacher Pre-Lab Preparation

IMPORTANT NOTE: Colored iodine must be used in this experiment.

1. Review teacher background information, teacher preparation slides, student pre-lab slides/videos, student introduction, suggested instructional plan, and the student *Food Exploration* lab investigation procedures.

2. Prepare materials for each group. Place approximately 20 drops of iodine into each 2 oz. or similar size cup. Set up stations from which students can obtain the test substance chosen.

TIP: Groups may be assigned their test substance if it is desired that all substances be tested.

TIMESAVER: Prepare solutions ahead of time. Keep in mind that each group will need to be able to test their prediction. This may require students to complete their predictions prior to the planned lab or the preparation of multiple samples for each possible substance.

TIP: If sufficient amount of materials are not available, the testing of the substances may be done as a demonstration.

Suggested Instruction Plan

1. Review scientific vocabulary and knowledge prerequisites:

   Antioxidants **Oxidation**

2. Consider having your students research antioxidants and the role they play in health prior to beginning the lab investigation.

3. Before beginning the lab investigation:

   a. If applicable, ask students to read Oxidation Transformation and complete the focus questions for this lab investigation.

   b. Require students to wash their hands.

   c. Allow students to taste a sample of the food highlighted in the lesson prior to beginning any investigation procedures. This process is important for increasing student exposure to healthy foods and decreasing the likelihood that students will be tempted to taste foods included as investigation materials.

   d. Emphasize the importance of practicing good food safety behaviors by not consuming substances used as part of the lab investigation.

4. Distribute Materials:

   It is recommended that materials are organized into stations for easier distribution. Materials are recommended based on the amount needed for 1 class of 30 students. Students should be arranged in small groups of 4-5.

5. Launch the lab by asking students to make a prediction about the antioxidant potential of various acidic substances.

6. Students should choose one substance to test their prediction. After obtaining and recording observational data within each group, allow the groups to share their findings with the class. This step is necessary for each student to complete Table A.

   TIP: Groups may be assigned their test substance if it is desired that all substances be tested.

   a. *Cream of Tartar:* Iodine should change the color of the solution to an opaque golden yellow (pH ~ 4).

   b. *Vinegar:* Iodine should change the color of the solution to a medium clear, dark, golden yellow (pH ~ 3).

   c. *Vitamin C:* Iodine should disappear when added to the solution. The solution should remain clear. However, if iodine is continually added, eventually the iodine will completely oxidize the vitamin C present, potentially resulting in a color change (pH ~ 3, slightly lower than vinegar).

   d. *Lemon Juice:* Iodine should disappear when added to the solution. The solution should remain its original color. However, if iodine is continually added, eventually the iodine will completely oxidize the vitamin C present, potentially resulting in a color change (pH ~ 2).

7. Show students the provided video lab demonstration, Part II: Hidden Antioxidants.

8. Iodine can be used to detect vitamin C. When iodine is added to a vitamin C containing solution, ascorbic acid (vitamin C) is oxidized to dehydroascorbic acid and iodine is reduced to iodide ions.

$$C_6H_8O_6 \text{ (Ascorbic acid)} + I_2 \text{ (Iodine)} \square 2\ I^- \text{ (Iodide)} + C_6H_6O_6 \text{ (dehydroascorbic acid)}$$

9. Vitamin C tablets and lemon juice are the two substances with antioxidant properties. Vitamin C is an antioxidant and is contained in both substances. Oranges are also high in Vitamin C. In Part I-B of this lab, students should have observed the vitamin C solution and lemon juice prevent oxidative browning in apples. Other substances (e.g. sugar) can prevent oxidation browning; however, they work through other mechanisms such as reducing exposure of the fruit's flesh to oxygen or lowering the pH.

10. Allow students to work in small groups on the Student Lab Investigation worksheet to further explore the topic and respond to lab questions.

11. Follow-up with a class discussion about antioxidants and their role in human health. Follow-up this lesson with the *Investigating Your Health* investigation. See *Teacher Bites* for ideas on how to further extend this lesson.

Teacher Bites: Lesson Extension

- Explore other methods to prevent enzymatic browning. An acid with a lower pH is the key. Name other fruits that have a low and high pH. Test your theories by setting up and performing an investigation.

- Test the antioxidant potential of oranges by setting up another iodine investigation.

Investigating Your Health:
Amazing Antioxidants

STUDENT HEALTH INVESTIGATION

Lesson Focus

Explore the health benefits of consuming fruits. Students will research antioxidants, their fruit sources, and health benefits. Students will compare the nutrients of frozen, dried, and canned fruit.

Lesson Description

Students will compare and contrast Nutrition Facts labels for a fruit in its frozen, canned, and dried packaging. They may find labels in the grocery store or use USDA's on-line database. Students will also create three recipes, one for each daily meal, using fruit as a main ingredient.

Learning Objectives

As a result of this lesson, students will be able to:

- Define antioxidants
- Identify fruit sources of various antioxidants
- Describe the health benefits of consuming fruits

Academic Content Standards

ELA Common Core Standards for Literacy in Science and Technical Subjects (R-reading, W-writing, SL-speaking and listening, L-language) Grades 6-8

R-1 Cite specific textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

R-4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical content relevant to grade (6-8) text and topics.

R-10 Read and comprehend science/technical texts in the grades 6-8 text.

W-2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

W-7 Conduct short research projects to answer a question (including a self-generated question) drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

W-9 Draw evidence from informational texts to support analysis, reflection, and research.

Next Generation Science Standards

Performance Expectation

MS-LS1-7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

Disciplinary Core Idea

LS1.C Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, support growth, or release energy.

Science and Engineering Practices

Analyzing and Interpreting Data: Analyze and interpret data to determine similarities and differences in the findings.

Suggested Instructional Plan

1. Review Scientific Vocabulary and Knowledge Prerequisites:

   Antioxidants

2. **Part A** - Instruct students to research antioxidants prior to beginning the investigation. Students should seek to identify specific antioxidants, their health benefits, and fruit-based food sources.

3. Using the provided student background or information learned from researching antioxidants, students should examine the food labels for a single fruit packaged in three different ways (i.e. frozen, dried, and canned).

4. Students can find food labels in the grocery store, USDA's nutrient database (http://ndb.nal.usda.gov/ndb/foods/search/list), or use the labels provided.

5. If you choose to use the provided pineapple food labels, see the Teacher Edition workbook for answers to the *Investigating Your Health* lab questions. Answers to questions based on other food labels will vary.

6. If completed in-class, allow students to work in small groups on the Investigation worksheet to further explore the topic and respond to questions.

7. Follow-up with a class discussion about student findings related to the health benefits of fruits and student generated ideas for increasing fruit consumption.

Pineapple Food Labels

Frozen Pineapple

Nutrition Facts

Serving Size	**¾ cup**
Calories	**70**
Total Fat	**0g**
Sodium	**0mg**
Total Carbohydrates	**19g**
Dietary Fiber	**2g**
Sugars	**14g**
Protein	**0g**

Vitamin A 2%	Vitamin C 130%
Vitamin E 0%	Calcium 2%
Iron 0%	Thiamin 0%
Niacin 0%	Folate 0%
Vitamin B_{12} 0%	Zinc 0%
Magnesium 0%	

Dried Pineapple

Nutrition Facts

Serving Size	**¾ cup**
Calories	**318**
Total Fat	**0g**
Sodium	**193mg**
Total Carbohydrates	**79g**
Dietary Fiber	**2g**
Sugars	**70g**
Protein	**0g**

Vitamin A 0%	Vitamin C 0%
Vitamin E 0%	Calcium 2%
Iron 2%	Thiamin 0%
Niacin 0%	Folate 0%
Vitamin B_{12} 0%	Zinc 0%
Magnesium 2%	

Canned Pineapple

Nutrition Facts

Serving Size	**¾ cup**
Calories	**105**
Total Fat	**0g**
Sodium	**15mg**
Total Carbohydrates	**26g**
Dietary Fiber	**2g**
Sugars	**23g**
Protein	**0g**

Vitamin A 0%	Vitamin C 20%
Vitamin E 0%	Calcium 0%
Iron 0%	Thiamin 0%
Niacin 0%	Folate 0%
Vitamin B_{12} 0%	Zinc 0%
Magnesium 0%	