



RESOURCES AND THE ENVIRONMENT

# Raw vs. Processed Food

Written by Barbara Tharp, M.S., Nancy Moreno, Ph.D., and Paula Cutler, B.A.

from *Resources and the Environment Teacher's Guide* and for *Tillena Lou's Big Adventure*.

**BCM**<sup>®</sup>  
Baylor  
College of  
Medicine

This activity is part of the Resources and the Environment teaching unit. The *teacher's guide* may be used alone or with integrated unit components. The Resources unit is comprised of the guide, *Tillena Lou's Big Adventure* (storybook), and two supplements: *The Reading Link* and *The Math Link*. For more information on this and other educational programs, contact the Center for Educational Outreach at 713-798-8200, 800-798-8244, or visit <http://www.bioedonline.org/>

© 2014 by Baylor College of Medicine  
All rights reserved.  
Printed in the United States of America.

ISBN: 978-1-888997-67-5

# BioEd<sup>SM</sup>

Teacher Resources from the Center for Educational Outreach at Baylor College of Medicine.

The mark “BioEd” is a service mark of Baylor College of Medicine. No part of this book may be reproduced by any mechanical, photographic or electronic process, or in the form of an audio recording, nor may it be stored in a retrieval system, transmitted, or otherwise copied for public or private use without prior written permission of the publisher. Black-line masters reproduced for classroom use are excepted.

The activities described in this book are intended for school-age children under direct supervision of adults. The authors, Baylor College of Medicine and the publisher cannot be responsible for any accidents or injuries that may result from conduct of the activities, from not specifically following directions, or from ignoring cautions contained in the text.

Development of My World and Me<sup>®</sup> educational materials was supported, in part, by the National Institutes of Health, National Center for Research Resources, grant number RR25 RR13454, and National Institute of Environmental Health Sciences, grant number R25 ES10698. The opinions, findings and conclusions expressed in this publication are solely those of the authors and do not necessarily reflect the views of Baylor College of Medicine or the funding agencies.

Authors: Barbara Z. Tharp, MS, Nancy P. Moreno, PhD, and Paula H. Cutler, BA  
Editor: James P. Denk, MA  
Design and Illustrations: Martha S. Young, BFA, and Christopher A. Burnett, BA  
Illustrations from *Tillena Lou's Big Adventure* by T Lewis, BFA

## ACKNOWLEDGMENTS

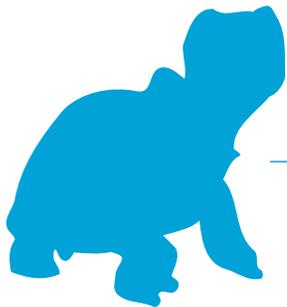
The My World and Me Project at Baylor College of Medicine has benefited from the vision and knowledge of scientists and educators from a wide range of specialties. Our heartfelt appreciation goes to William A. Thomson, PhD, Professor of Allied Health Sciences, and Family and Community Medicine and Director, Center for Educational Outreach, who has lent his support and expertise to the project.

Special acknowledgment is due to our affiliate in this project, the American Physiological Society (APS). We especially thank Marsha Lakes Matyas, PhD, and Katie Frampton of APS, for their invaluable reviews of draft materials and direction of field tests, focus groups, and dissemination activities in the Washington, DC area.

Special thanks go to the National Center for Research Resources of the National Institutes of Health (NIH) for its support of the My World and Me project, and to the National Institute of Environmental Health Sciences, NIH, for its support of classroom implementation of My World and Me materials in the Houston area.

We are grateful to the many classroom teachers in Washington, DC, and Houston, Texas, who participated in the field tests of these materials and provided invaluable feedback. We especially thank Rachel J. Cunningham, Wanda J. de Vries and Nannette M. Schultz at Whidby Elementary School in Houston for their contributions and suggestions.

**BCM<sup>®</sup>** Center for Educational Outreach  
Baylor College of Medicine  
One Baylor Plaza, BCM411  
Houston, Texas 77030  
713-798-8200 | 800-798-8244  
**Baylor**  
**College of**  
**Medicine** www.bioedonline.org | edoutreach@bcm.edu



# Raw vs. Processed Food

Students gain an understanding of what “processed” means. They also distinguish between natural and processed foods, and learn about sources of some foods.

## CONCEPTS

- Living things have basic needs.
- All foods that humans eat begin in a natural state.
- People eat some foods in their natural state (unprocessed) and some in a processed state. Not all foods are edible by people without processing.
- Human beings are among the few animals that process their food (others include leaf cutter ants, bees, and wasps).

## SKILLS

- Observing
- Sorting and classifying
- Comparing and contrasting
- Matching
- Applying knowledge
- Communicating
- Charting

## TIME

**Setup:** 10 minutes

**Class:** 45 minutes in one session

## MATERIALS (see Safety Issues and Setup)

### Teacher Materials

- 12 bags or trays
- 12 natural food items
- 12 processed food items that match the natural food items

### Materials per Student Team

- Prepared bag or tray with one mixed set of food items, one natural and one processed (see Setup)

### Materials per Student

- Crayons or markers
- Sheets of drawing paper

Food is one of the four basic needs of organisms that cannot make their own food through photosynthesis. Organisms that trap light energy through photosynthesis and use it to manufacture their own food are known as producers. Some animals eat parts of plants as food. Different kinds of animals rely on other animals or their waste for food. All living things that rely on producers for food are known as consumers. Food sources are critical resources in all environments.

People use a variety of food resources to meet their energy and nutritional needs. People eat both natural and processed foods. With a few exceptions (for example, bees and wasps), people are the only animals that process their foods. Processed foods are foods that are no longer in their natural state, because they either have been cooked or combined with other food ingredients. For example, a raw, whole apple is a food in its natural state. However, applesauce, which is made by cooking the apple, is a processed food. Roasted peanuts are no longer in their natural state because they have been cooked. Raw foods, such as carrots, celery and lettuce, are considered natural for the purposes of this unit.

## SAFETY ISSUES

Many children have food allergies. You may wish to check with the school nurse or send a letter home to parents asking for this kind of information prior to conducting the activity.

Follow all district and school science laboratory safety procedures. Before and after the activity, have students wash their hands and clean work areas with disinfectant.

## SETUP

You will need to obtain 12 natural food items and their matching processed food companions (e.g., an orange and a carton of orange juice, see “Companion Foods,” p. 2). Prepare 12 mixed sets of food items, one set for each team of two students. Each set must contain one natural food and one processed food (for example, an orange and a tortilla).

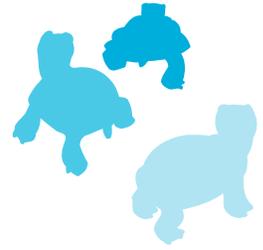
Prepare one set of foods for demonstration during a class discussion of natural and processed foods.

Have students work in teams of two.

## PROCEDURE

1. Before students begin handling food, make a point of demonstrating how to wash hands with soap and water. Have students wash their hands before proceeding with the activity.





## COMPANION FOODS

Natural	Processed
whole potato	potato chips
whole grape	raisin, grape juice
section of sugar cane	granulated sugar
ear of corn	tortilla, canned cooked corn kernels
whole strawberry	strawberry jam
brown rice	rice cereal
dried beans	canned beans
whole orange	orange juice
wheat berries	crackers, macaroni
tomato	salsa, catsup
carrot	cooked carrot
cucumber	pickle
milk*	cheese*
avocado	guacamole
whole raw egg	cooked egg
lemon	lemon juice, lemon candy
cinnamon stick	ground cinnamon
apple	apple sauce

\* You also may want to mention that most milk sold in stores is pasteurized (heated) to kill germs.

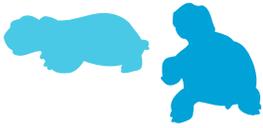


### WHAT IS “NATURAL”?

The word “natural” can have a variety of meanings on food labels and in reference to organic foods. Use of the term “organic” is regulated and refers to foods that have been produced without pesticides, chemical fertilizers, hormones or antibiotics.

*Tip:* Tell students to sing the “Happy Birthday” song completely to gauge how long to wash their hands—about 10 seconds.)

2. Gather students together in a semicircle in front of you and show them several unprocessed foods. For example, you could present an apple and a cucumber. Ask, *From where did these foods come? Can you eat them just the way they are? Can some other animal eat them?* As students answer, make sure they understand that the foods which are natural resources may be eaten just as they are. Now, show processed versions of the above foods (e.g., a jar of applesauce or a pickle). Ask, *Where did this applesauce come from originally?* (Is there an applesauce tree?) Make sure the students understand that applesauce is a processed food. Ask, *Can you eat the applesauce just the way it is? How has it changed from the apple?* Point out that since the apples are cooked and mashed, applesauce is a processed food. Ask, *Do animals eat applesauce?* Point out that unlike people, animals generally do not process their food. However, many animals, such as dogs or cats, will eat processed or combined foods.



## EXTENSIONS

- Have students draw or write steps they think are taken to make a natural food into a processed food. You may have to assign the foods (e.g., a can of tuna fish, a box of cereal, a can of grape juice), for them to investigate.
  - Make lunchtime observations. Ask, *What's in your lunch today?* Have students decide whether lunch food items are processed or natural.
  - Draw pictures of natural foods, then draw processed foods made from the natural ones. Cut out drawings, laminate them and put them with baskets labeled "natural" and "processed" for a sorting center.
  - At the conclusion of the activity, have a tasting party. For example, you could have a taco party with the tomatoes, tortillas, guacamole, etc.
  - Read books, such as *The Magic Tortilla*, *Tortilla Factory*, and *The Little Red Hen*.
  - Have students make a list of different natural and processed foods at a grocery store.
  - Encourage students to find natural and processed foods at home, draw and name them, and bring their drawings to class.
  - Make a classroom list, "All the Foods You Can Prepare With..." (e.g., tomato: pizza, spaghetti, soup, catsup; or apple: pie, sauce, cookie, cake, butter, jelly).
  - Show videos or sets of pictures showing the change a natural food undergoes to become processed (National Geographic, *Window on Literacy*, etc.).
3. Repeat the steps above, comparing a cucumber and a pickle. Explain to the students that each one now will be given a food that they will identify as "natural" or "processed." Also explain that someone in the room has a match for their food that is the opposite category and they are to find that food.
  4. Distribute one food set to each of the student pairs.
  5. Allow time for student pairs to examine, discuss and identify their foods. Then line students up with their foods. One at a time ask them to step forward, show their food and decide if it is natural or processed and why they think this is. Ask questions to lead them to the correct classification like, *Do you think this could be growing on a tree just like it looks?* Ultimately, students should form two lines, one for natural and another for processed. Next, encourage the students in the natural line to find their match or matches in the processed line. Encourage them to discuss what they know about the food and any other possible foods that could be created from the natural food.
  6. There may be more than one processed food for some of the natural items.
  7. Distribute drawing paper and crayons or markers to each student. Have each student draw a picture of his or her food, color and cut it out.
  8. Create a chart on the board, with one column labeled "Natural" and the other "Processed." Gather all students into a class group again. Explain that each will bring his/her food picture to the front of the class, name it and identify it as natural or processed. Then each student will attach the food picture to the chart under the appropriate column, natural or processed. The student(s) with the matching counterpart follows that student, attaching his/her food to the opposite column on the chart.
  9. Ask students to share what they know about their foods: where the food comes from, and what they think was done to make the processed food.