

# Science

## Starchy Foods

### Purpose:

- Learn about starch in food
- Predict, test, and compare the starch contents of different foods

### **Starch:**

Plants make their own food using water, air, and sunlight. They make food in the form of carbohydrates such as sugars and starch. Plants use starch as storage food for later use.

Animals, including humans, depend on plants for food and energy. Your body breaks down plant sugar and starch differently for energy. For short term energy, your body burns sugars, which are broken down quickly. For long term energy, your body burns starches, which are broken down slowly over time. Your body needs both types of energy to function properly.

In the food pyramid, foods within the grain group have lots of starch. Bread, pasta, and cereals are all part of the grain food pyramid group. Try to consume mostly whole grain foods (brown rice, whole-wheat flour, and oatmeal) from this food group as they are better for your body than refined grains (white rice, white bread, and white flour). The food pyramid recommends that older children consume at least 9 grain servings daily.

Cassava is found in tropical countries and is 90% starch. The tapioca flour in this 4-H activity sheet investigation is made from cassava. Scientists use iodine to test for starch. Iodine turns from reddish brown to blue-black when it is exposed to starch.

Adapted from: Wonderwise African Plant Explorer <http://wonderwise.unl.edu/>

### Activity 1: Comparing Food Starch Contents

#### Supplies (for each group):

- Paper and pencil
- 2 Tbsp iodine (10% povidone-iodine solution is found in most drugstores) in disposable cup
- 1 plastic pipette or dropper
- On plastic plate, place:
  - 1 tsp tapioca flour
  - Small pieces of 2 starchy foods (crackers, potatoes, corn chips, bread)
  - Small pieces of 2 non-starchy foods (cheese, apples, celery)

Work in groups of 4. Have each group choose four food items (in addition to the tsp of tapioca flour) to create a prepared plate of food items and list these items on a piece of paper. Ask each group to predict and write down which foods on their plate contain the most starch. After the group members have made their predictions, have an adult group leader obtain a cup of iodine and pipette. The leader should emphasize that iodine stains clothing and should never be eaten. Test the group predictions by having the leader place a small drop of iodine on each food item. Have participants record what color each food turned. Next to the recorded color, write yes or no if the food contained starch or not. Have an adult group leader discard food samples when finished. Iodine is poisonous so do not eat any food used in this activity.

#### Discussion:

1. What color did the different foods change?
2. Which foods contained the most starch?
3. How do the results compare to the predictions?



**COLORADO STATE UNIVERSITY  
EXTENSION**

**1 activity for grades 3-6. Allow 30 minutes. Science Standard - Investigation**  
Colorado State University Extension 4-H Youth Development