Tennessee 4-H Food Science Project

Advanced

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UTEXTENSION
INSTITUTE OF AGRICULTURE
THE UNIVERSITY OF TENNESSEE

FOOD SENSORY SCIENCE

Outcome: Design your own sensory test

EXPLORE: Step Out Activity

Your need for calcium increased by one third between 7 and 10 years of age, and again between 11 and 14 years old. There are very few foods, other than milk and milk products, that are a good source of calcium.

For an example, note the different quantities of food required to furnish approximately the same amount of calcium:

a. 1 x 1 x 1 inch slice (one ounce) cheddar cheese
b. 3/4 cup of whole or skim milk
c. 1-1/8 cup of cooked mustard or turnip greens
d. 2-1/4 cups of cooked navy beans

Each of these foods furnishes 216 milligrams of calcium. This is 18 percent of the recommended daily requirements for calcium. Hamburgers, cereals, and snacks are generally low in calcium. Therefore, it is recommended they be served alongside milk.

Do a taste test between whole milk and skim milk. Compare and contrast the taste.

What do they have in common?

What is different between the two?

EXPAND & APPLY

What skills did you learn? How does this relate to every day life? How can you use this knowledge in the future?

FOOD MICROBIOLOGY

Outcome: Explain how the FDA, USDA, and CDC trace food outbreak.

EXPLORE: Step Out Activity

Research the following organizations and write down what each acronym means:

USDA:

FDA:

CDC:

Explain how the organizations listed above trace food outbreaks or foodborne disease.

EXPAND & APPLY

What skills did you learn? How does this relate to every day life? How can you use this knowledge in the future?

FOOD CHEMISTRY

Outcome: Design a food chemistry experiment

EXPLORE: Step Out Activity

Let's study the effect of time when sugar is added to the texture of cooked fruit.

Select, pare, and quarter six apples or pears.

Divide the pieces into three groups.

Place 1/4 cup water in each of three similar size pans and add one portion of fruit.

Using a piece of tape or a crayon, label the pans A, B, and C.

To pan A, add 1/2 cup sugar, cover the pan, and bring it to a boil. Then continue to cook over low heat until fruit is tender but not mushy.

To pan B, cook fruit in water in a covered pan for about 5 minutes, then add 1/3 cup sugar. Continue cooking until the fruit becomes tender.

For pan C, cook fruit in water, covered, until tender. Then add 1/2 cup sugar and continue to heat until dissolved.

Complete the chart:

Time Sugar Added	Appearance	Texture	Flavor of Syrup	Fruit
Before Cooking				
Partially Cooked				
After Cooking				

Turn to the next page to continue answering questions.

FOOD CHEMISTRY

Outcome: Design a food chemistry experiment

EXPLORE: Step Out Activity

Now that you have some results, answer the following questions.

Does adding sugar to the fruit before it is cooked make it softer or firmer then adding sugar after cooking?

Which preparation method makes the fruit taste sweeter?

Which preparation method yields the most attractive fruit?

Which method would you use for cooking fruit for a pie?

Which method would you use for making a fruit sauce?

Do you think you might have different experiences with different fruits? Compare Red Delicious apples with Winesap or Granny Smith apples to see which is best. If you conduct this experiment, leave the cover off during your preparations. Then answer the last question:

Does the product take longer to cook without the cover on? Yes No

EXPAND & APPLY

What skills did you learn? How does this relate to every day life? How can you use this knowledge in the future?

FOOD SCIENCE, SAFETY AND SANITATION IN THE KITCHEN

Outcome: Research various culinary science positions, including specific companies, job titles, salary, roles and responsibilities, and prerequisites.

EXPLORE: Step Out Activity

Research culinary science roles and fill in the chart below:

Company	Position/ Job Title	Education Requirements	Expected Salary	Responsibilities

EXPAND & APPLY

What skills did you learn? How does this relate to every day life? How can you use this knowledge in the future?