Milk Makeup

Objective

Students will investigate the nutritional composition of cow milk and pinniped milk. They will create charts showing the amount of fat, protein, sugar, and water in cow and pinniped milk.

Materials

per student group:

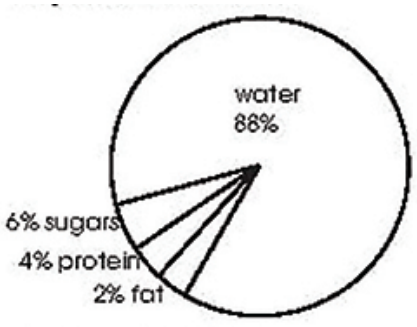
- ❑ various milk cartons (nonfat, 1%, 2% and whole) with nutritional information listed
- ❑ metric weight scale
- ❑ measuring cup
- ❑ paper
- ❑ pencil

Background

Pinnipeds have very fat-rich milk. Rich, creamy milk contains a lot of calories (energy) and helps pups grow quickly. Pinnipeds with a short (one month) nursing period generally produce milk with a higher fat content than pinnipeds who have an extended (six month) nursing period.

Action

1. Help students read nutritional information on the milk cartons. Explain the meaning of serving size and values for fat, protein, and sugars (carbohydrates).
2. Have students determine the percentages of water, fat, protein, and sugar by following this procedure. Determine the serving size (such as 8 oz. or 236 ml). On a metric scale, weigh the measuring cup then fill the cup with a serving size of milk. Determine how many grams the liquid weighs. Look at the nutritional label and add the weight values for fat, sugar, and protein. Subtract that value from the total weight value to get the weight of water.sequence and place the cards in order.
3. Demonstrate how to present this information in the form of a pie chart by copying the pie chart at the bottom onto a chalkboard or writing surface.
4. Write the following information on the board regarding pinniped milk.
   - Harbor seal milk contains 45% fat, 45% water, 9% protein, 1% sugar.
   - Walrus milk contains 60% water, 30% fat, 10% protein, and traces of sugars.
5. Have students create new pie charts for each pinniped milk data and create a new milk carton for listing ingredients. Would anyone like to buy harbor seal milk?



Nutrient values for 2% fat cow milk.