Name Date Class

Chapter 6

Real World BioApplications

How Lean Is Lean Ground Beef?

Nutritionists caution against diets that include too much fat. However, the body needs some fat. Fats are one of the six essential nutrients, are a major energy source for the body, and are important building blocks of cell membranes. To lower your intake of dietary fats, nutritionists suggest that you avoid junk food, cut down on dairy products, and eat leaner meats such as chicken or lean ground beef. Supermarkets offer consumers different types of lean ground beef, such as 75 percent lean, 85 percent lean, and 95 percent lean. But are these lean varieties of beef really worth the added cost, and are they really as lean as advertised? In this activity, you'll answer these questions as you determine the fat content in three samples of ground beef.

PROCEDURE

1. Obtain and label three different samples of ground beef, and record information about each sample in Table 1. Calculate the beef's cost per 100 grams by dividing the price per pound by 454 and multiplying by 100.

Table 1

Ground Beef Sample	Percentage of Fat on Label	Cost per 100 Grams
1		
2		
3		

2. Using a balance, weigh out a 100-g sample of ground beef and place it in a large beaker labeled Sample 1. Fill the beaker three-fourths full with water, set it on a hot plate, and heat to boiling. **CAUTION:** ***Use care when working with a heat source.***
3. Use tongs or gloves to remove the beaker from the heat source, and allow it to cool 10 minutes.
4. The fat will form a separate layer above the water. Pour as much of the fat as you can into a graduated cylinder. Use care so as not to pour off water into the graduated cylinder. It may be necessary to gently scrape remaining fat particles from the beaker and add them to the graduated cylinder. Determine the volume of fat in ground beef Sample 1, and record this in Table 2. Calculate the mass of the fat by multiplying the volume of fat by 0.9 gm/mL, the density of fat.
5. Calculate the percentage of fat by dividing the mass of fat by the mass of Sample 1 and multiplying by 100%. Record the percentage of fat in Table 2.
6. Repeat steps 2 through 5 for the other two beef samples.

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Table 2

Ground Beef Sample	Mass (g)	Volume of Fat (mL)	Mass of Fat (g)	Percentage of Fat in Sample
1				
2				
3				

Analyze and Conclude

1. Which ground beef sample had the lowest percentage of fat? The highest?

2. Do your experimental percentages of fat agree with those stated on the labels of the ground beef samples? What might account for differences between the values?

3. Which of the ground beef samples would you be most likely to buy? Explain your answer.