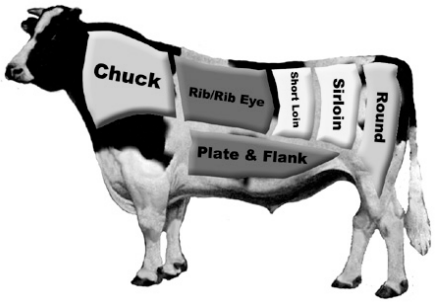
Name: _____ Date: _____

The Fat Content of Ground Beef



Introduction

The amount of fat allowed in ground beef is regulated by law: 30% maximum for ground beef and 15% maximum for lean ground beef. Ground beef with less fat is more expensive because the butcher must spend more time preparing it, and because it has less "filler".

In this lab, you will make a rough determination of the percent of fat in regular ground beef vs. lean ground beef. By boiling off the fat from a 100-g sample of beef and collecting it in a graduated cylinder, each milliliter of oil will represent approximately one percent of fat in the ground beef.

Materials

filter paper, large
ground beef
lean ground beef
pipettes

Equipment

beaker, 600-mL or larger
beaker tongs
graduated cylinder, 100-mL
hotplate
stirring rod

Safety Considerations

- Raw beef can contain *E. coli* bacteria; wear gloves while working with the meat and wash your hands thoroughly after completing this lab.

Procedure

1. Using a balance, obtain a 100-g sample of either regular ground beef <u>or</u> lean ground beef. DO NOT PLACE THE MEAT DIRECTLY ON THE BALANCE; instead, "zero" a piece of large filter paper and weigh the beef on that.
2. Add the beef sample to a large beaker.
3. Add enough tap water to the beaker so that it is within 200 mL of the top (i.e., 400 mL for a 600-mL beaker, 800 mL for a 1000-mL beaker, etc.).
4. Using a hotplate, gently boil the sample for 15 minutes, or until the entire sample has turned gray. Be careful not to allow any material to spill or splatter.
5. Turn off the hotplate and allow the sample to cool so that the meat settles to the bottom. The fat should form a liquid layer on top of the water.
6. Carefully pour off only the fat layer into a clean, 100-mL graduated cylinder. You may want to use a pipette for this step.
7. Read the volume of fat in the cylinder, ignoring any water that may be in there. We will assume that 1 mL of oil is equivalent to 1% of fat in the 100-g sample of beef. Record this value in the Data Table.
8. Obtain data on the other samples of beef from your classmates.

Clean-up

1. Dispose of the cooked beef in the trash, NOT THE SINK.
2. Clean the beaker and cylinder thoroughly with soap, water and a test tube brush.
3. Return all equipment to its proper location.
4. Wipe down your lab area and wash your hands before leaving the lab.

Data Table

	Your Sample	Class Average	Class Average
Regular or Lean?		**Regular Ground**	**Lean Ground**
Cost ($/lb)			
Mass of sample		**100 g**	**100 g**
% Fat			

Questions

1. How did your results compare to the class average?

   _____

   _____

2. How does heat affect the fat in the ground beef?

   _____

   _____

3. How does the cost of the beef relate to its amount of fat? Do you think the cost difference is worth it? Why or why not?

   _____

   _____

4. How is this lab similar to the Greasy French Fries lab we just did? How is it different?

   _____

   _____

5. List one way you could change this lab and describe how your results might be different.

   _____

   _____