

Name: _____ Date: _____ Block: _____

Food Calorimetry Lab

Purpose: To measure and determine the energy, in Calories, released by burning food.

Materials:

- Balance
- Graduated cylinder
- Ring stand
- Ring clamp
- Wire gauze
- Flask
- Thermometer
- Water
- Matches
- Aluminum pan
- Needle inserted into cork stopper wrapped with foil
- Soap
- Food samples

Procedure:

1. Attach the ring clamp to the ring stand.
2. Place wire gauze on top of the ring clamp.
3. Wipe soap on the bottom of the flask.
4. Fill the flask with 100 mL of water.
5. Measure the initial temperature of the water.
6. Place the flask on top of the wire gauze on the ring stand.
7. Record the mass of the food sample.
8. Carefully stick the food sample through the needle attached to the foil covered stopper.
9. Place the stopper with the food sample into the aluminum pan.
10. Place the aluminum pan underneath the flask.
11. Strike a match and ignite the food sample.
12. Once the food begins to burn, blow out the match.
13. Place the match into the water waste container.
14. Let the food sample completely burn then measure the final temperature of the water.
15. Remove the food sample from the needle then throw the food in the trash.
16. Discard the water down the drain.
17. Repeat steps 4-16 using a different food item.

Data:

Food Sample	Mass of Food (g)	Volume of Water (mL)	Initial Temperature of Water (°C)	Final Temperature of Water (°C)

Calculations:

1. Determine the mass of water used for each food sample. (Hint: the density of water is 1 g/mL)
2. Using $q = m C \Delta T$ equation, calculate the amount of heat, in joules, absorbed by the water for each food sample. The specific heat of water is 4.184 J/g°C.
3. Determine the amount of energy, in nutritional Calories, released by each food sample. (1 nutritional Calorie = 1 kJ)
4. Calculate the amount of energy, in Cal/g, released by each food sample.
5. Using the food label as the accepted value, calculate the percent error for each food sample.

Calculation	Food Sample #1: _____	Food Sample #2: _____
1. Mass of water		
2. Heat absorbed by water (J)		
3. Energy released by food (Calories)		
4. Energy released by food (Cal/g)		
5. % error		

Discussion Questions:

1. Identify and explain possible sources of error? Why is percent error not 0%?

2. Is the burning of food an endothermic or exothermic process? Explain your reasoning.