

Lab - Energy in a Snack

Purpose: To experimentally determine the amount of energy released by your body when it eats a snack and compare it to the actual values.

In this experiment, you will need to write a procedure that will determine the amount of heat released when a snack item is burned. Use the candle-burning lab we have done earlier as a guideline. Before performing the laboratory, make sure you have written a lab procedure and developed a data table or list. You can have your teacher check your procedure for you before you begin. Perform the experiment in the hood. You will need to determine the energy released by a potato chip and one other item.

Procedure:

Data Table/List:

Calculations & Questions: (Perform calculation for each trial. Show work.)

- 1) Determine the mass (in grams) of water heated.
- 2) Calculate the overall temperature change of the water.
- 3) Calculate the total energy (in joules) used to heat the water. Remember that it takes 4.2 J of energy to raise the temperature of 1 gram of water by 1 °C.
- 4) The food Calorie, Cal (with an uppercase C), reported on food labels is a much larger energy unit than a joule. One Calorie equals 4200 J.
 - a) Calculate the total amount of Calories used to heat the water.
 - b) How many Calories were released by the snack item?
- 5) Calculate the amount of energy, per gram of snack item burned, for each trial.
- 6) Use the data from the snack package to calculate the Cal/g value for the snack.
- 7) Calculate the percent error between the label value and your experimental value.
- 8) What design errors in this activity might account for the difference between the label values and your experimental values?
- 9) How could your lab setup and procedure be improved to decrease the error?

Conclusion: