CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)

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Project Number

33068

Project Title

Testing the Accuracy of Food Calories by Using a Calorimeter and Calorimetry

Abstract

Objectives/Goals

This project tests the amount of calories on various products by using a homemade Calorimeter.The objective of this project is to find out if the Calories stated on the nutritional labels are correct or incorrect.

Methods/Materials

First thing one must do is create the calorimeter I designed. You will be need a foam container that is capable of storing 24 cans and wrap the interior with aluminum foil and secure the foil with duck tape. Place a stance in the center of the foam container and cover three of its walls with styrafoam. Make a hole in the foam container so that you can the ignite the product and see what is occurring. Fill the aluminum can with water and weigh the mass of the water in grams as well as its temperature in Celcius. Place either Doritos, Skittles, M&Mâ##s, Goldfish(cheddar), Tostitos, Danish Butter Cookies, Ritz Cheese Sandwhiches, Barritas Fresas, Almonds, dried banana, dried pineapple, or Bibinuelos in the bottom of the aluminum can. But first, measure the weight of the product being tested in grams, close the container, and ignite the product through the hole you created. Measure the temperature of the water after the product finishes burning. Use the information you received in the trail and plug it in to the equation Q=mc(delta)t to solve for calories. Then divide that answer by 1000 and you got the amount of Calories for that certain weight. Divide that answer by the weight you noted earlier and you got the Calories per gram. The last thing you must do is multiply that amount by the grams per serving on the nutritional label and you have the calories per serving, according to what to you tested.

Results

The results I got were off from the amount of calories on the nutritional labels. I got a 13% error overall. That means that my experiments were lower by 13% from the amount of calories on nutritional labels.

Conclusions/Discussion

I found out that the calorimeter design wasnâ##t very efficient because of the fact that there is still heat escaping. Also there is not enough oxygen being supplied into the Calorimeter. Both of these factors lead to error. Companies spend lots of money making sure that their products are true, which leads to my final thought. The calories on nutritional labels are correct, and one can only verify this by using a high-end bomb calorimeter.

Summary Statement

My porject is about me testing the accuracy of food calories found on nutrtional labels by using a homemade calorimeter and Calorimetry.

Help Received

Dr. Immel helped me by bring my project to life and provided me with a thermometer; Mr. Kempiak gave me a brief lecture on Calorimetry and provided me with a stance and an aluminum can.

Preliminary