



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Ryan A. Robie	Project Number J1532
Project Title Count on Calories	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project was to calculate the approximate food energy content in a peanut, an oyster cracker, and a mini-marshmallow and then compare my data with the actual Calorie count as listed on each foods nutrition facts label. The comparison of the experimental values with the label values will help me understand how the Calories in different types of food relate to the amount of energy one gets from those foods.</p> <p>Methods/Materials I used a simple homemade calorimetry system to measure the changes in the temperature of the water heated and I also measured the changes in the mass of each food burned. My materials consisted of the following: a cork, sewing needle, peanuts, oyster crackers, mini-marshmallows, water, pie tin, large tin can, small tin can, metal skewer, lighter, small digital scale, stopwatch, hemostats, tweezers, thermometer, measuring cup, nutrition facts labels from the different food items burned, and a pencil and paper to record my observations. Three trials were made for each food item. My constants for all trials were the mass of the water and the initial temperature of the water.</p> <p>Results The peanut consistently had the longest combustion time and effected the greatest temperature increase in the water heated in the calorimeter. The mini-marshmallow was the most flammable, burned the fastest, and effected the smallest temperature change in the water. The oyster cracker was the most difficult to ignite, but when it did its time to complete combustion was more than twice as long as that of the mini-marshmallow, yet less than half the time of the peanut.</p> <p>Conclusions/Discussion Using the data from my experiment, I verified that the calculated food energy content of different types of food does closely approximate the Calorie count as listed on each foods nutrition fact label. A calorie is a unit of energy defined as the quantity of heat needed to raise the temperature of 1 gram of water 1 degree centigrade. Through the process of combustion the chemical energy in each food substance was released and converted into the heat energy that raised the temperature of the water. My results suggest that of the three food items burned, the peanut sustains the longest lasting energy. This confirms the Calorie count information as listed on the nutrition facts labels. The peanut provides the most Calories per gram of the three food items tested.</p>	
Summary Statement I will quantify the energy available in three different foods and compare it to the food labels Calorie count.	
Help Received Dad supervised the construction of the simple calorimetry system.	