



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

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<b>Project Title</b> <b>Food on Fire: Does Fat Content Affect Calorie Levels in Food?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My purpose was to discover if foods with higher fat content had more calories in them. Mainly, I wanted to carry out an experiment that had to do with something we use everyday.. energy! <b>Methods/Materials</b> I first had to build a calorimeter (out of a coffee can, an aluminum can, a cork, 4 screws, and a support rod) to measure the amount of calories in the food samples. Then, each food sample had to be weighed and lit on fire under a can of water (the initial temperature of the water was measured). The food sample was allowed to burn out. Depending on how much the temperature of the water in the can changed, I was able to determine the amount of calories in the food using the formula $Q(\text{water})=mc(\Delta)T$ . $Q(\text{water})$ is the heat captured in kcalories, $m$ is the mass of the water, $c$ is the specific heat capacity of water (1 kcal per gram degree Celsius) and $(\Delta)T$ is the change in temperature. I used many food samples (2 popcorn kernels, 4 pine nuts of average size, 4 slivered almonds of average size, half of a large cracker, 1 average to large size Cheeto, and 2 average to small size tortilla chips). <b>Results</b> My results proved that my hypothesis (foods with higher fat content will have more calories) was not entirely true. The food samples went in this order from least to most fat: popcorn, crackers, tortilla chips, pines nuts and almonds (they tied), and Cheetos. The food samples, however, went in a different order from least calories to most calories: popcorn, crackers, tortilla chips, Cheetos, almonds, and pine nuts (this time the 2 nuts did not tie). Notice the order is not the same for both lists. Although the first three items stayed in the same order in both lists, the other three items did not. This is my evidence that fat content does not necessarily dictate the calorie levels in food. <b>Conclusions/Discussion</b> My experiment went quite well owing to the fact that my inexpensive, homemade calorimeter worked well. However, there were a couple hitches in my project. For example, many food samples did not burn throughout on the first trial and had to be tested more. Also, the project was very conservative. This is because while burning the food it is likely the burnt-out food sample still contained energy. It is also certain that some of the energy from the food sample did not transfer directly into the water, but heated the surrounding air and the aluminum can. Overall the project was a success.	
<b>Summary Statement</b> This project is about finding the amount finding the amount of calories in different food samples and then comparing the calorie amount to the fat caontent.	
<b>Help Received</b> Father supervised because of fire hazard.	