



CALIFORNIA STATE SCIENCE FAIR

2005 PROJECT SUMMARY

Name(s) Casey L. Fu	Project Number J0513
Project Title Density Fun with Cooking	
Objectives/Goals Why do some foods such as dumplings float on water when cooked? My hypothesis was that their density becomes less than that of water. I also thought that all foods decreased in density after they were cooked in boiling water.	Abstract Foods from different food groups (peanuts, apple, sweet rice flour, chicken, and carrots) were tested. To find the density, divide the weight by the volume. The scale was used to weigh the food. Since you can't measure the volume directly (foods that were tested have irregular shapes), the graduated cylinder was used to find the volume: Fill the graduated cylinder with tap water to about 50 mL. Record the volume. Next, place the food in the cylinder (If the food is partially out of the water, use a toothpick to push it down until the food is completely under the water) and record the new volume. The difference between the two volume readings is the volume of the food. The density of each food before and after cooked were tested.
Results Dumplings had the most significant density change before and after cooked, and they floated on boiling water. Their density decreased from 1.19 to 0.92. Second place was chicken, which decreased from 1.12 to 0.99 and floated on boiling water also. Surprisingly, apples and peanuts increased in density after they were cooked. Carrots decreased slightly in density.	
Conclusions/Discussion My hypothesis was partially correct. Foods become floating when cooked because their density decreased to less than that of water, but some foods such as apples and peanuts increased in density on boiling water. From this experiment, you can tell when cooking chicken or dumplings, once you see them float, they are ready to eat. You can save energy and time, and foods taste better when they are not overcooked.	
Summary Statement Dumplings and chicken float on boiling water because their density become less than water while foods such as apples and peanuts increase in density after cooked.	
Help Received Mom helped cook. Mom and Dad went over the report and gave suggestions. Sister helped decorate the board.	