



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

|   |                                       |
|---|---------------------------------------|
| <b>Name(s)</b><br><b>Ranjana Ravikumar</b>  | <b>Project Number</b><br><b>J1820</b> |
| <b>Project Title</b><br><b>Yummy Yogurt</b>   |                                       |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>The objective was to identify how the temperature of the milk influences the time it takes for the milk to turn into yogurt.<br>My goal was to solve my mother's problem in identifying the optimal temperature and time to convert milk into fresh, firm, and tangy yogurt.<br><b>Methods/Materials</b><br>Materials: 1 thermometer, 12 x 2/3 of a cup of 1% milk, 12 tablespoons cultured yogurt, 4 heat resistance cups, an oven, 12 labels, Measuring Cup<br><br>Procedure: 1. Pre-heat the oven to 80F. 2. Using the measuring cup, pour 1% milk into the cup until it is filled 2/3rd. Then transfer the contents of the measuring cup into a microwavable safe bowl. 3. Then microwave the milk till it boils. 4. Repeat step 2 and step 3 for 3 more bowls. 5. Cool the boiled milk in the first cup to 120F, transfer one tablespoon of cultured yogurt into the milk and put the cup into the oven. 6. Repeat steps 5 for the remaining three cups, each time cooling the milk by ten degrees less than the previous cup at the time of adding the cultured yogurt. 7. Place the cups one by one into the oven with the oven light on, thereby maintaining an ambient temperature of 80F. 8. Based on my pre-test experiment I would check the status of the milk in the cups after, say about 6 hours. Then every 15 minutes after that. 9. After a cup has been turned into yogurt I would record it on my data table.<br><b>Results</b><br>I conducted my experiment at four different temperature points (120F, 110F, 100F and 90F) and carried out 3 trials at each point.<br>With 120F as the setting temperature, it took an average of 5:04:20 hours for the milk to turn into yogurt. At 110F it took 4:43:00 hours, at 100F it took 4:11:00 hours, and at 90F it took 4:48:20 hours to turn into yogurt.<br><b>Conclusions/Discussion</b><br>My research guided me to conduct the experiments with the temperature of the milk in the range of 70F - 118F. The ambient temperature was maintained at 80F during the process of curdling the milk into yogurt.<br>My conclusion is that the optimal temperature for the milk to turn into yogurt is at 100F. My experiment yielded no inconsistent data in relation to my hypothesis.<br>I was thus able to identify the optimal temperature of 100F to create fresh, tangy yogurt with a firm |                                       |
| <b>Summary Statement</b><br>To identify the optimal temperature and time to convert milk into fresh, firm, and tangy yogurt.  |                                       |
| <b>Help Received</b><br>My Mother gave me the idea to do this project and for buying all of the supplies that I needed to conduct this experiment; Mrs. McCleary, Science Specialist at the Alderwood Basics Plus School, for teaching us to conduct the Science Fair Project and write the project report; My Father helped me to revise and edit  |                                       |