



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Gordon Cheung; Erik Huynh; Jimmy Lin	Project Number J1308
Project Title Brushing with Bacteria	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project was to find out the least costly and easiest way to disinfect toothbrushes of common mouth microorganisms. The results of this experiment can help us decide on healthier practices for dental hygiene. We tested the following rinses: hydrogen peroxide, hot water and salt water. We believe that the hydrogen peroxide would disinfect the most bacteria on the toothbrushes.</p> <p>Methods/Materials Materials, including labeled toothbrushes, were given to each subject. Each subject brushed with 3 brushes (1-morning; 2-after school; 3-bedtime) for 1 week. Then each subject brought toothbrushes to middle school lab. Next, we labeled and prepared agar Petri dishes; we swabbed brushes to Petri dishes; treated toothbrushes with liquid rinses (hydrogen peroxide, hot water and salt water) for 1 hr.; and swabbed brushes onto Petri Dishes. We then placed Petri dishes into incubator at 37.5 Celsius for 24 hrs. Record observations and measurements after 24 hrs of incubation. Material used were 20 prepared Petri Plates, Stirring Rod, beaker, toothbrushes, toothpaste, hydrogen peroxide, table salt, and 1 incubator model 10-140.</p> <p>Results According to our data, Hydrogen Peroxide had killed the most bacteria on the toothbrushes. The hydrogen peroxide killed an average of 93% of the bacteria on the toothbrushes. The hot water killed an average of 71% of the bacteria on the toothbrushes. The salt water had increased the amount of bacteria on the toothbrushes by 4 times.</p> <p>Conclusions/Discussion We accept our hypothesis because the hydrogen peroxide had killed the most bacteria on the toothbrushes. We were very surprised when the salt water had increased the amount of bacteria on the toothbrushes by about 4 times the amount of bacteria on the toothbrush. We think the bacteria in the tap water had over powered the salt. The salt could not kill all the bacteria in the tap water, so we ended up putting more bacteria on our toothbrushes.</p>	
Summary Statement This project is about finding the least costly and easiest way to disinfect microorganisms on toothbrushes.	
Help Received Teacher gave technical advice and supervised experiment; Parents drove us to stores and our homes.	