CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J1720

Project Title
To Swish or Not to Swish? That Is the Question: The Effectiveness of Oral Hygiene in Reducing Bacteria in the Mouth

Abstract

Objectives/Goals
My project was to determine what method of cleaning: 1) toothbrushing, 2) toothbrushing and flossing, 3) toothbrushing and mouthwash rinsing would kill the most bacteria in my mouth. My hypothesis was that toothbrushing and mouthwash rinsing would kill the most bacteria.

Methods/Materials
I prepared petri dishes by heating a bottle of nutrient agar and filling 10 dishes at a time. I stored the unused petri dishes upside down in sandwich bags in the refrigerator. For the control, my dad poured distilled water over a sterile cotton swab and swiped one tooth in my uncleaned mouth. We then swabbed back and forth across the entire petri dish. We did this a total of three times. I then stored the petri dishes in my incubator at 30 degrees Celsius. The next day I counted the petri dishes for the number of bacterial colonies. There were a lot of very small colonies so I counted in groups of ten. I recorded the temperature, time, number of colonies, and observations in my journal. I repeated all these steps for the tooth brushing, toothbrushing and flossing, and toothbrushing and mouthwash rinsing trials. I did a total of 9 dishes for each. My constant factors were the same amount of mouthwash (10 ml.) and toothpaste (pea-size), the same amount of time brushing (2 min.), flossing (1 min.), and mouthwash rinsing (1 min.). I incubated the dishes at the same temperature (about 30 degrees Celsius) for the same amount of time (24 hours).

Results
After doing my experiment, the mouthwashing group had the least amount of bacteria colonies counted per plate with an average of 635. The toothbrushing group had an average count of 1,157 colonies per plate. The toothbrushing and flossing group had an average count of 956 colonies per plate. My control group had an average count of 1,742 colonies counted per plate. To make sure that the average numbers of the four groups were reliable, I found that the control group had the most bacteria colonies counted in 7 out of 9 trials. Also, the toothbrushing and mouthwash rinsing group had the least amount of bacteria colonies counted in 5 out of the 9 trials. This proved to me that the averages were reliable.

Conclusions/Discussion
My hypothesis was supported because toothbrushing and mouthwash rinsing had the smallest average amount of bacteria colonies compared to toothbrushing and toothbrushing and flossing.

Summary Statement
My project showed me how important toothbrushing, flossing and mouthwashing is in preventing diseases in my mouth.

Help Received
My mom helped with typing and matting. My dad took pictures and swabbed my tooth and helped me swab the dishes.