CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

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Project Number

34666

Project Title

Toothbrush Location Bacteria Experiment: Where Should You Store Your Toothbrush?

Abstract

Objectives/Goals

Toothbrushes in the bathroom come into contact with many contaminants, including mold, toilet spray, human germs and dust. The objective of this project is to determine which toothbrush storage location in the home (cup, holder, drawer, sink counter, medicine cabinet) is exposed to the most bacteria in the course of regular use.

Methods/Materials

5 agar-filled Petri dishes, 5 sterile cotton swabs, 5 Equaline brand toothbrushes, one homemade incubator. Use each toothbrush once with the same toothpaste and in the same mouth. Place toothbrushes in designated locations and leave them there for 72-hour period under normal use conditions. Track bathroom use patterns in log. Collect samples from each toothbrush and place samples in Petri dishes under uniform light and heat conditions. Measure bacterial growth in Petri dishes after 72-hour period.

Results

The greatest amount of bacterial growth was found in the sample from the toothbrush left directly on the bathroom sink counter, followed by the amount of bacteria found on the toothbrushes stored in the bathroom drawer and medicine cabinet.

Conclusions/Discussion

Because of its proximity to the toilet, the toothbrush on the counter was exposed to bacteria carried by toilet plumes created by repeated flushings during the test period. Research suggests that droplet bacterial nuclei can stay afloat in the air long after a toilet has been flushed. The results of this toothbrush experiment suggest that time and frequency of exposure influences the amount of bacterial growth.

Summary Statement

This project tests the bacterial growth on toothbrushes stored in various bathroom locations, asking whether storage impacts bacterial growth and potentially our health.

Help Received

Parents helped type report, helpd secure materials (toothbrushes and agar-filled Petri dishes) and helped student learn how to take samples.