CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)

Katie C. Krulisky

Project Number

J1318

Project Title

What Are You Stepping Into?

Abstract

Objectives/Goals

In order to see if footwear is an environment in which bacteria flourish, and if so, which type of shoes (leather/fabric) grow and withhold the most bacteria.

Methods/Materials

9 pairs of unworn shoes were swabbed with a sterile cotton applicator and inoculated on the Petri dishes. The dishes were then incubated for 24 hours. The average number of bacteria clusters per a row in the unworn shoes #Leather# was 86 and #Fabric# was 148.5. When inoculating Terra#s worn shoes a metal loop and a cotton swab were used in separate Petri dishes. Since the cotton swab (180 bacteria clusters per row) showed more results than the metal loop (71 bacteria clusters per row) I decided to stick with the sterile cotton applicators for the rest of the experiment. After the shoes were worn for 5 hours they were swabbed again.

Results

The averages of bacterial clusters per row were 241.5 in leather shoes and 118.75 in fabric shoes. After each shoe wash measured before wear and after wear various shoes were worn with one of the following foot-powders: Dr. Scholl#s, Personal Care, Odor-Eaters, Gold-Bond, crushed penicillin, or they were simply frozen for 12 hours. Upon completion it was concluded that worn leather shoes had significantly more bacteria than unworn leather while unworn fabric had more than worn fabric. Out of all the powders and other suggested bacteria-killing procedures crushed penicillin proved most effective, killing all of the bacteria, with freezing the shoes proving next efficient, decreasing the bacteria count by 55%.

Summary Statement

My project is about the variations of bacterial growth between leather, fabric, and how they change with different foot powders.

Help Received

Mother helped take photos and retrieve supplies