CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
Aubrey L. Faust

Project Number
J1311

Project Title
Moonmilk: The Next Miracle Cure?

Abstract

Objectives/Goals
Moonmilk is a pasty accretion of minerals and microbes found in caves. European peasants used moonmilk to treat infected wounds. Fresh moonmilk deposits in the caves at Oregon Caves National Monument contain the bacteria Actinomycetes, which is the source of most antibiotics. I wanted to test the moonmilk from the Oregon Caves to see if it had the antibacterial properties suggested by folklore.

Methods/Materials
I tested four different samples of the moonmilk against two pure strains of bacteria, Rhodospirillum rubrum and Micrococcus luteus, and compared the results with those of Neosporin and a bacteria-only control. I used Petri dishes and measured any bacterial inhibition zones that developed.

Results
One Petri dish inoculated with moonmilk showed a narrow inhibition ring (radius of about 0.3 cm). No other moonmilk dishes showed inhibition rings. The Petri dishes containing Neosporin all showed comparatively large inhibition rings (average radius of about 4 cm). Colonies of bacteria covered the control Petri dishes.

Conclusions/Discussion
My experiment showed that the fresh moonmilk might have antibacterial properties. The effect was not strong enough to demonstrate antibacterial properties conclusively. The Neosporin, by contrast, showed distinct antibacterial properties. An unavoidable delay of eight days between collecting the moonmilk samples and inoculating the Petri dishes may have reduced the viability of the moonmilk samples, despite storage approximately at cave temperature. I predicted that the hardened moonmilk samples would have lesser or no antibacterial properties compared with the freshly formed moonmilk. The results were consistent with this prediction, as confirmed by the absence of inhibition rings around all of the rock moonmilk samples.

Summary Statement
I tested a cave deposit called moonmilk, once used by European peasants to treat infected wounds, to see if it would inhibit the growth of bacteria.

Help Received
John Roth, the Chief of Resource Management at Oregon Caves, authorized and supervised the collection of the moonmilk samples. Ms. Diana Skiles, my science teacher, helped me to select the strains of bacteria and obtain supplies. My parents drove me to the Oregon Caves.