CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
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Project Number
J1101

Project Title
Silk Sari vs. Cotton Kenta: Water Filtration in Rural Populations

Abstract

Objectives/Goals
My objective was to determine if cotton fabric would filter bacteria as well as silk. A National Geographic article stated that when Indian women use their silk saris to filter water, the incidence of Cholera drops significantly. In other parts of the world, silk is not so common, but cotton is.

Methods/Materials
I collected water samples and filtered them through silk, cotton, nylon, and a hiking filter. I performed about 100 tests (oxygen content, turbidity, E. coli and coliform bacteria counts). Samples were collected from four sites: standing water in a puddle at Hahamongna watershed park, the Hahamongna riverbed, from one spot of the Big Tujunga River, and five miles upstream in the same river. The water was checked before and after filtering.

Results
The hiking filter removed all bacteria (as advertised). The number of bacteria was reduced about 50% by the silk, cotton, and nylon even though bacteria are much smaller than the gaps between the threads. They are often attached to larger particles, which are filtered successfully. The nylon was not quite as effective as the silk, but the cotton seemed to be slightly more effective than silk.

Conclusions/Discussion
Filtering water with of silk, cotton, or nylon will reduce the bacteria content about 50%. Bacteria are too small to be filtered directly, but they are often attached to particles in the water, so they are removed along with the particle. Surprisingly, cotton was slightly more effective than silk at removing bacteria from water. Nylon was a little less effective than silk.

If people in other parts of the world were taught to filter water through cloth, it could reduce disease significantly.

Summary Statement
I measured about a 50% reduction in bacteria count when water is filtered through silk, cotton, or nylon.

Help Received
My mother suggested the project and helped with collecting samples. She also helped with preparing the display board.