CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Collin M. Lindseth

Project Number
J0922

Project Title
Do Contaminates in Drinking Water Transfer to Raw or Cooked Vegetables?

Abstract

Objectives/Goals
To determine if contaminates, such as perchlorate, and other properties found in drinking water would transfer to broccoli when raw broccoli was washed or cooked in the water.

Methods/Materials
Water from Highland, CA, Sioux Falls, SD, North Las Vegas, NV, and Dasani bottled water from each city was collected as purified drinking water. Source water from rain, destined for the Santa Ana River, and water from the Big Sioux River and Lake Mead was collected. All water, washed raw broccoli, and cooked broccoli was tested for contaminates and properties with home use test kits, designed to test within acceptable EPA limits, but unable to test for perchlorate. A Water Eye Pen more sensative to contaminates was also used to test just the waters.

Results
The purified waters tested were mostly within EPA limits using the home use test kits. The sensative Water Eye Pen indicated that the purified water from North Las Vegas was undrinkable, and the Highland water was drinkable only after filtration and boiling. Further tests indicated Lake Mead source water contained bacteria, rain water destined for the Santa Ana River was drinkable and not yet contaminated, and Big Sioux River water was drinkable. The washed raw broccoli did acquire most water properties, including the Lake Mead bacteria. The cooked broccoli aquired most water properties, but boiling killed the bacteria.

Conclusions/Discussion
The washed raw and cooked broccoli were influenced by the different water properties and contaminates. Certain test results for the raw and cooked broccoli were identical or close to the results of the waters tested; the pH and hardness test results followed a pattern between each test. Since the Lake Mead bacteria was tranferred to the raw broccoli, but not the cooked broccoli, boiling killed the contaminate. Because the water properties and contaminates trasferred to the raw and cooked broccoli in most tests, it is reasonable to say that perchlorate could also transfer to food.

Summary Statement
If water contaminates and other water properties can transfer to food washed, cooked or grown in the water, we may be eating food contaminated with harmful substances.

Help Received
Mother helped type; mother supervised display layout and testing.