CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
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Project Number
J1312

Project Title
Bacterial Contamination in Fast Food Drink Ice

Abstract

Objectives/Goals
Problem: Does drive-thru ice have a higher level of bacterial contamination than self-serve machine ice in fast food restaurants?
Hypothesis: The drive-thru ice will exhibit a higher level of bacterial contamination than self-serve machine ice due, in part, to contamination and mishandling of the ice by restaurant employees.

Methods/Materials
Four samples per day were collected from three different Del Taco restaurants for a total of five consecutive days. A sample of ice was taken from the ice machine as well as from the drive thru ice bin. Spigot water and sterile water in a restaurant cup were used as controls. The samples were cultured on R2A agar plates, and incubated for 96 hours. Heterotrophic plate counts were performed at 48 and 96 hours. Colilert presence/absence tests for the presence of coliform bacteria including Escherichia coli(E.coli) were performed on each sample as well.

Results
Bacterial colonies grew on all of the ice sample agar plates. Bacterial colonies were noted on the majority of the control plates. After incubating 48 hours, the number of colonies found on the ice machine samples were approximately the same as on the drive thru ice samples. At 96 hours, however, the drive thru ice samples contained more colonies than the ice machine samples. The samples from one restaurants ice machine consistently tested positive for the presence of coliform bacteria, however, E. Coli was not present.

Conclusions/Discussion
The experimental results after incubating the samples for 96 hours supported the hypothesis. The data recorded at 48 hours was inconclusive. I believe the data recorded at 48 hours was inconclusive because the bacteria required additional time to grow on the agar plates. I believe that mishandling of the ice by employees was a major contributor to the higher levels of bacteria found in the drive thru ice. This information can increase the awareness of restaurant management and employees to reduce the potential spread of disease.

Summary Statement
My project compared the amount of bacteria present in fast food restaurant self-serve ice machines to ice found in drive thru ice bins.

Help Received
My mom & dad drove me around for 9 consecutive days to collect &/or analyze my data, helped proof read my paper, & helped assemble some of my board. The Orange County Sanitation District (OCSD) Lab staff provided supplies, guidance, & the use of their lab facilities.