CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
J0510

Project Title
Determining the Effects Fruit Peels Have on Freezing Water

Abstract

Objectives/Goals
The objective of my project is to determine if fruit peels have any effect on the freezing of water. My hypothesis is that lemon peels will have the most effect, while orange peels will have the least.

Methods/Materials
6 different types of citrus fruit were peeled (orange, lime, lemon, grapefruit, tangelo, and tangerine). 1 oz. of peel was weighed, and mixed in the blender for 8 seconds with a half a cup of water. The liquid was poured through a sieve, and the filtered liquid was drawn into an eyedropper. 100 drops were laid on the foil board, and put in the freezer for 3 minutes. The results were determined by the solidity and discoloration of the drops. The results were then compared against the control of water.

Results
50.4% of the lemon drops froze, reducing the freezing rate by 24.8% over 5 trials. The tangelo was the least effective, with a freezing average of 71.6% frozen, reducing the freezing rate only 3.6%.

Conclusions/Discussion
My project shows that lemon peels reduce freezing in water the most effectively, with orange and lime peels 2nd and 3rd. To test this finding, another experiment was preformed. The mixtures of the lemon, lime, and orange peels were taken, and 40 orange leaves also. 10 orange leaves were dipped in a mixture, and frozen for 12 hours. The leaves were then aloowed to thaw for a total of 72 hours. From the results of both experiments, lemon peels have proven most effective. To reduce freezing, lemon peels should be chosen to reduce.

Summary Statement
My project is about how different fruit peels have an effect on the freezing rate of water.

Help Received
Mother helped type conclusion; Grandmother helped glue board; Grandmother helped clean supplies