CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
Veronica L. Villarreal

Project Number
J2019

Project Title
The Citric Acid that Cures Kidney Stone Pain

Abstract

Objectives/Goals
The objective was to determine which home-based citric acidic solution (i.e. lemon juice, lime juice, Sprite, Pepsi) dissolves calcium in a kidney stone fastest and most effectively by testing this on egg shells. I believe that lime juice will prove to dissolve the egg shell the best.

Methods/Materials
In an egg and vinegar project the goal is to dissolve the calcium in the egg so it will become something like a bouncy ball. By replacing the vinegar variable with lemon juice, lime juice, Sprite, and Pepsi, I submerged five eggs in five cups of each solution for 72 hours to determine which dissolved the egg shell best. To figure out which solution dissolved the egg shell most effectively, I would take the egg and apply pressure on it until it popped. Then I would measure the amount of pressure. The more pressure, the more calcium was still in the egg.

Results
The lemon juice ended up needing the least amount of pressure, therefore there was the least amount of calcium still in the egg after being submerged in a cup of lemon juice for 72 hours. This means that this home-based solution would be the one you should drink a lot of when trying to pass a kidney stone because it will dissolve the calcium in the stone most effectively to cause the least amount of pain.

Conclusions/Discussion
My hypothesis that lime juice would dissolve the egg shell the most effectively, was proven wrong though it came very close to the lemon juice. By figuring out which solution best dissolves the calcium in a kidney stone, people who are trying to pass a stone can know a quick and easy relief to the pain.

Summary Statement
My experiment is about trying to find which home-based citric acidic solution best dissolves calcium in kidney stones by testing them on egg shells.

Help Received
Mother helped with materials