CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
J1517

Project Title
Calcium vs. Protein

Abstract

Objectives/Goals
The purpose of this experiment is to determine which mineral works more efficiently in strengthening bones: calcium or protein. I also used drinking soda and vinegar to see whether phosphoric acid or acetic acid would damage bones more.

Methods/Materials
MATERIALS: Plastic cups, rubber bands, plastic food wrap, chicken bones, labels, gold scale, boiling pan, Texture Analyzer Stable Micro Systems, TEE 32 software,measuring cup, calcium, protein, water, drinking soda, vinegar, trimmer, knife.
METHODS: Place one bone in each 45 cups. Separate them in 9 sets with 5 cups in each set. Fill each set as follows: Set1 - Water; Set2 - Vinegar; Set3 - Drinking Soda; Set4 - Vinegar & Calcium; Set5 - Drinking Soda & Calcium; Set6 - Vinegar, Calcium, Protein; Set7 - Drinking Soda, Calcium, Protein; Set8 - Vinegar& Protein; Set9 - Drinking Soda & Protein.
Examine the bones daily and take them out on day eighteen. Allow the bones to dry for two days. Record the bones' weights using the gold scale and test their strengthts using the Texture Analyzer Stable Micro Systems.

Results
Set5 was the strongest, Set3 came in second, Set1 came in third, Set9 came in fourth, Set6 came in fifth, Set4 came in sixth, Set7 came in seventh, Set8 came in eighth, and Set2 was the weakest.

Conclusions/Discussion
Set5 (Drinking Soda & Calcium) turned out to be the strongest. Set2 (Vinegar) was the weakest. According to my experiment, I concluded that calcium is more beneficial for bones than protein. I also found out that phosphoric acid does not do as much weakening to the bones as acetic acid which is known to promote skeletal elasticity.

Summary Statement
This project is to determine whether calcium or protein is better in strenghtening bones.

Help Received
Mother helped design board, journal, report. Father helped with photography. Dr. Omary supervised me in using Cal Poly University's lab equipment, Texture Analyzer Stable Micro Systems. Mrs. Krista Taylor, my science teacher, assisted in completing my research.