CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
S0410

Project Title
What Is the Effect of Protein Source on the Amount of Digestion that Occurs?

Abstract

Objectives/Goals
The goal of this project was to determine what type of protein is broken down the most. The categories were: poultry, red meat, tofu, wheat gluten, and beans.

Methods/Materials
I used 4 oz. samples of each protein source, and cooked them all in a similar manner. The process of digestion was simulted by grinding the protein in a food processor and adding digestive enzymes. These included Pepsin, artificial gastric juice, and pancreatic enzymes. The pH was taked before and after a two hour period of digestion, and the change in pH showed how much the protein had broken down. (three trials)

Results
I found that the greatest change in pH occured in the poultry samples, where the mean pH dropped from 6.84 to 6.64. The tofu and wheat gluten samples also experienced a statistically significant drop in pH, while the red meat and beans did not.

Conclusions/Discussion
Poultry appears to be the best digested source of protein, and it also contains the most protein: 35 grams. While red meat offer more iron, beans offer more fiber, poultry stands out for it's digestibility.

Summary Statement
The amount that different types of protein cn be digestion.

Help Received
Dr. Morey of Cal Poly University helped me come up with a method of quantifying digestion with pH.