CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
34153

Project Title
Compositional Differences in Protein Content in Milk from rBST-Treated and non-rBST-Treated Dairy Cows

Abstract

Objectives/Goals
The goal of this study was to determine differences in chemical composition in milk from cows treated with rBST and cows not treated with rBST after the pasteurization process. rBST is a synthetic growth hormone used to increase yields in dairy cows, and has been banned in many brands and supermarkets due to consumer backlash. However, the FDA and various other consumer groups have found milk treated with rBST to be safe for human consumption, and have specifically found no difference in the protein content of rBST-treated milk and regular milk. This study aimed to test the last part of the FDA's claim, regarding protein content.

Methods/Materials
Samples of milk, consisting of equal number of rBST-treated and non-rBST-treated milk, were collected. Samples were separated into constituent whey and casein proteins using a centrifuge. The concentration of casein, whey, and total proteins in each sample was analyzed using the Bradford Assay method of protein determination.

Results
A 95 percent confidence t-test of means found no significant difference in protein content in milk from cows treated with rBST and those not treated. Specifically, there was no significant difference in either total, casein, and whey protein content.

Conclusions/Discussion
The results agreed with the FDA findings, as there was no significant difference in protein concentration between the two treatments. A key limitation of this experiment was the lack of analysis of specific protein types in the milk, which may be rectified by further research either next year or before the State Science Fair.

Summary Statement
My project seeks to determine the effect of rBST-treatment in dairy cows on the protein composition of the milk they produce.

Help Received
Used lab equipment at my high school and at CSU Bakersfield under supervision of Dr. LaFever.