



CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

Name(s) Patricia E. De Asis	Project Number 31501
Project Title What's in Your Milk?	
Abstract Objectives/Goals The objective of this experiment was to determine whether whole cow, reduced fat cow, goat, human, or almond milk contained the most casein proteins. My hypothesis was that the whole milk will contain the most casein proteins compared to the other types of milk tested since it has little or no essential nutrient removed after being processed. Methods/Materials To perform this experiment, I first measured out the initial pH of the whole milk with a pH meter. Then I poured the milk into a pot and heated to 70 degrees Celsius on a hot plate. I poured 60 ml of the warm milk into five different Tupperware containers and added 1 teaspoon of vinegar onto each Tupperware container mixing it for two minutes. After allowing the milk to sit for two minutes, I then separated the casein and whey by pouring the substance through a coffee filter strainer. The casein proteins precipitated into white curds and the remaining liquid is whey. Then I measured the pH meter of the whey and transferred the white curds onto foam plates. After 24 hours I measured the mass of casein proteins using a scale and the casein removal process was repeated for the four other types of milk, and five trials were done for each. Results With the final data, the reduced-fat cow milk contained the most casein proteins. On average, the reduced-fat cow milk contained 10.4792 grams of casein proteins. However, the whole cow milk did have a fairly close average with 10.3886 grams. The next type of milk that had the most casein proteins was the almond milk with the average of 4.3632 grams. On the other hand, human milk had one of the lowest amounts of casein proteins with an average of 2.9458. Lastly, the goat milk contained the least amount of casein proteins with an average of 0.7524. Conclusions/Discussion My hypothesis that the whole cow milk would contain the most casein proteins was rejected by the data collected. The reduced-fat cow milk contained the most casein proteins out of all the types of milk tested. However, whole cow milk did have a fairly close resulting data with the reduced-fat cow milk. Therefore, despite the fact that the reduced-fat cow milk did contain the most casein proteins, research still shows that whole milk is the best alternative for human milk as a source of proteins for infants and toddlers.	
Summary Statement This project was conducted to understand the amount of casein proteins in different types of milk.	
Help Received Mother helped put together board; Science teacher helped and supervised during experiment; classmates edited papers.	