



# CALIFORNIA STATE SCIENCE FAIR 2006 PROJECT SUMMARY

<b>Name(s)</b> Nichele R. Lee	<b>Project Number</b> <b>J1421</b>
<b>Project Title</b> <b>Osteoporosis, Oh My! Calcium and Bones: Decalcification and Recalcification</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of my project is to study the process of calcium loss in bone. I wanted to determine whether calcium supplements help prevent osteoporosis by reducing decalcification and what type of calcium supplements work best to prevent decalcification and improve re-absorption of calcium.</p> <p><b>Methods/Materials</b> Two types of experiments were conducted: decalcification and recalcification. For decalcification, vinegar was used to decalcify chicken bones. Five different calcium supplements were tested: Caltrate and TUMS containing Calcium Carbonate; Citrical and Kirkland containing Calcium Citrate; and Target-Mins containing Calcium Hydroxyapatite. Vinegar was used as the control. I soaked the bones in jars with vinegar mixed with 1,200 mg of calcium from each supplement. I checked the bones for change in flexibility and mass every day for five days.</p> <p>For recalcification of decalcified bones, I first decalcified the chicken bones in pure vinegar. To test the re-absorption of calcium, I used distilled water as the control. I tested the same five calcium supplements. Each decalcified bone was soaked in a mixture of water and 1,200 mg of the calcium supplements. I checked the bones for change in flexibility and mass every two days for 14 days.</p> <p><b>Results</b> In my initial sets of trials, Calcium Carbonate lowered decalcification of the chicken bones best and Calcium Hydroxyapatite recalcified bones best. But, I made a mistake by misreading the dosage on two of the calcium supplements and applied uneven quantities of calcium in the original experiment. To get accurate results I did two extra sets of trials. In both of these trials I found that Calcium Carbonate not only lowered decalcification of the chicken bones best, but this time it also recalcified bones best.</p> <p><b>Conclusions/Discussion</b> Through my experiments I had a firsthand glance at what could happen to bones due to osteoporosis. The loss of calcium in the bones made them become brittle and weak. I could not even begin to imagine what it would be like to have bones like that. I also learned that calcium supplements do indeed help reduce decalcification and improve re-absorption of calcium on bones. If someone were to go buy a calcium supplement, I would suggest they buy supplement containing Calcium Carbonate. Nevertheless, I learned that the important thing to prevent osteoporosis is to have a daily intake of calcium.</p>	
<b>Summary Statement</b> My project examines what type of calcium supplements help prevent decalcification and improve recalcification of bones best, in order to prevent osteoporosis.	
<b>Help Received</b> My mother showed me how to graph my data and proofread my report. My father helped cut the chicken bones. My science teacher lent me a scale to use for measurements.	