



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

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Project Title Healthy or Hazardous Hair Help?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Can added cysteine amino acid in hair conditioner strengthen or make hair more flexible? Hypothesis: Since keratin, the strong part of hair, contains cysteine (an amino acid), added cysteine amino acids should make the strand stronger, but less flexible. I will define strength of the hair as how much weight it can support.</p> <p>Methods/Materials For each group (2 trials) in the experiment, I used duct tape, two raised platforms, 100 pennies, a small gift bag, a foot ruler, cysteine amino acid capsule, 20 ml hair conditioner, 20 ml water, two small sticks, scissors, 4 legos, 2 milliliter measuring cups, a napkin, and a marker.</p> <p>Both measuring cups (labeled #Cysteine# and #Regular# by the marker) were filled with 10 ml water, and 10 ml conditioner. One cysteine capsule was added to the cysteine cup, as the manipulated variable. One strands of hair would sit in each of the formulas for 5-10 minutes. On one platform, two legos were taped down at the edge about 1.5 inches apart. The small bag was taped to the ruler on its edge. After both strands of hair had been dried, one of them was taped between the two legos. Then, the bag was placed through the strand so that the ruler was in between the two legos. The other end of the hair was taped to the other platform. Once the bag had been moved to the center of the hair and taped there, I added pennies one by one. At every three pennies, the length of the hair shown on the ruler at the end of the platform in between the legos, was recorded. Once the hair broke, the number of pennies was counted and recorded. The experiment was then repeated for the other hair. I conducted 50 trials in total (25 trials with cysteine treated hair, 25 without).</p> <p>Results The average number of pennies held by the regular hair was 34.44, and the average number of pennies held by the cysteine hair was 32.52. As for the elasticity, the regular strand stretched, on average, 24% of its original length, while the cysteine hair stretched 19% of its original length. For both the cysteine and regular strands of hair, the same pattern of elasticity occurred.</p> <p>Conclusions/Discussion Added cysteine amino acid in hair conditioner does not strengthen it, nor does it make it more flexible. The regular hair was 6% stronger and about 20% more flexible than the cysteine strand. Cysteine should not be an ingredient in shampoos or conditioners, because it appears to damage and weaken hair.</p>	
Summary Statement "Healthy or Hazardous Hair Help?" is a study of the effects of cysteine amino acid on hair strength and elasticity.	
Help Received Sister recorded information (numbers) while I conducted experiment and called them out	