



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

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Project Title Soap Nuts: Do They Have Antibacterial Properties in the Laundry?	
Objectives/Goals Scientists have recently discovered that your washing machine contains many harmful bacteria and are currently evaluating the risk that these bacteria pose to humans. Bleach, hot water and microwave radiation are used to kill bacteria and viruses in clothes; however these methods are toxic or require large amounts of energy. Is there a relatively low-cost, environmentally-friendly, energy-efficient way to disinfect clothes? Many natural soaps exist and have been used for thousands of years. One of these natural soaps is derived from the sapindus mukorossi or Soap Nut tree which occurs naturally in the Himalayan foothills. Soap Nut marketers, who are beginning to target the American market, claim that in addition to being able to clean and soften clothes, Soap Nuts are also antimicrobial. If this is true, Soap Nuts could be the answer to producing environmentally responsible, bacteriologically clean clothes. Based upon the research available, it is probable that Soap Nuts detergent will kill bacteria.	
Abstract	
Methods/Materials A procedure was designed to test Soap Nut solution and Tide on a piece of filter paper placed in petri dishes infected with E-Coli K-12. Dilutions with water of each concentrate were tested to mimic the detergents dilutions with water similar to what is experienced in a washing machine. Ethanol alcohol, a scientifically-proven, antibacterial agent, was used as the control.	
Results The Ethanol control group produced a ring of inhibition around the filter paper. The Soap Nuts concentrate and dilutions produced no ring. Tide produced a slight ring at more viscous dilutions; however this ring was insignificant and would be expected by a thicker substance. To conclude, neither Soap Nuts nor Tide presented antibacterial properties when compared to the Ethanol Alcohol control group.	
Summary Statement Soap Nuts' antibacterial properties may provide answers to combat the rampant growth of bacteria in the washing machine.	
Help Received Used lab at SDSU under direction of Dr. Stanley Maloy, Dean of the College of Sciences	