



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Gautam V. Soundararajan	Project Number S1723
Project Title The Effect of Sapindus mukorossi vs. Commercial Detergents on the Growth of the Diatom, Thalassiosira pseudonana	
Abstract Objectives/Goals This research is intended to study the effect of a natural cleanser, Ritha Nut (Sapindus Mukorossi) vs. commercial chemical detergent residues in water on the environment. Diatoms, being ideal biological indicators of environmental changes, serve as perfect indicators of harmful detergent residues. A study of the efficacy of Ritha against chemical detergents is also part of this project. Methods/Materials Water extraction was performed on Ritha Nut shells to extract the saponins. Detergent concentrations at 1%, 1/10%, 1/100%, and 1/1000% of Ritha Nut, Tide, and Ivory Snow were created. The diatom Thalassiosira Pseudonana was grown in an NEPC solution in an incubator. Different concentrations of the detergent solutions were introduced to the diatoms and a cell count was performed using a hemacytometer and microscope. Absorbance and strength of the Ritha Nut and chemical detergents were also measured using potting soil to simulate dirt and a spectrophotometer. Results In this experiment, the growth of Thalassiosira Pseudonana was greater in the Ritha Nut solution compared to the other chemical detergents used. The actual concentration of detergent used in a typical load of laundry is about 1/100%, at which fewer diatoms survived, especially for the chemical detergents. Regarding strength of the Ritha Nut vs. the chemical detergents, Ritha was almost equal to Ivory Snow, but half as strong as Tide. Conclusions/Discussion There is a negative impact to the environment when using chemical detergents, in comparison to the environmental benefits that the Ritha Nut offers. Household cleaning products are constantly sent to our water systems and are dismissed as insignificant. However, this research shows that chemicals used in cleaning products are harmful to the environment and the use of natural cleansers, such as Ritha Nut, are beneficial.	
Summary Statement My project tested the efficacy of Ritha Nut as a cleanser and studied its effect (vs. chemical detergents) on the environment using diatoms.	
Help Received Used lab equipment at Scripps Institute of Oceanography under the supervision of Dr. Hildebrand	