



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

| | |
|---|---------------------------------------|
| Name(s) Easun Arunachalam | Project Number S1801 |
| Project Title Countering Free Radicals: Comparing the Antioxidant Effects of Vitamins | |
| Abstract Objectives/Goals The goal of my project was to determine the Vitamin (A, C, or E) that would most effectively neutralize free radicals, thereby creating a favorable environment for seed germination. Methods/Materials I conducted 32 trials (a total of 160 readings) consisting of 80 readings with mung bean seeds and 80 readings with radish seeds. Each trial involved three vitamins, A, C and E. One vitamin was added to each Petri dish (containing seeds in hydrogen peroxide), in order to determine the vitamin with the most effective antioxidant properties to counter the harmful effects of free radicals. This was measured by counting the number of seeds that germinated successfully, in the presence of each vitamin. I averaged the results separately for each type of seed. Finally, I calculated the combined average for both sets of trials. Results Vitamin E most effectively neutralizes free radicals during the germination of radish seeds while mung bean seeds show identical rates of germination when supplemented by either Vitamin A or E. Conclusions/Discussion My hypothesis was incorrect: Vitamin A was not the most effective vitamin to neutralize the free radicals in hydrogen peroxide. Germination environments containing Vitamin E allowed for the greatest rate of seed growth overall suggesting that it was the most effective vitamin in neutralizing the free radicals in H ₂ O ₂ . I am currently pursuing a follow-up experiment to see if the any (or all) of the vitamins themselves are responsible for lowering the rate of germination of the seeds as opposed to the free radicals in H ₂ O ₂ . | |
| Summary Statement A project to determine which Vitamin (A,C or E) would most effectively neutralize free radicals. | |
| Help Received Mom helped me count seeds and prepare board. | |