CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
S1413

Project Title
The Antioxidant Effect of Vitamin E on Plant and Animal Tissues

Abstract

Objectives/Goals
The objective of this experiment is to study the effectiveness of vitamin E on the reduction of oxidation of plant and animal tissues by an oxidizing solution in a controlled environment.

Methods/Materials
I soaked one rose petal in oxidizing solution (H(2)O(2)) and soaked another in oxidizing solution but stirred in water soluble vitamin E gels. A rose petal was also submerged in H(2)O, another in H2O with vitamin E, one in H(2)0 and starch, and the last in H(2)O(2) and starch. I then observed the damage of each rose petal underneath the microscope, took a picture, and estimated the percentage of damaged areas. The same was done for fresh salmon tissue. The color changes was measured quantitatively using the HSV color wheel.

Results
At most, the rose petal soaked in vitamin E and H(2)O(2) solution was 58.7% less damaged than the rose petal soaked in H(2)O(2) alone. The presence of vitamin E in an oxidized solution reduced the effect of H(2)O(2) by about 29% for the salmon fish tissues. The presence of starch also had an effect of reducing the amount of damage from the oxidizing solution.

Conclusions/Discussion
Since the human body is such a complicated system with an extremely large number of variables, scientists carrying out studies lasting a few years still have difficulty in isolating the antioxidant effects of Vitamin E. The results of my experiment demonstrate the effectiveness of Vitamin E as an antioxidant in an controlled environment. The rose petal submerged in the solution containing vitamin E and H(2)O(2) was less affected by H(2)O(2) than the rose petal submerged in H(2)O(2) only. Plant and animal tissues in a solution of starch and H(2)O(2) were less affected by oxidation than the plant and animal tissues without starch, but more damaged than the plant and animal tissues with vitamin E and H(2)O(2). Therefore, the properties of Vitamin E were a factor for less damage on the rose petals and salmon tissues. The majority of my hypothesis was proven. However, I understimated the effect that the presence of starch would have on reducing the effect of oxidation.

Summary Statement
The objective of my experiment is to establish a simple and controlled environment in which the effect of Vitamin E on the reduction of the oxidation of plant and animal tissues will be clearly measurable.

Help Received
My father helped to edit the report and buy the supplies required for the experiment.