CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
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Project Number
J2014

Project Title
The Anti-Oxidant Army

Abstract

Objectives/Goals
The objective and goal of my experiment is to see which ant-oxidant will prevent an apple from turning brown the longest. I want to see which anti-oxidants are effective in reducing oxidation and can prevent harmful diseases from spreading. They do this by neutralizing free radicals, which are the cause of many of these diseases that we see today.

Methods/Materials
I used 6 different anti-oxidant extracts from Acai berries, blackberries, pomegranate, green tea, dark chocolate and kale. The anti-oxidants were mixed into cups with room temperature water, and sliced apples were placed into the cups, along with a controlled variable tested with only plain water. I observed them daily and noted any changes in color. The experiment was repeated for a total of 3 trials.

Results
The results of my experiment showed that the Acai and Pomegranate are the most effective anti-oxidant because it starts to turn brown slowly, and showed less discoloration in the end. The dark chocolate result is similar to the berries, while the green tea proved to be the worst, as it completely turned brown on the second day of my experiment. The black berry showed a very slow change, but in end, it showed a higher amount of browning after 7 days. Kale's result shows that it can minimize the amount of browning in the end.

Conclusions/Discussion
I chose blackberry as my hypothesis and this experiment showed that I am incorrect, because among all the different variables that I used in this experiment, I found the berries, particularly the Acai and Pomegranate, to be the highly effective in preventing oxidation of free radicals. They are listed among the highest ORAC (Oxygen Radical Absorbent Value), a method used to measure oxidative capacities of biological sample established by the US Department of Agriculture. With their anti-oxidant properties and their large number of vitamin and mineral content, the berries are very effective to fight free radicals that causes a lot of diseases today. This experiment also shows that while some of the variables, like green tea, may not be as good in preventing the apple's skin of turning brown, they have different forms of flavonoids that can function to absorb large number of oxygen, an effective way to fight against free radicals. I was also able to understand the reason why dark chocolate's result is the same with the berries, and it is because their anti-oxidant property is also found in Acai oils.

Summary Statement
I tested 6 different anti-oxidants to determine which one will prevent an apple from turning brown, and I found out that the berries are very effective in fighting free radicals.

Help Received
My science teacher suggested to use water as my controlled variable, while my mom suggested some tips in designing my project board.