



# CALIFORNIA STATE SCIENCE FAIR 2016 PROJECT SUMMARY

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<b>Project Title</b> Investigating the Deactivators of Enzymatic Browning	
<b>Abstract</b> <b>Objectives/Goals</b> When fruits are cut, they release polyphenol oxidase (PPO). When PPO comes in contact with air, it triggers oxidation, resulting in enzymatic browning of fruits. Goal of the project was to determine effects of acidity and antioxidant on enzymatic browning of banana peels. This year's hypothesis was that fresh sources of antioxidant is more effective in stopping enzymatic browning than preserved sources of antioxidant. <b>Methods/Materials</b> Last year: Banana peels cut in 2cm by 2cm were dipped in various solutions of different pH. Enzymatic browning of banana peels were observed and recorded over time. This year: Banana peels cut in 2cm by 2cm were dipped in both fresh and preserved source of antioxidant rich products. Effects of enzymatic browning was observed and recorded over time. Further experiments involved banana peels dipped in diluted solution of vinegar to accelerate enzymatic browning followed by exposing them to various concentrations of known deactivators of enzymatic browning. <b>Results</b> Previous year's experiment showed that solutions with pH between 1 to 6 did not showed appreciable difference in slowing down the enzymatic browning of banana peels. Vinegar with low pH actually accelerated the enzymatic browning of banana peel. This year's experiment comparing fresh sources of antioxidant versus preserved sources of antioxidant also did not show appreciable difference in deactivation of enzymatic browning. <b>Conclusions/Discussion</b> Neither the acidity of the solutions nor freshness of antioxidant slow down the enzymatic browning of banana peels. Vinegar with low pH actually accelerated the enzymatic browning by breaking down the cell wall and we were able to utilize this unique effect of vinegar to further study other known deactivators of enzymatic browning.	
<b>Summary Statement</b> The acidity and the fresh source of antioxidant did not deactivate the enzymatic browning of the banana peels.	
<b>Help Received</b> Our parents helped design the experiments and we performed the experiments.	