



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Flynn Rorty	Project Number J0518
Project Title Starch Struck: The Effect of Dietary Amylase on Starch Digestion	
<p style="text-align: center;">Abstract</p> <p>Objectives The goal of my project was to conduct testing to see if high amylase foods, such as pineapple or guava, are as good at aiding starch digestion as purchased amylase pills.</p> <p>Methods A serial dilution of a 1% cornstarch solution was used to generate a standard curve. Starch was detected in triplicate samples by pipeting diluent with diluted tincture of iodine, mixing and adding to a 6-well plate. Color development was measured by scanning on our home printer/scanner. Data was imported into ImageJ and pixel intensity measured and plotted to generate a standard curve. To test if dietary amylase digested starch, a variety of fruits were solubilized and incubated with rice solution at 37o C for different time periods. Commercially purchased amylase pills were powdered and amylase solution was incubated with the rice solution at 37o C. As a positive control, 1 ml of saliva was donated by me and my mother. At each time point, test solution and diluted tincture of iodine were combined, mixed, added to a 6-well plate and scanned. Results were graphed.</p> <p>Results Guava was found to have the highest active amylase compared to pineapple, blueberries, human saliva and even amylase pills. My mother's saliva broke down less starch than mine, indicating that the activity of saliva amylases decrease with age.</p> <p>Conclusions My results show that eating guava with high starch foods, a simple method to control the release sugars from foods, is very effective because it digested more starch then synthetic amylase pills. Not only can amylase help diabetics keep their blood glucose levels consistent, it can help athletes who want to control their blood glucose levels over a long work-out. My results also suggest that older people may benefit from eating foods high in amylase because amylase levels decrease in older people.</p>	
Summary Statement I showed that some fruits contain enough amylase to aid starch digestion.	
Help Received I designed and conducted the experiments myself. Professor Lindsay Hinck (University of California, Santa Cruz) explained the concept of standard curves to me.	