



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Catherine Anne C. Delgado	Project Number J0501
Project Title Does the Presence of Food in the Stomach Affect Iron Absorption Rate?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this study is to determine whether or not the presence of food in the stomach affects iron absorption (and iron absorption rate).</p> <p>Methods/Materials Three solutions: Distilled water (control), vinegar-water dilution (model for full stomach), vinegar (model for empty stomach). pH was tested to accurately model stomach environments. 30 trials conducted. For each trial, add two iron reagents (from LaMotte Company) and then ½ teaspoon of broccoli into 10 mL of each solution. Record time it took to reach 0.5, 1, and 2 parts per million (ppm) of iron.</p> <p>Results The amount of iron absorbed and how fast it was absorbed was dependent on the presence of food in the stomach (in this case, stomach environment models). The empty stomach solution resulted in the fastest iron absorption rate with a mean of 5 minutes for 0.5 ppm, 19 minutes for 1 ppm, and 33 minutes for 2 ppm. The full stomach solution had a mean of 12 minutes for 0.5 ppm, 57 minutes for 1 ppm, and 90 minutes for 2 ppm. The control had a mean of 14 minutes for 0.5 ppm, 70 minutes to reach 1 ppm, and 2 ppm was never reached.</p> <p>Conclusions/Discussion 30 trials modeling different stomach environments revealed that the presence of food does affect iron absorption, because of the acidity of the solutions. In the literature review, it was found that gastric acids were shown to enhance iron absorption. Iron absorption is dependent on the stomach environments created by food. This information can be used for regulating iron absorption through your diet.</p>	
Summary Statement By measuring iron absorption and iron absorption rate in different stomach environments, I found that iron absorption is dependent on the presence of food.	
Help Received I was inspired by an experiment published by science buddies and tweaked it for myself. I performed the experiments by myself but materials were collected from my science teacher, Karen Madsen and my family. I purchased iron reagents (powder and liquid) from LaMotte Company.	