



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

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| Name(s) Maria D. Zumkeller | Project Number S0537 |
| Project Title Comparing Iron Concentration of Organic and Non-Organic Vegetables | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my investigation is to compare and determine the relationship between iron concentration of organic and non organic spinach and potatoes.</p> <p>Methods/Materials To determine the unknown concentration of iron in the food samples, I prepared a series of standard solutions in which the analyte concentration (iron) is precisely known. I then measured the transmittance and absorbance of the standard solutions using a spectrophotometer. The absorbance measurement of each standard solution was then used to create a calibration curve which demonstrated how the experimental observable (the absorbance) varies with the concentration. The unknown solution was then analyzed using the same method as employed to create the standard solutions yet in this case the analyte is the food sample. The absorbance and transmittance levels of the food sample solutions were then measured. In order to calculate the iron concentration of the food samples, the average absorbance of the unknown solution trial was used with the slope and intercept from the calibration curve through a specific equation.</p> <p>Results There was not a significant amount of change of iron concentration between the organic and non organic vegetables thus proving my hypotheses. When plotted, the average amount of iron in the organic and non organic vegetables (spinach and potatoes) did not demonstrate a drastic variation.</p> <p>Conclusions/Discussion Iron is an essential component to the proper function of the human body. It is crucial to the creation of hemoglobin that carries oxygen to all parts of the body and regulating cell function throughout the body. A lack of the mineral can lead to susceptibility of illnesses and conditions such as anemia. Thus, the amount of iron intake one receives can determine overall health. Many americans have accepted the fallacy that organically grown vegetables provide more nutrients than non organically grown vegetables and possess an overall higher nutritional value. However, my experiment has refuted this belief.</p> | |
| Summary Statement Comparison of the iron concentration within organic and non organic vegetables using the method of spectrophotometry. | |
| Help Received Used lab equipment at Sanger High School under the supervision of Nathan Whittington, science teacher. | |