CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY

Name(s)

Taylor Sovich

Project Number

S0522

Project Title

Quantitative Analysis of Iron in Food

Abstract

Objectives

The objective of this study is to compare the spectrophotometric absorbance of iron in food versus food cooked in an iron skillet to determine whether cooking in an iron skillet increases iron concentration.

Methods

Tested multiple food samples for iron by heating foods to ash in a crucible. Added 2M HCl and distilled water to ash then filtered. Added KSCN into filtrate. The iron in the filtrate reacts with the KSCN forming a reddish color, Fe(SCN)3. Repeated process after cooking the same food samples in an iron skillet. Compared results to color standard solutions, and used a colorimeter and spectrophotometer to measure absorbance.

Results

The absorbance of the independent variable, foods cooked in the iron skillet, showed an increase in the absorbance compared to the controlled variable, foods not cooked in an iron skillet. For example, beans had an absorbance of 0.099 AU and after cooked on an iron skillet the absorbance increased to 0.131 AU.

Conclusions

Foods cooked in an iron skillet have a greater concentration of iron compared to foods cooked without an iron skillet. This brings an awareness to those who suffer from iron deficient anemia. Cooking in an iron skillet is a beneficial way to increase the iron concentration in the human body.

Summary Statement

I tested foods to determine whether cooking in an iron skillet increases iron concentration.

Help Received

My chemistry teacher helped me with the necessary chemical dilutions, handling the chemicals, and the use of the colorimeter and spectrophotometer. My chemistry teacher allowed me to use the chemistry lab and equipment to preform my experiment.