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Abstract

Recorded Scholarly Presentation

Major: Chemistry

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Antioxidants in Hot Brewed and Cold Brewed Teas (FRAP Method)

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Free radicals are entities that lack an electron, making them highly unstable and reactive. These compounds can enter the human body through air pollutants, fried foods, alcohol, and pesticides. They are also known for destroying cells, potentially causing the development of diseases such as cancer, Alzheimer's, and hypertension. Antioxidants, however, react with the free radicals by giving them an electron, thus increasing their stability and preventing damage from being done to cells. One way to consume antioxidants is by drinking teas, and this project serves to provide insight into which brew of tea, hot or cold, produces the most antioxidants.

To measure the antioxidant levels, something called a FRAP (ferric reducing ability of plasma) assay is performed. In this process, a solution that contains tea is added to an iron (III) TPTZ (TPTZ is tripyridyltriazine) complex. The antioxidants in the tea then donate an electron to this iron (III) TPTZ complex and make it an iron (II) TPTZ complex. This reaction represents what happens in our bodies when antioxidants react with free radicals. This process is measured using an instrument called a UV-Vis spectrophotometer. All this instrument does is measure the difference in absorbance between a tea solution and a solution containing tea and the iron complex. Testing is currently taking place, and this process includes testing both black and green teas.