

Western Illinois University
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Abstract

Live Poster Session

Major: Forensic Chemistry

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Antioxidants in Tea

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Antioxidants are known to reduce oxidation and prevent damage to cells caused by unstable molecules in the body called free radicals, which are generated as a response to the environment or other causes such as when the human body is converting sustenance into energy. The antioxidant measured here is Trolox, an analog of vitamin E. When fat withstands oxidation, the creation of reactive oxygen substances is prohibited by Trolox. Tea is a source of antioxidants. Two types of teas (black and green tea), hot and cold brewed, will be analyzed using the UV-Vis spectrophotometer, as well as the CuPRAC method to determine the type and temperature of tea that provides the highest antioxidant capacity. In addition, the hot and cold brewed tea will be compared to ascertain if they contain an equivalent number of antioxidants. The CuPRAC method changes the copper (II) compound to a copper (I) compound allowing for the color change to be observed by the UV-Vis spectrophotometer. The intensity of this color change, ranging from a dark yellow to a light greenish yellow, is contingent on the quantity of copper (II) reduced. Beer's law is used to create a calibration curve based on the absorbance data collected from the UV-Vis spectrophotometer. A Trolox calibration curve has been generated by testing the absorbance at varying concentrations. Statistical analysis was performed on the calibration curve to ensure accuracy and precision. Currently, hot brewed black and green tea absorbances are being tested and analyzed to determine the concentration of Trolox in these types of teas using the calibration curve produced.