Green Tea (Camellia sinensis): Comparison of Antioxidant Activity between Authentic and Supplement Samples via the Briggs-Rauscher Reaction along with their UHPLC Fingerprinting in order to Address the Issue of Adulteration

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Antioxidants are vital in maintaining good health. They terminate chain reactions that produce free radicals. As a result, antioxidants help combat against diseases caused by oxidative stress. Green Tea is also one of the most widely consumed beverages worldwide. Recently, Green Tea supplements have also increased in popularity. These supplements ensure efficient antioxidant intake without having to drink cups of tea daily. However, consumers are not actually aware of what compounds companies are putting into their products, and if these compounds are derived from the original plant. Supplements are said to have greater health benefits but these benefits have never been compared with authentic green tea. The objective of the project was to compare the antioxidant activity between authentic green tea and supplemental samples as well as create a UHPLC fingerprinting profile to check the authenticity of these supplements. The experiment was conducted using the Briggs-Rauscher reaction. This reaction includes three solutions which creates a free radical producing environment. Data from the experiment indicated that authentic green tea contained significantly more antioxidant properties than supplements. Furthermore, fingerprinting assay showed evidence of adulterated compounds present in the supplements. This research is incredibly beneficial to consumers as it reveals that authentic green tea contains more health benefits.