

URP Proposal for Summer 2021

Analysis of contaminants in CBD consumer products

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Following electronic cigarettes popularity, cannabidiol (CBD) products are filling the US market. CBD is extracted from the hemp plant and incorporated into many different consumer remedies that claim to help reduce pain and anxiety. Due to the 2014 Farm Bill, which allowed for hemp agriculture, the CBD industry is one of the fastest growing markets. Part of the cannabis family, the hemp plant is an excellent bio-accumulator of contaminants. There is a concern that CBD products derived from hemp could contain contaminants from the soil where the plant was grown. With the quick market growth of these products, federal and state regulations are falling behind.

This project continues research started in Spring 2020. Due to COVID/time, we have limited our samples to creams sold in the Chattanooga area. The student researcher has developed a sample preparation method for digesting CBD creams to prepare them for metals analysis. For Summer 2021, we would like to expand this to a wider variety of CBD products (including oils and tablets) and other contaminants (such as pesticides) that may also be present. Sample preparation will be a key factor prior to the analysis. Inductively Coupled Plasma – Optical Emission Spectroscopy (ICP-OES) and Gas Chromatography-Mass Spectrometry (GC-MS) will be used.

The application of theory and the critical thinking are fundamental in preparing students for successful and productive careers in science. The student who performs this research will gain an extensive hands-on experience with analytical methods and instrumentation. The student on this project should have completed CHEM 3210 and 3010/3020 with at least a B by the time research begins. Proficiency in statistics is a plus. The student will be expected to enroll in CHEM 4997 in Spring 2021 to prepare for the summer research project. Over Summer 2021, the student will be expected to engage in research for 40 hours/week for 10 weeks (beginning May 10, 2021), participate in scheduled URP activities, and give two presentations. The project will culminate in a student-written paper. There will be opportunities to present the research at UTC and at a regional and/or national meeting.