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Rachel McCarthy  
*Illinois Wesleyan University*

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# Eckley Scholar Erin Yuan '21 Studies Antioxidants in Spices and Tea

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BLOOMINGTON, Ill. — Senior [chemistry](#) major Erin Yuan '21 brought the kitchen into the chemistry lab with her 2020 Eckley research project, studying the interactions of antioxidant contents and properties in tea and spices.

Yuan completed her independent research project as an [Illinois Wesleyan University Robert S. and Nell B. Eckley Scholars and Artists Program](#) Scholar, a yearly fellowship offered in the summer to five upperclass students across the arts and sciences.

With the aid of her faculty advisor, Associate Professor in the Chemistry and Biochemistry Department Manori Perera, Yuan studied the difference of antioxidants present in tea and spices, in order to observe the effect of combining them. Yuan hypothesized that novel mixtures, such as cinnamon tea, would significantly differ in antioxidant content from pure spices and tea.

Despite lab closures in June due to the COVID-19 pandemic, Yuan still made progress in her research with slight modification to the project initially proposed. She worked on a literature survey surrounding the project while also working on another component associated with antioxidants in tea. She brought to completion the development of an undergraduate lab that was started by previous research students in Perera's lab. This work led to a manuscript that was later submitted to a chemical education journal. Her work could be used in upper-level chemistry courses like quantitative analysis or capstone labs.

Once the chemistry laboratory reopened, Yuan analyzed the antioxidant concentration of 13 samples using mass spectroscopy — an analytical tool useful for measuring the mass-to-charge ratio of one or more molecules present in a sample — to determine the presence of antioxidants and UV-visible spectroscopy to test their properties. This work involved instrumentation at Illinois Wesleyan as well as Illinois State University.

While the data collected using mass spectroscopy was not able to clearly show that the hypothesis was valid or invalid, this work provided some new ideas that could enhance the project. For Yuan, this is another skill set that will help in any research lab or industrial work.

“Those valuable experiences deepened my understanding of chemistry and strengthened my ability to conduct an independent study, which will make me more confident and comfortable in further studies,” Yuan said.

“I would describe this experience as a valuable opportunity for immersive learning and an excellent simulation of a researcher's life. Unlike doing research during the semester, it gave me a chance to entirely focus on the project with a compact experimental process. What I learned through the project is going to be powerful support for my future study.”



Erin Yuan '21

*By Rachel McCarthy '21*