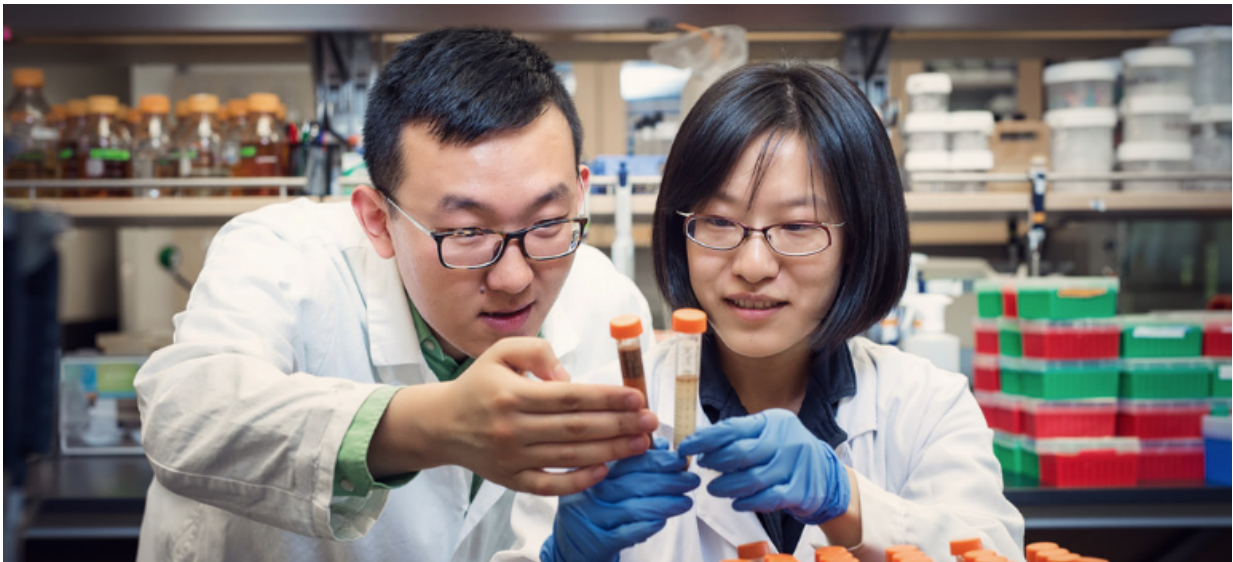


Researchers develop new method to test for antioxidants in chocolate

November 30 2016, by Corey Allen



UBC's Xiaonan Lu and Yaxi Hu are testing antioxidant levels in raw cocoa beans to chocolate bars. Photo: Martin Dee. Credit: University of British Columbia

Food scientists at the University of British Columbia have developed a faster and cheaper way to quantify antioxidant levels in chocolate. It's a method they plan to use in new research to help uncover when antioxidant levels rise and fall during the manufacturing process, from raw cocoa beans to chocolate bars.

"Our [method](#) predicts the [antioxidant levels](#) in chocolate in under a

minute, compared to the industry standard that can take several hours or even days," said Xiaonan Lu, an assistant professor in food, nutrition and health in the faculty of land and food systems, who developed the method alongside PhD student Yaxi Hu. "It's not a substitute for the traditional method used at the moment, but it does show a strong correlation for being just as reliable."

The UBC method uses infrared spectroscopy, a technology that can be used to illuminate infrared light onto chocolate samples. The infrared spectra record the chemical composition of each sample, including the amount of polyphenols, micronutrients with high antioxidant properties. The traditional method relies on biochemical tests to read absorbance values and can be quite time consuming and expensive.

"Testing for antioxidant levels can give chocolatiers guidance on which cocoa beans to select, or how to improve their processing parameters," said Hu.

Chocolate is made from cocoa beans and is manufactured through several processing stages, including drying, roasting and fermentation of the beans. The UBC food scientists have started to use their method to measure cocoa bean samples from around the world in each stage to determine when antioxidant levels are at their highest and lowest.

"If we identify drying as the step that significantly lowers the bean's antioxidant properties, for example, we will want to develop a strategy to reduce the drying time, or drying temperature," Lu said.

It could be considered incredibly valuable information for chocolate companies who want to make products high in antioxidants or appeal more to health-conscious consumers.

Antioxidants benefit human health and help contribute to the prevention

of cancers, vision loss and heart diseases. Antioxidant compounds are commonly found in foods like pecans, blueberries and chocolate.

Lu and Hu's research on [cocoa beans](#) is in its early stages as they test hundreds of samples. The method they developed to test for antioxidant levels was funded by a local chocolatier in Metro Vancouver, the Natural Sciences and Engineering Research Council (NSERC) and by the non-profit MITACS.

The UBC food scientists hope to attract additional funding, particularly from a major [chocolate](#) company, to further their studies.

More information: Yaxi Hu et al. Determination of antioxidant capacity and phenolic content of chocolate by attenuated total reflectance-Fourier transformed-infrared spectroscopy, *Food Chemistry* (2016). [DOI: 10.1016/j.foodchem.2016.01.130](https://doi.org/10.1016/j.foodchem.2016.01.130)

Provided by University of British Columbia

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