

## Ohio State Scientists Studying Healthier Food and Beverage Processing Options

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COLUMBUS, Ohio, July 12, 2018 – The Ohio State University (“Ohio State”) today announced that a team of scientists from Ohio State’s College of Food, Agricultural, and Environmental Sciences (CFAES) has been awarded a four-year, \$891,000 grant from the U.S. Department of Agriculture’s National Institute of Food and Agriculture. The major goal of the grant is to develop an innovative manufacturing technology that will preserve food and beverages using wholesome, recognizable ingredients, no artificial preservatives and reduced use of heat, all thanks to a new method of high-pressure-based shear technology.

While more consumers want healthier beverage options, they’re also concerned about the safety of how those beverages are preserved. Health-conscious consumers want great tasting, healthy drinks that don’t include chemical additives and preservatives with names they can’t pronounce.

With financial support from the USDA grant and technical support from Ohio State’s collaborators at Pressure BioSciences, Inc. (OTCQB: PBIO), CFAES researchers are seeking to remedy that issue.

Called Ultra-Shear Technology (“UST”), this innovative method will allow beverage companies to manufacture healthier beverages by reducing thermal exposure through the combined application of elevated pressure, shear, and controlled times and temperatures.

And it’s not just drinks that might soon be preserved in a much healthier way.

UST can also be used by food manufacturers in the healthier processing of sauces, condiments and other foods, said V.M. Dr. “Bala” Balasubramaniam, a CFAES professor of food engineering who is leading the research project. His laboratory, with a multidisciplinary team of microbiologists, chemists and nutritionists, investigates innovative food technologies and then works with industry to implement them.

“Health-conscious consumers pay close attention to ingredients in beverages and tend to avoid products perceived to contain artificial or chemical-sounding ingredients, although such ingredients may be scientifically proven to be safe and functional,” Professor Balasubramaniam said.

With a projected global population of 9.1 billion people by 2050, meeting the growing demand for beverages and other foods with substantiated health

benefits and consumer-desired quality attributes is seen by many as a major, impending challenge.

“Development of cost-effective, next-generation, gentler industrial food manufacturing technologies for the preservation of healthy beverages has now become a critical need,” Dr. Balasubramaniam said.

Known internationally for his research on high-pressure and other types of nonthermal processing, or safely processing food using significantly less heat, Dr. Balasubramaniam holds joint appointments in the CFAES departments of [Food Science and Technology](#) and [Food, Agricultural and Biological Engineering](#).

Other members of the CFAES research team include Ahmed Yousef, professor of food microbiology; Rafael Jimenez-Flores, the J.T. “Stubby” Parker Endowed Chair in Dairy Foods; and Christopher Simons, assistant professor of sensory science.

The team will collaborate with scientists and engineers at Pressure BioSciences Inc., a Massachusetts-based company that is a leader in the development and sale of high pressure-based instruments and consumables to the worldwide life sciences industry. Dr. Edmund Ting, a senior vice president at PBI, was a pioneer in the development of commercialized high pressure processing of food, which has become an estimated \$10 billion market over the past several decades. Dr. Ting will lead the development of the laboratory scale and pilot plant equipment that CFAES and PBI researchers will use in the research project.

“It has been rewarding to see the significant growth of high-pressure food and beverage processing over the last 25 years,” commented Dr. Ting. “I believe UST has equal if not greater applications than high-pressure processing, both within and outside the food and beverage industries.

“We are pleased to collaborate with experts at Ohio State to advance the commercialization of the UST platform for the food and beverage market.”

The UST equipment developed under the research project will be used to demonstrate the technology to the food and beverage processing industry through pilot plant demonstrations and testing, Dr. Balasubramaniam said. UST processing will also be shared with food processors through webinars, short courses and food processor fact sheets.

“The UST technology is expected to be particularly beneficial for medium- and small-scale food processors and entrepreneurs who otherwise have limited technical resources to evaluate such novel food manufacturing processes,” Dr. Balasubramaniam added. “The ultimate goal is for consumers to benefit from the

increased availability of wholesome, healthy, “clean label” food and beverage options.”

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