UF researcher reduces allergens in peanuts using pulsed light

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A University of Florida researcher has developed a new technique to make peanuts safer for people with peanut allergies.

Wade Yang, an assistant professor in UF's food science and human nutrition department, used pulsed ultraviolet light, or PUV, to reduce the allergenic potential of peanuts by up to 90 percent. The study was published this week by the journal *Food and Bioprocess Technology.*

By releasing pulsed, or concentrated, bursts of light containing multiple wavelengths, PUV changes peanut allergens so that human antibodies can't recognize them and cause the release of histamines, which are responsible for allergy symptoms such as itching, rashes and wheezing.

"We believe the allergen can be controlled at the processing stage, before the product even goes to the shelf," Yang said.

More than 3 million Americans are allergic to peanuts and tree nuts, and reactions can range from skin rashes to death. Peanuts have been found to cause the majority of deaths in the U.S. from anaphylaxis, or severe allergic reaction. Allergic reactions can occur from eating peanuts or from even the slightest exposure in some individuals. Currently, the best way for those with the allergy to be safe is to completely avoid peanuts.

Using PUV, Yang, a member of UF's Institute of Food and Agricultural Sciences, reduced the allergenic potential of three of the most allergenic proteins in peanuts. The reduction of one of the proteins — Ara h2, the

most potent of the three — marked the first time this reduction has ever been achieved with PUV.

Yang confirmed the allergy reduction using a biochemical test and by exposing the proteins to serum samples from patients with peanut allergies to see if an allergic reaction occurred.

Allergens were reduced in peanut extracts and peanut butter. Preliminary, unpublished results also demonstrate that PUV can significantly reduce the allergenic potential of whole peanuts.

Dr. Shih-Wen Huang, a pediatric allergist in UF's College of Medicine, said epidemiological data show an increase in food allergies over the last 20 years.

Scientists don't know why, he said, but there could be multiple factors involved, including living in a cleaner environment that shifts our immune response away from protecting against germs to reacting to innocent food substances. He also noted that increased peanut consumption is part of an overall trend toward healthier eating.

Huang said epinephrine is often recommended for treating severe allergic reactions, and for milder reactions, antihistamines.

And while epinephrine and antihistamines alleviate allergenic symptoms, Yang said he would like to prevent the allergy at the processing stage with PUV, before it reaches humans.

Yang's future research involves developing a one-step roasting and allergen reduction process by PUV to produce hypoallergenic whole peanuts.

Provided by University of Florida