

# Making cashews safer for those with allergies

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For the millions of adults and children in the U.S. who have to shun nuts to avoid an allergic reaction, help could be on the way. Scientists are now developing a method to process cashews—and potentially other nuts—that could make them safer to eat for people who are allergic to them.

The researchers are presenting their work at the 248th National Meeting & Exposition of the American Chemical Society (ACS).

"The only widely accepted practice for preventing an allergic reaction to nuts is strict avoidance—stay away from the [food](#)," notes Chris Mattison, Ph.D. "Clinical trials to test immunotherapy are underway, but we're approaching it from an agricultural perspective rather than medical. Can we change the food, instead of treating the person, so we can eliminate or reduce severe reactions?"

For those with food allergies, responses to offending products can range from mild itching in the mouth or skin to life-threatening anaphylaxis, which makes it hard to breathe. Once every three minutes, someone in the U.S. ends up in the emergency room due to a [food allergy](#) reaction—that adds up to about 200,000 visits a year.

To try to reduce those numbers, Mattison's team is looking at ways to modify proteins in [tree nuts](#) and peanuts (which are legumes) that trigger an immune response in people who are allergic. The response is launched by antibodies called immunoglobulin E (IgE), which recognize and latch onto the proteins. Mattison explains that changing the shape of

the proteins makes it harder for IgE to find them.

But past research taking this approach has involved harsh chemicals. Mattison, a researcher with the Agricultural Research Service branch of the U.S. Department of Agriculture, wanted to see if his team could achieve the same results, but using compounds that are "generally regarded as safe," or GRAS. These are substances that are accepted by the Food and Drug Administration for use in food and pharmaceuticals.

"We found that the GRAS compound sodium sulfite can effectively disrupt the structure of a couple of the cashew allergens," Mattison says. "And we've done a couple of different tests to show we reduced IgE binding to the proteins when they've been treated with sodium sulfite."

Next, they plan to conduct experiments on whole nuts and test the modified proteins on cells in the lab to see how they respond. They're also looking at enzymes, which are molecules that can cut up proteins, as candidates to disrupt the allergens.

And, although this particular report focuses on cashew proteins, Mattison says the work could have broader implications. The kinds of allergenic proteins the GRAS compound and enzymes affect are not exclusive to one kind of nut.

"One of our goals is to apply our knowledge from the cashew experiments to other tree [nuts](#) and to peanuts," he says.

**More information:** Title: Processing routes to reduce IgE binding to cashew allergens

### **Abstract**

Tree nuts are an important part of a healthy diet, but they can be a serious threat to those with tree nut allergy. Three seed storage proteins,

Ana o 1, 2, and 3, have been identified as major cashew nut allergens that are bound by IgE in cashew allergic patients. Reactions to cashew nuts are often severe and methods aimed at reducing or eliminating the ability of cashew and other tree nuts to cause allergy would be beneficial to those who suffer from nut allergy. Proteolytic treatment of cashew allergens in vitro indicates that methods incorporating enzymatic breakdown of cashew allergens could be used to reduce IgE binding. Similarly, chemical treatment of cashew extracts with generally regarded as safe (GRAS) compounds such as sodium sulfite can disrupt cashew allergen structure and reduce IgE binding. Continued research is needed to develop improved methods for the attenuation of cashew and other tree nut allergens in order to lessen the likelihood of severe food allergy reactions.

Provided by American Chemical Society

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