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# Good news, shrimp allergy sufferers: Scientists say reverse-pressure sterilization can produce a less-allergenic shrimp

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By Responsible Seafood Advocate

## Exposing roasted shrimp to high pressure and steam reduced the allergenicity of shrimp, researchers conclude

Some good news for shrimp allergy sufferers: A **new study**

(<https://pubs.acs.org/doi/10.1021/acs.jafc.3c01557>) has found that reverse-pressure sterilization can produce a less-allergenic shrimp product that, when tested in mice sensitive to the crustaceans, did not cause severe reactions.

Some of the most common foods that people are allergic to are dairy products, wheat, peanuts and seafood. The immune system mistakes some proteins from these foods for an intruder and launches a response against them. In minor cases, this can provide some discomfort or swelling, and in severe cases, it can be life-threatening.

But the proteins that the immune system reacts to can be altered or degraded when heated, which



A new method using pressure and steam can produce a less allergenic shrimp product, which is good news for people with a shrimp allergy. Photo by [Nadin S. \(https://www.pexels.com/photo/shrimp-and-a-dip-on-a-plate-16892372/\)](https://www.pexels.com/photo/shrimp-and-a-dip-on-a-plate-16892372/).

might prevent antibodies from recognizing them, and thereby make the food safer for people with allergies to consume. Studies on other shellfish, such as oysters, have suggested that allergenicity can actually increase after roasting, while others show that it decreases.

With this context in mind, the researchers wanted to understand exactly how allergens in shrimp change during post-processing. They also wanted to see if they could create a more hypoallergenic product.



(<http://www.expalsa.com/>).

The team separated samples of shrimp (*Penaeus vannamei*) into three groups. One group was raw and the second was roasted. The third group was roasted and then treated with reverse-pressure sterilization, in which the crustaceans were exposed to high pressure and steam. All three groups were mashed into pastes, and each was given to a separate group of mice that had a shrimp allergy.

Both the raw and roasted shrimp caused similar reactions, including increased levels of histamine and damage to the spleens and lungs, suggesting that roasting alone did not change the protein's properties much. The third group had milder reactions and less organ damage.

When the allergen proteins in the shrimp samples were examined more closely, the team found that roasting caused these proteins to change shape, but antibodies could still bind. However, reverse-pressure sterilization caused the proteins to cluster together, hiding the binding sites. This hindered antibodies from latching on, and thus, prevented a severe allergic reaction.

The researchers say that this method successfully and efficiently reduced the allergenicity of shrimp and elucidated the unique protein changes that caused it.

**[Read the full study here \(https://pubs.acs.org/doi/10.1021/acs.jafc.3c01557\)](https://pubs.acs.org/doi/10.1021/acs.jafc.3c01557)**.

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