# New target identified for food allergy therapy: Blocking enzyme prevents allergic reaction to peanuts

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(Medical Xpress)—Researchers at National Jewish Health have identified an enzyme that is essential to the allergic reaction to peanuts. Blocking the enzyme's activity in sensitized mice prevented diarrhea and inflammation, and reduced levels of several proteins associated with allergies. The findings, published online in the *Journal of Allergy and Clinical Immunology*, identify the enzyme, known as Cyp11a1, as a potential target for treatment of increasingly common and potentially deadly food allergy.

"Right now, we have no therapy for food allergy other than to avoid the allergenic food," said senior author, Erwin Gelfand, MD, chair of Pediatrics at National Jewish Health. "In Cyp11a1, we have found an essential enzyme and signaling pathway in the intestinal allergic reaction, which are potential targets for intervention."

Food allergy has become more common in recent decades, now affecting about 8 percent of the American population. Among children, peanuts are the most common food allergy and can provoke severe, even life threatening, allergic reactions. Antihistamines and epinephrine are used in response to allergic reactions, but there is no approved therapy for the prevention of allergic reactions to food.

Cyp11a1 promotes the first and rate-limiting step in the production of corticosteroids. These steroids have long been used to treat allergic

diseases because they inhibit inflammation associated with the allergic reaction. Evidence in recent years, however, has indicated that corticosteroids may also activate immune cells associated with allergic reactions.

The researchers sensitized mice to peanuts so that they became allergic to the legume. When subsequently fed peanut protein, the mice experienced diarrhea and inflammation in the small intestine. Levels of Cyp11a1 increased, as did cytokine signaling molecules IL13 and IL17A, which are associated with allergic reactions.

When the researchers used aminoglutethimide (AMG) to inhibit the enzymatic activity of Cyp11a1 in the sensitized mice, it prevented allergic diarrhea and inflammation, and reduced levels of IL13 and IL17A. It also reduced the conversion of naïve T cells into allergic Th2 and Th17 subtypes.

"While we evaluated Cyp11a1 blockade in peanut allergy, it could likely have an effect in the full range of food allergies," said Dr. Gelfand.

**More information:** www.ncbi.nlm.nih.gov/pubmed/23870673

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