>> https://www.yumda.com/en/news/1179854/

Plant-Based Proteins May Lead to Allergies

Scientists find that allergies to soy and peanuts can be activated by common meat-free alternatives based on other legumes, but most people won't experience a reaction

17.03.2023 - Many people keen to reduce their meat consumption are turning to substitutes made of legumes packed with protein, vitamins, and fiber. But allergies to legumes like soy or peanuts are both common and dangerous. Are patients allergic to particular legumes at risk from meat-free proteins made of legumes even if they contain different legumes? Dr Mark Smits and a team of scientists at University Medical Center Utrecht set out to investigate.

computer generated picture

symbolic picture

"Both protein consumption and the world's population are increasing which leads to an urgent demand for sustainable protein sources," said Dr Thuy-My Le, senior author of the study published in *Frontiers in Allergy*. "An increase in the consumption of legumes may increase the number of allergies to these foods. Furthermore, these new legumes may elicit allergic complaints in already legume-allergic patients. Therefore, we investigated how often sensitization and allergy to different legumes occurs in these patients."

An allergy by any other name

People develop food allergies when their immune systems confuse food proteins with a threat and produce Immunoglobulin E (IgE) antibodies. Sensitized individuals can, upon re-exposure to the same food, develop symptoms of an allergy. Patients that react to one food may also react to another: this is a co-allergy. Co-allergies are accompanied by co-sensitization, in which patients produce IgE antibodies against several foods. Co-sensitization may be caused by cross-reactivity, where IgE antibodies bind to proteins from multiple foods because the proteins share similar structures.

Co-sensitization can lead to a diagnosed co-allergy, but doesn't always: it's possible for someone to be co-sensitized to a food, but not experience a reaction when they eat it. So, do patients with specific legume allergies react to other legumes?

Smits and colleagues recruited legume-allergic patients from the Allergology Clinic at the University Medical Center Utrecht and split them into six groups according to allergies: peanuts, soybeans, green peas, lupines, lentils, and beans. All patients had allergies validated by an oral food challenge or a positive IgE test combined with a history of reactions. Each different group was tested for IgE antibodies against the other legumes.

“We showed that a large number of patients produced antibodies against more than one legume,” said Dr Kitty Verhoeckx, second author of the study. “However, clinical data showed that only a small part of these patients had actual symptoms.”

High co-sensitization rate between legumes, but not always co-allergy

All six patient groups showed co-sensitization to additional legumes, and almost a quarter of patients were sensitized to all legumes. Nearly all the patients in the bean allergy group were sensitized to other legumes. Patients allergic to green peas, lupines, or lentils were also likely to be sensitized to other legumes, while patients with diagnosed allergies to peanuts or soybeans were not.

The team also looked at which of these patients had documented co-allergies for several legumes. The high co-sensitization rate was associated with clinical symptoms in only a relatively small number of patients. In peanut and soybean-allergic patients, co-allergies for green pea, lupine, lentil and bean were uncommon, but patients who had allergies to this second group of legumes were likely to be co-allergic to peanuts or soybeans. Patients with peanut allergies were also often co-allergic to soybeans, and vice versa. Co-sensitization for peanuts was associated with clinically relevant co-allergy in almost all the other legume groups. However, the team cautioned that it will be necessary to expand the study to a larger group and confirm co-allergies with oral food challenges to determine how clinically relevant this co-sensitization is in practice.

“Legumes are an attractive sustainable protein source, but allergic reactions in the already legume-allergic population cannot be excluded as antibodies in the blood of legume-allergic patients frequently react to different legumes,” said Le. “However, this reaction does not always lead to a clinically relevant food allergy. Introduction of novel foods into the market should be accompanied by appropriate assessment of the risk of developing (new) food allergies.”

Original publication:

Frontiers in Allergy | Co-sensitization between legumes is frequently seen, but variable and not always clinically relevant | 16-Mar-2023