Bundesinstitut für Risikobewertung

Food allergy caused by insects?

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Can edible insects trigger allergies? In September 2020, the BfR launched a new joint research project to protect consumers from potential allergic reactions: **Allergen-Pro**. The aim: to establish methods for the in-depth analysis of allergens in food and to describe their impact on those with allergies. Seven partners from Switzerland and Germany are involved in developing suitable and reproducible detection methods for insect components in food products.

Those with food allergies must avoid allergens in food. Health problems can be triggered by even the smallest traces for those affected. This is why manufacturers of ready-made foods must list the ingredients on the packaging. A special declaration obligation applies to major allergens, such as peanuts, celery or egg, even if these are only found in small quantities in the recipe. However, the declaration of allergens that inadvertently enter a food, in other words which are not part of the regular ingredients, is not regulated. These kinds of inadvertent allergenic entries can happen due to transport and production conditions, for example, and pose a health risk to those with allergies.

According to estimates from the Food and Agriculture Organization of the United Nations (FAO), more than 1900 insect species are consumed worldwide. They are subject to rules related to novel foods in the EU.

It is also probable that insects will be increasingly used as components in food in the future. The role of insects as a potential new food allergen is currently being discussed. Although only a few cases of allergies caused by insect components have been described to date, there is considerable potential for cross-reaction notably with arthropods (including crustaceans and dust mites) due to the similarity (homology) of numerous proteins such as e.g. tropomyosin and arginine kinase.

One aim of the Allergen-Pro joint research project is to provide food monitoring authorities and, ultimately, food producers with methods for identifying insect components in food in due course. A total of seven partners from Switzerland and Germany are involved in developing suitable and reproducible methods for the detection of insect components even in highly processed food products. These methods are based either on detecting the genetic material that is unique to each species, or on directly detecting any allergenic proteins.

Furthermore, the clinical relevance of insects as a health-relevant potential food allergen is still unclear. It is still difficult to predict the clinical relevance of food sensitisation using so-called *in-vitro* methods. Innovative, high-through-put *in vitro* methods for identifying allergenic IgE/G epitopes in insect proteomes will also be developed to improve safety for those suffering from allergies and food manufacturers. The project is also working on developing an *in-vitro* test system for the first time that should make it possible to determine, with minimal stress for the test subjects, whether they are allergic or only demonstrate sensitisation without clinical reactions.

The Allergen-Pro project is funded by the Federal Ministry of Food and Agriculture (BMEL) following a resolution by the German Bundestag.

Further information on insects is available from the BfR website

https://www.bfr.bund.de/de/a-z_index/insekten-199312.html

https://www.bfr.bund.de/de/veranstaltung/bfr_symposium___insekten_als_lebens__und_futtermittel___nahrung_der_zukunft_-197151.html

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About the BfR

The German Federal Institute for Risk Assessment (BfR) is a scientifically independent institution within the portfolio of the Federal Ministry of Food and Agriculture (BMEL) in Germany. It advises the German federal government and German federal states (“Laender”) on questions of food, chemical and product safety. The BfR conducts its own research on topics that are closely linked to its assessment tasks.

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