

Lectins in food: undercooked beans pose health risk, says EFSA

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Consumer exposure to lectins in undercooked beans indicates a health concern. This is the finding of EFSA's assessment of the public health risk related to the presence of lectins in food.

The European Commission asked EFSA to conduct this assessment in the context of foodborne illnesses linked to the consumption of raw or undercooked pulses, which may be associated with more consumers opting for raw or minimally-cooked plant-based diets.

Lectins are a group of proteins naturally present in many plants, such as legumes, grains and vegetables. They protect plants from pests and diseases.

Most lectins are harmless. Some lectins, mainly found in raw pulses, can cause gastrointestinal symptoms and immune effects. Consuming properly processed and prepared pulses does not pose any risk related to lectins.

Potential health risks

"We developed an acute exposure scenario where beans have not been cooked enough, and half of the lectins are still present in their active form. Our assessment concludes that this scenario represents a health concern for all age groups," said Dr. Helle Knutsen, Chair of the Panel on Contaminants in the Food Chain.

"However, consumers can process foodstuffs to deactivate lectins. Properly soaking and boiling beans avoids potential health risks".

EFSA's scientists carried out their assessment by evaluating the potential harm caused by the lectin phytohemagglutinin (PHA) and assessing consumer exposure. PHA is found in beans and is the most toxic lectin in commonly consumed edible plants.

Symptoms linked to the consumption of raw or undercooked pulses include nausea, vomiting, abdominal pain and diarrhea.

Based on animal studies, scientists considered the effect of PHA on the small intestine as the most critical health effect.

How can consumers reduce harmful effects of consuming lectins?

The most effective way to reduce the majority of lectins in pulses is to soak them in water for 6-12 hours until they soften, then change the water and boil them for at least half an hour at 100° C. As preparation times depend on the variety of pulses, it is advisable to cook them until they become soft.

Other home cooking methods like steaming, microwaving and roasting are less effective.

Next steps

Based on EFSA's work, the European Commission and Member States will consider measures to inform and protect consumers from potential health risks linked to lectins in food.

The opinion also outlines several data gaps and provides recommendations for future studies, including studies on the presence of different lectins in raw and processed foods, and their effects on humans and animals.



Links to science

[Risks for human health related to the presence of plant lectins in food](#)

See also

[Plain language summary](#) (PLS)

Podcast episode: "[Bean there, cooked that: are raw legumes safe?](#)" Which type of lectins are the most damaging, and what can we learn from our ancestors when it comes to preparing traditional recipes safely? Watch or listen in to our [recent episode on lectins](#) from our podcast Science on the Menu!

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