

Dry roasting could help trigger peanut allergy

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Credit: Katherine C. Cohen/Boston Children's Hospital

Dry roasted peanuts are more likely to trigger an allergy to peanuts than raw peanuts, suggests an Oxford University study involving mice.

The researchers say that specific chemical changes caused by the high temperatures of the dry roasting process are recognised by the body's immune system, 'priming' the body to set off an allergic immune response the next time it sees any peanuts.

The results might explain the difference in the number of people with peanut allergies in the Western world compared to populations in East Asia, the researchers say. In the West, where roasted and dry-roasted peanuts are common, there are far more people with [peanut allergies](#) than in the East, where peanuts are more often eaten raw, boiled or fried. Numbers of people with other food allergies show no such difference.

The study is published in the *Journal of Allergy and Clinical Immunology* and was funded by the

National Institute for Health Research (NIHR) Oxford Biomedical Research Centre, the US National Institutes of Health and the Swiss National Science Foundation.

The researchers purified proteins from dry roasted peanuts and from [raw peanuts](#). They introduced the peanut proteins to mice in three different ways - injected under the skin, applied to broken skin, and introduced directly into the stomach. The immune responses of the mice to further peanut extracts given later were measured.

The mice that had been initially exposed to dry roasted peanuts generated greatly increased immune responses to peanuts, compared to mice that had been exposed to raw peanut proteins. The types of immune responses seen are characteristic of allergic reactions.

Professor Quentin Sattentau, who led the research at the Dunn School of Pathology at the University of Oxford, says: 'This is the first time, to our knowledge, that a potential trigger for peanut allergy has been directly shown.'

Previous studies have shown that roasting modifies peanut proteins leading to altered recognition by the immune system, but they did not show that roasted peanuts can trigger an allergic [immune response](#).

First author Dr Amin Moghaddam of Oxford University says: 'Our results in mice suggest that dry roasted peanuts may be more likely to lead to peanut allergy than raw peanuts: the dry roasting causes a chemical modification of peanut proteins that appears to activate the [immune system](#) against future exposure to peanuts.'

'Allergies in people are driven by multiple factors including family genetic background and exposure to environmental triggers. In the case of peanut allergy, we think we may have discovered an

environmental trigger in the way that peanuts are processed by high-temperature roasting.'

Professor Sattentau says: 'We know that children in families with other allergies are more likely to develop peanut allergy. However our research is at an early stage and we think that it would be premature to avoid roasted peanuts and their products until further work has been carried out to confirm this result.'

He adds: 'We think we have identified the chemical modifications involved in triggering an allergic response to peanuts, and are currently exploring methods that are food industry-friendly to eliminate these groups.'

More information: The paper 'Dry roasting enhances peanut allergic sensitization across mucosal and cutaneous routes in mice' by Amin Moghaddam and colleagues is to be published in the *Journal of Allergy and Clinical Immunology* on Monday 22 September 2014.

Provided by Oxford University

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