



May contain nuts...

LGC has led a collaborative project on the development of a sensitive and accurate DNA based screening approach for the detection of allergenic nuts in food that will benefit consumers by improving food labelling thereby reducing adverse reactions to food products.



The Requirement

Up to 4% of the global population suffer from allergic reactions due to food allergies. In the last twelve years, the number of children suffering from peanut allergies appears to have more than tripled from 1 in 200 to 1 in 55. In order to increase quality of life and reduce the impact on the NHS, there is a need for food producers and suppliers to be able to develop 'allergen free' product lines, accurately label food produce and minimise cross contamination in production lines. The development of accurate and effective techniques for detecting allergenic ingredients is crucial to achieving this.

Protein detection is the current standard approach for allergen detection; however there are relatively few fully validated protocols for the detection of all nut varieties. Sensitivity issues in protein detection methods can mean that a large food sample size is required, and insufficient specificity in nut characterisation can lead to variability in results. DNA approaches offer further scope for allergen detection when there are very few or no protein approaches available, for example in the detection of cashew nuts.

The Solution

An LGC led consortium with Premier Analytical Services, Hampshire Scientific Service, and Waitrose has responded to this global problem by developing a DNA based approach for the detection of specific nut allergens. EU legislation requires that food containing ingredients known to have allergenic properties must be clearly labelled. The sensitivity and specificity offered by this DNA approach provides the potential for the detection of allergenic ingredients at very low levels allowing accurate food labelling and reducing inappropriate trace nut warnings. Coupled with this, it only requires a tiny amount of sample for testing. By developing this DNA based screening approach,

an alternative, simple, reliable and sensitive method for the simultaneous detection of many important nut allergens, including almond, Brazil, cashew, hazelnut, macadamia nut, peanut, pecan, walnut and sesame seed has been achieved. Conclusive results attained through an inter-laboratory blind comparison between the collaborators, on a range of eight processed food materials provided by Waitrose, verified the applicability of the new DNA approach.

Impact

"This has been a very beneficial project" says Glenn Taylor, Assistant Head of Regulatory Services from Hampshire Scientific Service. "It has allowed us to be involved in developmental work that will not only be of benefit for enforcement purposes, but potentially food testing as a whole."

This successful collaboration benefits LGC in its role as the Government Chemist, as an independent and impartial referee analyst, as well as enabling LGC to develop knowledge gained on trace DNA detection. More efficient production and surveillance by Premier Analytical Services will lead to improved customer confidence and adherence to legislative requirements, whilst Hampshire Scientific Service have access to a new method for legislative enforcement and have further developed their analytical expertise. Waitrose, as a major UK food retailer, is benefiting from the extremely sensitive and accurate analytical tool to help meet its commitments to the highest standards of customer safety and clarity of labelling.

Malcolm Burns, Science Leader in Food Analysis at LGC says "Collaborations are an important part of LGC's work in allowing us to understand and meet the needs of industry. This was a very successful project with scope for future developments".

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