Review of the literature and guidance on food allergen cleaning: Conclusions

This report has reviewed and consolidated findings from literature published post-2012 on cleaning to remove food allergens. The sources include peer-reviewed literature published in scientific journals as well as guidance documents, industry and professional body publications, information on websites, book chapters and webinars, from different geographical regions.

Cleaning to remove food allergens is part of a holistic food safety management system the purpose of which, with specific reference to food allergens, is to prevent or minimise the potential for allergen cross-contact that is of risk to the consumer with food allergy and to ensure that accurate information about food allergens can be provided to consumers on the label of prepacked food or at the point of sale when the food is not prepackaged.

It is widely agreed that cleaning should be applied in any part of the food handling, manufacturing/preparation, storage environment where allergenic protein may have been in contact, and which could result in allergen cross-contact. The importance of hygienic design, effective management (including cleaning and colour coding where possible) of equipment used to conduct cleaning is recognised, as such equipment can itself be a potential source of allergen cross-contact.

The general consensus across the different literature types was that cleaning methodologies should be chosen on a case-by-case basis, as many factors affect cleaning efficacy (including for example food matrix, surface, environment, equipment accessibility, cleaning chemical characteristics, concentration and temperature etc.). Principles of cleaning to remove food allergens are therefore aligned with the general principles of cleaning.

Nonetheless, ‘wet cleaning’ was continuously endorsed as the most effective methodology for the removal of allergenic residues; it is, however, recognised that this method may not be applicable in every situation. In terms of cleaning chemicals, again their selection depends on the situation and the overall matrix of the food, as it is the food soil that needs to be removed, not just the allergenic protein. However, it was often remarked that chlorinated alkaline seems to be more effective than acid detergent for removing allergenic foodstuffs.

Principles of allergen cleaning validation and verification were identified from the literature and are collated in this report as principles; these principles are understood to be important when undertaking validation studies and subsequent verification activities.

There was consensus among the selected literature that ‘visually clean’ should always be the first monitoring control point, for areas across food handling, manufacturing, preparation, packing processes and storage, prior to any further types of cleaning and prior to applying any analytical testing.

In-depth discussion of the inherent limitations of different analytical techniques has not been included, however, the need to use specific, sensitive, relevant, validated testing methods has been discussed. It is also found that many sources state that visual inspection should not be the only method of gauging cleaning efficacy, as visually clean surfaces may still harbour detectable allergen residues.

Ultimately, much of the available information relates to large food processing operations; there are evidence gaps throughout the literature on cleaning to remove food allergens in food service and micro, small and medium food processing businesses. It is recommended that research is therefore needed to acquire knowledge of the efficacy of existing cleaning procedures and to inform best practice guidance for these businesses in future.