A systematic approach to identifying food allergens of public health importance

Bushra Javed\textsuperscript{1,2}, Phil Padfield\textsuperscript{1,2}, Matt Sperrin\textsuperscript{3}, Angela Simpson\textsuperscript{1,2}, E.N. Clare Mills\textsuperscript{1,2}

\textsuperscript{1}Manchester Institute of Biotechnology, University of Manchester, United Kingdom; \textsuperscript{2}Institute of Inflammation and Repair, University of Manchester, United Kingdom; \textsuperscript{3}Institute of Population Health, University of Manchester, United Kingdom;

**Aims:** Food safety authorities recognise food allergy as a significant public health concern and have defined a list of “priority foods” that must be labelled irrespective of their level of inclusion in a recipe. Allergen molecules of those priority foods are the actual hazard for sensitive individuals but data are often lacking regarding their capacity to cause an allergic reaction. A systematic approach is being taken to assess this for peanut and tree nut allergens.

**Methods:** Legislation from across the world has been searched to compile a list of tree nuts that have to be labelled and form this a search strategy developed. This was implemented in a pilot study and data used to develop a modified PECO approach to the full systematic review. In addition a set of gradings has been developed to allow data gathered to be critically appraised in a consistent manner.

**Results:** A search strategy and search terms, based on allergen labelling requirements across the world for peanut and tree nuts, has been developed. This was implemented in a pilot study and the retrieved articles were systematically reviewed and an inclusion list generated. Articles included were subject to analysis using grading criteria spanning the quality of the patient population used to the quality of an allergen preparation used in a given study.

**Conclusion:** This framework along with scientific grading criteria provides the basis to conduct a systematic literature review to identify the quality of evidence supporting inclusion of particular tree nut species in allergen labelling lists and quality of evidence that certain protein molecules can be classified as an allergen. Such data will allow future development of curated sequence sets of verified allergen molecules which are needed for development of analytical methods for determining allergens in foods.