Food Allergen Epitope Mapping.

Abstract:
With the increased global awareness and rise in food allergies, a multifold interest in food allergens is evident. The presence of undeclared food allergens results in expensive food recalls and increased risks of anaphylaxis for the sensitive individuals. Regardless of the allergenic food, the immunogen needs to be identified and detected before making any efforts to inactivate/eliminate it. In type I food allergies, protein immunogen cross-links immunoglobulin E, leading to basophil/mast cell degranulation, resulting in the symptoms that range from mild irritation to anaphylaxis. A portion/part of the protein, known as the epitope, can interact with either antibodies to elicit allergic reactions or T-cell receptors to initiate allergic sensitization. Antibody-recognized epitopes can be either a linear sequence of amino acids (linear epitope) or a three-dimensional motif (conformational epitope), while T-cell-receptor-recognized epitopes are exclusively linear peptides. Identifying and characterizing human-allergy-relevant epitopes are important for allergy diagnosis/prognosis, immunotherapy, and developing food processing methods that can reduce/eliminate immunogencity/immunoreactivity of the allergen.