Approaches to assess IgE mediated allergy risks (sensitization and cross-reactivity) from new or modified dietary proteins - DTU Orbit (27/10/2018)

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The development and introduction of new dietary protein sources has the potential to improve food supply sustainability. Understanding the potential allergenicity of these new or modified proteins is crucial to ensure protection of public health. Exposure to new proteins may result in de novo sensitization, with or without clinical allergy, or clinical reactions through cross-reactivity.

In this paper we review the potential of current methodologies (in silico, in vitro degradation, in vitro IgE binding, animal models and clinical studies) to address these outcomes for risk assessment purposes for new proteins, and especially to identify and characterise the risk of sensitization for IgE mediated allergy from oral exposure. Existing tools and tests are capable of assessing potential crossreactivity. However, there are few possibilities to assess the hazard due to de novo sensitization. The only methods available are in vivo models, but many limitations exist to use them for assessing risk. We conclude that there is a need to understand which criteria adequately define allergenicity for risk assessment purposes, and from these criteria develop a more suitable battery of tests to distinguish between proteins of high and low allergenicity, which can then be applied to assess new proteins with unknown risks.

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