Approaches to assess IgE mediated allergy risks (sensitization and cross-reactivity) from new or modified dietary proteins - DTU Orbit (20/02/2019)

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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.

General information
State: Published
Organisations: National Food Institute, Research Group for Gut Microbiology and Immunology, Netherlands Organisation for Applied Scientific Research - TNO, University Medical Centre Utrecht, Bayer SAS, Medical University Sofia, Norwegian Veterinary Institute, Monsanto Europe S.A., University of Athens, Monsanto Company, Nestec Ltd, Unilever
Pages: 97-107
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Food and Chemical Toxicology
Volume: 112
ISSN (Print): 0278-6915
Ratings:
  BFI (2019): BFI-level 1
  Web of Science (2019): Indexed yes
  BFI (2018): BFI-level 1
  Web of Science (2018): Indexed yes
  BFI (2017): BFI-level 1
  Scopus rating (2017): CiteScore 3.99 SJR 1.144 SNIP 1.427
  Web of Science (2017): Impact factor 3.977
  Web of Science (2017): Indexed yes
  BFI (2016): BFI-level 1
  Scopus rating (2016): CiteScore 3.96 SJR 1.351 SNIP 1.58
  Web of Science (2016): Impact factor 3.778
  Web of Science (2016): Indexed yes
  BFI (2015): BFI-level 1
  Scopus rating (2015): CiteScore 3.44 SJR 1.202 SNIP 1.415
  Web of Science (2015): Impact factor 3.584
  Web of Science (2015): Indexed yes
  BFI (2014): BFI-level 1
  Scopus rating (2014): CiteScore 3.12 SJR 1.038 SNIP 1.369
  Web of Science (2014): Impact factor 2.895
  Web of Science (2014): Indexed yes
  BFI (2013): BFI-level 1
  Scopus rating (2013): CiteScore 3.26 SJR 1.02 SNIP 1.506
  Web of Science (2013): Impact factor 2.61
  ISI indexed (2013): ISI indexed yes
  Web of Science (2013): Indexed yes
  BFI (2012): BFI-level 1