Meeting the challenges in the development of risk-benefit assessment of foods

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**Background**
Risk-benefit assessment (RBA) of foods aims to assess the combined negative and positive health effects associated with food intake. RBAs integrate chemical and microbiological risk assessment with risk and benefit assessment in nutrition.

**Scope and Approach**
Based on the past experiences and the methodological differences between the underlying research disciplines, this paper aims to describe the recent progress in RBAs, identifying the key challenges that need to be addressed for further development, and making suggestions for meeting these challenges.

**Key Findings and Conclusions**
Ten specific challenges are identified and discussed. They include the variety of different definitions and terminologies used in the underlying research disciplines, the differences between the “bottom-up” and the “top-down” approaches and the need for clear risk-benefit questions. The frequent lack of data and knowledge with their consequential uncertainties is considered, as well as the imbalance in the level of scientific evidence associated with health risks and benefits. The challenges that are consequential to the need of considering substitution issues are discussed, as are those related to the inclusion of microbiological hazards. Further challenges include the choice of the integrative health metrics and the potential scope of RBAs, which may go beyond the health effect. Finally, the need for more practical applications of RBA is stressed. Suggestions for meeting the identified challenges include an increased interdisciplinary consensus, reconsideration of methodological approaches and health metrics based on a categorisation of risk-benefit questions, and the performance of case studies to experience the feasibility of the proposed approaches.

**General information**
State: Published
Organisations: National Food Institute, Research group for Risk Benefit
Contributors: Nauta, M., Andersen, R., Pilegaard, K., Pires, S. M., Ravn-Haren, G., Tetens, I., Poulsen, M.
Pages: 90-100
Publication date: 2018
Peer-reviewed: Yes

**Publication information**
Journal: Trends in Food Science and Technology
Volume: 76
ISSN (Print): 0924-2244
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 6.67 SJR 2.344 SNIP 2.444
Web of Science (2017): Impact factor 6.609
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6 SJR 2.357 SNIP 2.775
Web of Science (2016): Impact factor 5.191
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 5.51 SJR 2.232 SNIP 2.626
Web of Science (2015): Impact factor 5.15
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 5.17 SJR 2.173 SNIP 2.767
Web of Science (2014): Impact factor 4.651
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 4.83 SJR 2.216 SNIP 2.653
Web of Science (2013): Impact factor 4.651
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 3.91 SJR 2.048 SNIP 2.417