

27429 - Safety of Plant-Based Meat Alternatives in a Reverse Engineering Approach.  
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The on-going interest in improved sustainability, healthfulness, quality and safety of food is evident and the growing plant-based food market is a clear example of this trend. Traditionally, sustainability, health and safety issues have been viewed as mutually exclusive. An assessment platform to navigate in these complex issues in an integrated way can assist the agro-food industry in making informed and balanced decisions, when innovating towards a more sustainable and secure food system.

This symposium contribution will discuss a reverse engineering approach used by Wageningen UR for plant-based burgers as a case study, with specific emphasis on requirements from the microbiological safety perspective. By linking information about the hazards relevant for product ingredients in an ingredient-hazard database, a hazard profile can be created for plant-based formulations, already at an early stage of product development. Insights on microbial contaminants of plant-based ingredients and their inactivation rates were collected in databases. This data together with processing and storage conditions and microbial growth models was used to identify the most likely hazards of different recipes for plant-based burgers included in the case study. For this purpose the FSO/PO (Food Safety Objective/Performance Objective) approach defined by ICMSF<sup>1</sup> was used.

Insights regarding safety, when combined and balanced with the other criteria such as sustainability and economic viability, at an early development stage, can reduce the development time, costs and new product failures. This will aid in development of safe plant-based products that meet sustainability and health objectives.

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<sup>1</sup> International Commission on Microbiological Specifications for Foods