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ABSTRACTS BOOK

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Oral Abstracts **Wednesday 20 July**

Risk Analysis

MICROBIOLOGICAL VARIABILITY IN GROWTH AND HEAT RESISTANCE; IMPLICATIONS FOR FOOD SAFETY AND FOOD SPOILAGE

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Abstract Content: Quantitative microbiology is used in risk assessment studies, microbial shelf life studies, product development, and experimental design. Realistic prediction is, however, complicated by different sources of variability. The final concentration of microorganisms at the moment of consumption depends, amongst others, on the variability in the storage times and temperatures, variability in product characteristics, variability in process characteristics, variability in the initial contamination of the raw materials, and last but not least, microbiological variability. This presentation compares different sources of microbiological variability in growth and inactivation kinetics of a pathogen and a spoiler, namely experimental variability, reproduction variability (within strain variability), strain variability (between strain variability) and variability between individual cells within a population (population heterogeneity), and prioritizes their importance. Also, the microbiological variability will be compared to other variability factors encountered in a model food chain to evaluate the impact of different variability factors on the variability in microbial levels encountered in the final product. The impact of strain variability (especially for heat) was found to be very large and overwhelming many other effects, so it might be more relevant to have a good representative strain and test various strains than to focus (and even get lost) into specific effects of one strain. When studying one variability factor, the impact of that factor might seem large, while the relevance of this variability might be smaller when put in perspective with other variability factors. This benchmarking of variability factors gives crucial information about whether the variabilities are all equal or whether some are more important than others. When the quantitative information of the most relevant microbiological variability factor(s) will be integrated in predictive models it will make predictions less accurate, yet it does make the models more realistic.

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Keywords: pathogens, population heterogeneity, quantitative risk analysis, spoilage organisms, strain diversity