Microbiological risk assessment

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Abstract

Microbiological risk assessment is defined by the CODEX Alimentarius Commission as ‘a scientifically based process consisting of the following steps: (i) hazard identification; (ii) hazard characterisation; (iii) exposure assessment; and (iv) risk characterisation’. It is one of the components of microbiological risk analysis, which has the overall objective to minimise food-borne risks to consumers. It is a complex discipline that continues to evolve and challenges and new opportunities were discussed during the breakout session ‘Microbiological risk assessment’ held at the EFSA 2nd Scientific Conference ‘Shaping the Future of Food Safety, Together’ (Milan, Italy, 14–16 October 2015). Discussions focussed on the estimation of the global burden of food-borne disease, the prioritisation of microbiological risks taking into account uncertainty, the challenges in risk assessment when dealing with viruses, the contribution of typing methods to risk assessment and approaches to deal with uncertainty in risk assessment in emergency situations. It was concluded that the results of the global burden of food-borne disease study provide, for the first time, a comprehensive comparison of risks due to different hazards and this will be an important input to food safety strategies at the global, regional and national levels. Risk ranking methodologies are an important tool for priority setting. It is important to consider the underestimation (e.g. due to bias in reporting). Typing methods for microbial hazards inevitably impact on risk assessment and can have an important influence on the accuracy of source attribution studies. Due to their high genetic diversity and the limitations of current diagnostic methods, it is still challenging to obtain robust evidence for food-borne outbreaks caused by viruses and more research is needed on the use of whole genome sequencing in this area. The lessons learnt from the recent enterohaemorrhagic \textit{Escherichia coli} (EHEC) outbreak in Germany include the need for more effective and timely connections within and between institutions as responses unfold.

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