The Future of Safety Assessments of Novel Foods: A Focus on New Approach Methodologies

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New approach methods (NAMs), mainly *in silico* and *in vitro* methods have seen a rise in their utilisation to assess the safety of novel foods for market authorisation. Concerted efforts are in progress to reduce the over-reliance on long-term animal-based safety evaluation approaches, which are often associated with high costs, reproducibility concerns, and ethical issues. The rise of novel foods would require their safety assessments to protect consumer health. This work will present the recent advances in the application of NAMs to evaluate the safety of novel foods with applied examples, their regulatory adoption, strengths, and limitations. It was found that the commonly utilised NAMs include the Ames and Comet assays which assess genotoxic risks at the genetic level and the DNA level respectively. Others include *in vitro* methods that evaluate mammalian cell cytotoxicity through fluorometric and colourimetric techniques (e.g., Trypan blue, MTT and Alamar blue assays), and computational models such as the QSAR to predict safety. A limited number of NAMs (e.g., the Ames Assay) are currently accepted in the regulatory risk assessment of novel foods. This is attributed to limited progress on their standardisation and regulatory acceptance. Insights into their strengths, limitations, standardisation and regulatory acceptance would contribute to wider adoption in future safety and risk assessment of novel foods.