

Bio-markers. traceability and food safety issues

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European consumer confidence in the quality and safety of food products has been considerably shaken during the last years by the cumulative impacts of food-related health crises. Responding to the challenge, the European Union is implementing a comprehensive strategy to restore people's trust in the safety and quality of their daily food with the strategy integrated in the slogan "From the farm to the fork". Traceability processes (trace and trek) in food (processed, semi-processed, or raw production), which is intended for human or animal consumption need suitable markers all along the production chain. Research and practice is focusing on: development, validation and harmonization of technologies and methodologies to ensure complete traceability throughout the food chain; scale-up, implementation and validation of methods in whole food chains; assurance of authenticity; validity of labeling and application of HACCP to the whole food chain. The ultimate driving force for whether biomarkers will contribute to food trace efforts is the validity of the markers. Validity is a complex characteristic that describes the extent to which a biomarker reflects a designated event in a system. Generally, these events are exposure, effects of exposure, disease and susceptibility. Validity has meaning according to discipline as well. To the laboratory scientist, validity often refers to the nature of the biomarker and the characteristic of the assay for the biomarker. Thus, the sensitivity of the assay to detect a signal at a given concentration, and the ability of the signal to be specific for a particular event are indications of validity to the laboratory scientist. In addition, the scientist wants to know what factors might influence an assay. The epidemiologist relies on the laboratory definition of validity as the cornerstone of population studies, reliability of the assay under field conditions and the frequency of the marker varies in different population subgroups defined by age, race, gender, pre-existing illness, diet and various behavioural factors. Only when validity at the laboratory and population level has been established is a biomarker ready for the full spectrum of uses. Most biomarkers have not had that level of validation. The current review is to sum the scientific and technological basis for ensuring complete traceability as needed to ensure food safety.

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