Challenges and perspectives of advanced technologies in processing, distribution and storage for improving food safety
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Processing, distribution and storage compile the main parts of the food chain. Processing eliminates and/or prevents the microbes to proliferate and consequently spoil the food or cause a disease. It also affects other quality indices aiming at enhancing the shelf life of the product. The more mild the processes, the less their effect on the nutritional value of the products. A series of advanced physical technologies (e.g., plasma, pulsed electric field) have been proposed the past years but their further up-scaling and industrial application requires a better understanding of their antimicrobial mechanisms of action and their efficacy in controlling food safety. Radio frequency identification and time-temperature integrator devices can be used to monitor and log the temperature of foods during distribution and storage. Their combination with predictive microbiology tools can also lead to effective management systems improving food safety and quality. Their further implementation will require more awareness of their critical benefits and the better communication of their applicability.

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