

Food Safety Considerations and Research Priorities for the Cultured Meat and Seafood Industry

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Abstract

Cell-cultured meat and seafood offer a sustainable approach to meet the world's increasing demand for protein in a climate-changed world. A responsible, data-driven approach to assessing and demonstrating safety of cell-cultured meat and seafood can support consumer acceptance and broad distribution; helping to fully realize the potential of these products. A thorough demonstration of food safety requires a description and understanding of the process steps during cell-cultured meat and seafood manufacture to identify potential hazards, their exposure, and related safety requirements related to the inputs, by-products, and ultimately the consumption of the final product.

For this review, the authors worked with 50 cultured meat and seafood companies to co-develop a modular manufacturing process diagram, portraying the majority of cell-cultured meat and seafood production processes currently in development. This diagram serves as a framework to identify potential manufacturing hazards and product safety testing requirements. A series of workshops were held with industry representatives and cell-cultured meat researchers to substantiate the accuracy and validity of the diagram. This review identifies potential hazards and where they may occur during product development and manufacture, then evaluates where existing safety assessment approaches, drawn from related fields, may be relevant for cell-cultured meat and seafood products. From this, current knowledge gaps and research priorities were identified regarding the safety of cell-cultured meat and seafood products.

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