ECsafe SEAFOOD

Priority environmental contamination in seafood: safety assessment, impact and public perception

Royal Flemish Academy of Belgium for Science and the Arts

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NEW FINDINGS & INNOVATION CHALLENGES

Stakeholder Event & Open Science Meeting on Key Seafood Safety Developments by **ECsafeSEAFOOD**

ABSTRACTS BOOK

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Consumer needs and concerns Marine toxins in seafood and the environment Toxicity and modelling of seafood contaminants Evaluation of seafood monitoring data Rapid detection tools for environmental contaminants The future of seafood safety Communication outreach and education

OP.10. Bioaccessibility of contaminants of emerging concern in raw and cooked commercial seafood species: insights for food safety risk assessment

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The health benefits of a diet based on seafood have been recognised due to the high levels of polyunsaturated n-3 fatty acids, essential elements and vitamins. Nevertheless, the accumulation of environmental contaminants of emerging concern (CEC) by seafood can be a concern for human health. These contaminants are strong candidates for future regulation, and risk-benefit assessment is essential to properly assess food safety issues of these CEC. The effect of the digestion on the availability of CEC for absorption by the intestinal epithelium (bioaccessibility) is essential in risk-benefit analysis, but the information is still scarce.

In this context, a standardized *in vitro* digestion method was used to assess the bioaccessibility of CEC in raw and cooked seafood, including seaweeds, bivalves, crustaceans and fish. The CEC and others contaminants addressed in this work include toxic elements (e.g. MeHg), perfluorinated compounds (PFCs; e.g. PFOS and PFUnA), brominated flame retardants (BFRs; e.g. BDE47, BDE100, α-HBCD), pharmaceuticals and personal care products (PPCPs; e.g. venlafaxine, methylparaben and octocrylene) and marine biotoxins (e.g. okadaic acid, azaspiracids and tetrodotoxin).

CEC bioaccessibility varied according to compound, species and cooking procedure. For example, MeHg revealed low bioaccessibility in all species (1 - 60 %), and steaming decreased MeHg bioaccessibility. Low bioaccessibility was also observed for BDE47 and BDE100 (< 45 %), while PFCs and PPCPs revealed higher bioaccessibility percentages (between 71 and 95 %). A decrease was observed in PBDEs and venlafaxine bioaccessibility after steaming. Okadaic acid and azaspiracids bioaccessibility varied between 55 and 80 %, but decreased after steaming, and low tetrodotoxin (15 %) bioaccessibility was observed in pufferfish. These data are essential for accurate risk assessment of CEC in seafood that will enable drawing up maximum permissible concentrations for CEC at the European level