Modelling and predicting the simultaneous growth of Listeria monocytogenes and psychrotolerant lactic acid bacteria in processed seafood and mayonnaise-based seafood salads - DTU Orbit (24/09/2019)

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A new combined model for Listeria monocytogenes and psychrotolerant Lactobacillus spp. was constructed and evaluated for processed seafood and mayonnaise-based seafood salads. The new model was constructed by combining existing cardinal parameter models for L. monocytogenes and Lactobacillus spp. using the classical Jameson effect to model microbial interaction. Maximum population density (MPD) values of L. monocytogenes were accurately predicted in processed seafood with a known initial cell concentration of Lactobacillus spp. For these experiments, average MPD values of 4.5 and 4.3 log (cfu/g) were observed and predicted, respectively for L. monocytogenes. In seafood salads, growth of L. monocytogenes continued at a reduced growth rate after Lactobacillus sakei had reached their MPD. This growth pattern was successfully described by an expanded version of the classical Jameson effect model, but only for products with pH of 6.0 or higher. For seafood salads with pH below 6.0 the performance of the new model was unacceptable, primarily due to prediction of no-growth by L. monocytogenes when growth was actually observed. Within its range of applicability the new model can be valuable for risk assessment and risk management of processed seafood as well as for evaluating the compliance of products with the EU regulation for ready-to-eat foods.

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