

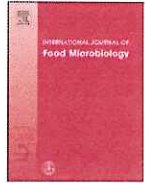


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Evaluation of the spoilage potential of bacteria isolated from spoiled raw salmon (*Salmo salar*) fillets stored under modified atmosphere packaging

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ABSTRACT

The spoilage potential of eight bacterial groups/species (*Serratia* spp., *Hafnia alvei*, *Brochothrix thermosphacta*, *Carnobacterium maltaromaticum*, *Shewanella baltica*, *Lactococcus piscium*, *Photobacterium phosphoreum*, "other Enterobacteriaceae" [containing one strain of *Moellerella* sp., *Morganella* sp. and *Pectobacterium* sp.]) isolated from spoiled raw salmon fillets stored under modified atmosphere packaging (MAP) was evaluated by inoculation into sterile raw salmon cubes followed by storage for 12 days at 8 °C. Microbial growth and sensory changes were monitored during the storage period. The dominant spoilage bacteria were *C. maltaromaticum*, *H. alvei* and *P. phosphoreum*. In order to further characterize their spoilage potential and to study the effect of their interactions, each of these 3 specific spoilage organisms (SSO) and two mixed-cultures, *C. maltaromaticum*/*H. alvei* and *C. maltaromaticum*/*P. phosphoreum* were tested in the sterile salmon model system using a combination of complementary methods: molecular (PCR-TTGE), sensory, chemical and conventional microbiological analyses. It was concluded that, in the mixed-culture inoculated samples, the dominant species determined the spoilage characteristics. The volatile fraction of *P. phosphoreum* inoculated samples was analyzed by solid-phase microextraction (SPME) followed by gas chromatography coupled to mass spectrometry (GC-MS). Among the specific volatile compounds present on *P. phosphoreum* spoiled inoculated samples, acetic acid was correlated with sensory analysis and can be proposed as a raw salmon spoilage marker.

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