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Microbial quality of ice-stored tropical yellowfin tuna (*Thunnus albacares*) steaks and influence of vacuum and modified atmosphere packaging (ECOSYSP)

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The objective of this work was to describe precisely the bacterial ecosystem of the yellowfin tuna flesh widely consumed in Martinique. In addition to the culture-dependent methods, a Next-Generation Sequencing platform (Illumina MiSeq) was used on the bacterial DNA of the tuna steaks stored in ice (AIR: 0 °C), vacuum (VP: 4-8 °C) and modified atmosphere packaging (MAP: 4-8 °C) until their respective sensory rejection point. At these dates, several bacterial strains were isolated and then inoculated in sterile tuna flesh to characterize their spoiling potential (challenge test). The organoleptic rejection of AIR products was observed at day 13 when total bacterial counts equaled 10^6 - 10^7 cfu.g⁻¹. No extension of shelf-life was provided by VP and MAP. According to the metagenomic analysis, *Rhodanobacter terrae* were the main species of the freshly caught tuna. At the sensory rejection time, *Brochothrix thermosphacta* and *Pseudomonas* spp., dominated the AIR samples while *B. thermosphacta* alone or a mix of *B. thermosphacta*, *Enterobacteriaceae* and lactic acid bacteria dominated the microbiota of MAP and VP products, respectively. *Pseudomonas* spp., *Enterobacter* spp., and *Escherichia* spp., were categorized as non or lightly-spoiling bacteria by the sensory panel; *B. thermosphacta* and *Carnobacterium* spp. exhibited moderate effects and were characterized by butter/caramel odors; *Hafnia paralvei* and *Serratia* spp., were considered as strong spoilers with pyrrolidine-like odors. When species were co-inoculated (by pair), the association between *B. thermosphacta* and *Carnobacterium* spp., favored a stronger deterioration while the addition of *Pseudomonas* spp., or *B. thermosphacta* to *H. paralvei* inhibited the development of unpleasant odors.

Biography

Adele Silbande is currently a PhD student in Food Microbiology Research at the University of Antilles in Martinique. She works on the post-mortem microbial ecosystems of tropical fishes, *Thunnus albacares* and *Sciaenops ocellatus* and the impact on the quality of the products (ECOSYSP).

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