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Microbial Dynamics and Sensory Traits of Spanish- and Greek-Style Table Olives (Olea europaea L. cv. Ascolana tenera) Fermented with Sea Fennel (Crithmum maritimum L.)

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Abstract : Table olives (Olea europaea L.) are among the most important fermented vegetables all over the world, while sea fennel (Crithmum maritimum L.) is an emerging food crop with interesting nutritional and sensory traits. Both of them are characterized by the presence of several bioactive compounds with potential beneficial health effects, thus representing two valuable substrates for the manufacture of innovative vegetable-based preserves. Given these premises, the present study was aimed at exploring the co-fermentation of table olives and sea fennel to produce new high-value preserves. Spanish style or Greek style processing method and the use of a multiple strain starter were explored. The preserves were evaluated for their microbial dynamics and key sensory traits. During the fermentation, a progressive pH reduction was observed. Mesophilic lactobacilli, mesophilic lactococci, and yeasts were the main microbial groups at the end of the fermentation, whereas Enterobacteriaceae decreased during fermentation. An evolution of the microbiota was revealed by metataxonomic analysis, with Lactiplantibacillus plantarum dominating in the late stage of fermentation, irrespective of processing method and use of the starter. Greek style preserves resulted in more crunchy and less fibrous than Spanish style one and were preferred by trained panelists.

Keywords : lactic acid bacteria, Lactiplantibacillus plantarum, metataxonomy, panel test, rock samphire
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