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BOOK OF ABSTRACTS

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DEVELOPMENT OF A SMART PACKAGE FOR THE SHELF-LIFE EXTENSION OF BLACK TRUFFLE (*Tuber melanosporum*)

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Different technologies have been applied to extend the shelf-life of fresh truffles maintaining their freshness and characteristic aroma, such as modified atmosphere packaging or edible coatings. In this work, an edible smart package able to extend the shelf-life of black truffles and trap the aromas released by the truffle was evaluated. The smart package consisted of a gelatine hydrogel matrix covering the truffle that showed an extraordinarily high oxygen permeability, allowing enough gas exchange to avoid anaerobic conditions in the truffle. The shelf-life extension of the truffle stored in the smart package was assessed through physical properties, and microbiological analysis. The aromatic profile was evaluated for both the truffle and the gelatine hydrogel by gas chromatography-mass spectrometry and sensory analysis. Truffle preservation in smart packages was compared to that in macroperforated packages. The microbial growth in truffles stored in the smart package was reduced and aroma compounds were retained, compared to truffles packaged in macroperforated packages after 21 days. However, firmness loss at day 28 of truffles stored in smart packages was considered high, indicating a spoilage behaviour. The smart package trapped key aroma compounds from the fresh truffle and maintained good microbiological quality through storage (<4 log $CFU \cdot g^{-1}$ after 28 days). Thus, the estimated shelf-life of the truffles stored in the smart package was about 21 days, obtaining fresh truffles with high quality, and an edible gelatine hydrogel with truffle aroma that can be useful for culinary purposes.
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