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BOOK OF ABSTRACTS

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I10. Industrial and Food Microbiology and Biotechnology

P341. Active whey protein edible films and coatings incorporating lactic acid bacteria for fungi control in cheese

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Moulds are the main spoilage organisms in dairy products. Fungal contamination despite causing discolouration, off-flavours, alterations in texture and appearance, which leads to waste and thus economic losses, can also be responsible for health issues. Additionally, some of the spoilage fungi can produce toxic secondary compounds designated by mycotoxins. The use of lactic acid bacteria (LAB) in a perspective of biopreservation can be considered as an alternative for fungal control. The incorporation of LAB into edible films and coatings can be an effective strategy to improve the quality and shelf life of some food products.

In this work, the incorporation of *Lactobacillus buchneri* UTAD104 into whey protein-based films and coatings were tested for the control of *Penicillium nordicum* in a cheese matrix. The addition of cells to the films and coatings formulation resulted in thicker films with less luminosity and significantly different colour than control films (without cells). Nevertheless, cells inclusion did not alter moisture content, water vapour permeability, mechanical properties (tensile strength and elongation at break) and hydrophobicity of the films. FTIR and XRD data suggest that cells did not modify the films' chemical structure or crystallinity. Bioactive films were able to maintain approximately 1×10^5 CFU/mL during the first 30 days of storage at 25 °C. When applied in cheese, films and coatings with *L. buchneri* UTAD104 prevented fungal contamination for at least 30 days. The mycotoxin ochratoxin A was not found in cheeses treated with films and coatings containing *L. buchneri* UTAD104. Results showed that the inclusion of LAB with antifungal properties in edible films and coatings could help to reduce or eliminate fungal contamination in cheeses.