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**DEVELOPMENT OF ACTIVE BIO-BASED MULTILAYER SYSTEMS:
ENCAPSULATION OF CINNAMALDEHYDE AND THEIR PHYSICO-CHEMICAL
CHARACTERIZATION**

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Abstract

In this work, different multilayer structures, using a polyhydroxybutyrate-co-valerate film with a valerate content of 8% (PHBV8) as support, were developed aiming the development of active bio-based multilayer systems. An interlayer based on zein nanofibers with and without cinnamaldehyde were electrospun in the PHBV8 film and three multilayer systems were developed: 1) without an outer layer; 2) using a PHBV8 film as outer layer; and 3) using an alginate-based film as outer layer. Their physico-chemical properties were evaluated through: water vapour and oxygen permeabilities and colour measurements, Fourier Transform Infrared Spectroscopy (FTIR) and thermal analyses. Results showed that the presence of different outer layers affected the water vapour permeability and transparency of the multilayer films.

The deposition of cinnamaldehyde-loaded zein fibres through electrospinning showed that can be used for development of active bio-based multilayer systems, which can be used in packaging applications.

Keywords: biodegradable, electrospinning, antimicrobial, packaging, biolayering



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