

Development of antifungal films based on low-density polyethylene and thyme oil for avocado packaging

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Abstract

Trilayer low-density polyethylene (LDPE) films were prepared by incorporating varying concentrations of thyme oil, as the antifungal active additive for avocado packaging. A comprehensive thermal, structural, mechanical, and functional characterization of the prepared films was carried out. Thermal stability of the film reduced with the addition of thyme oil in higher concentration, whereas the degree of crystallinity increased upto 2.5 wt % thyme oil loading. The elastic modulus and elongation at break of the films decreased in presence of thyme oil. However, the incorporation of thyme oil did not change the water vapor transmission characteristics of the original film. The antifungal activity of the films was tested against *Colletotrichum gloeosporioides* causal organism of “anthracnose” postharvest disease in avocados. The results indicated that the films have great potential as antifungal packaging materials for avocado fruits.