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## Physical and Functional Properties of Durian Skin Fiber Biocomposite Films Filled with Natural Antimicrobial Agents

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### Abstract

Effects of durian skin fiber (DSF), epoxidized palm oil (EPO), and cinnamon essential oil (CEO) on the physical and functional properties of polylactic acid (PLA) biocomposite films were investigated. The biocomposite films were produced via a solution casting process. The results indicated that the PLA with 3 wt.% DSF absorbed the maximum amount of water (5.9%), which was due to the hydrophilic characteristics of the DSF. Additionally, PLA and DSF lost the most weight after decomposing for 50 days in soil. The dart drop impact test showed a reduction in the impact failure weight of the PLA composites with EPO and CEO, which could have been because of their porosity; hence, a porosity was created between the microstructures. Interestingly, the tear resistance was remarkably amplified for the biocomposites with EPO and CEO. From the migration study, the PLA, DSF, EPO, and CEO biocomposite film appeared to be suitable for use as food packaging for all types of food, as there were no negative effects when they were tested with aqueous, alcoholic, acidic, fatty, and milk food product types.

### Keywords

Author Keywords: **Antimicrobial; Active food packaging; Biocomposite film; Durian skin fibers**

KeyWords Plus: **EDIBLE FILMS; MIGRATION; PRODUCTS; POLYMERS**

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