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**Potential Of Fabrication Of Durian Skin Fiber Biocomposites For Food Packaging Application Through The Electricity Impact Analysis**

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**Abstract**
As an effort to replace the petroleum-based polymers and reduce waste-related environmental problems, biopolymers are the best candidate due to their renewable, biodegradable and commercially viable. Initiative have been taken by developing durian skin fibre (DSF) reinforced polylactic acid (PLA) biocomposites with the addition of epoxidized palm oil (EPO). PLA/DSF biocomposites were fabricated via extrusion and then injection moulded. The biocomposites were assessed for its life cycle by developing a system boundary related to its fabrication processes using GaBi software. The life cycle assessment (LCA) of PLA/DSF biocomposites show that global warming potential (GWP) and acidification potential (AP) were the major impacts from PLA/DSF biocomposite. For PLA/DSF biocomposite, the results were 199.37 kg CO2equiv. GWP and 0.58 kg SO2equiv. AP. Meanwhile, for PLA/DSF/EPO biocomposite, the results obtained were 195.89 kg CO2equiv. GWP and 0.57 kg SO2equiv. AP. The GWP and AP were contributed by the electricity used in the fabrication of biocomposites. These impacts were due to the usage of electricity, which contributed to the emission of CO2. However, the PLA/DSF/EPO biocomposite had lower negative impacts because EPO improved the workability and processability of the biocomposite, and hence, reduced the amount of energy required for production. It can be concluded that the plasticized PLA/DSF biocomposite can be a potential biodegradable food packaging material as it has favourable properties and produces no waste. © 2021. All Rights Reserved.

**Author Keywords**
cradle-to-grave; durian skin fibre; food packaging; life cycle assessment; plasticizer; polylactic acid

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