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Physicochemical property of oil palm leaves and utilization of cellulose microfiber as probiotic encapsulant

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Abstract

Pato U, Ayu DF, Riftyan E, Restuhadi F, Pawenang WT, Firdaus R, Rahma A, Surono IS, Jaswir I. 2021. Physicochemical property of oil palm leaves and utilization of cellulose microfiber as probiotic encapsulant . Biodiversitas 22: 2937-2944. The vast land of oil palm (Elaeis guineensis) in Indonesia has a huge potential for oil palm solid waste, which can be used for various human needs. The physiochemical analysis performed was proximate analysis and fiber content, FTIR and X-ray diffraction analysis, an in vitro test on viability and resistance to acid and bile during storage at room and refrigerated temperatures. The main content of oil palm leaves was carbohydrates, especially fiber and followed by ash, protein, and fat. Fiber from oil palm leaves is mainly composed of lignin followed by cellulose and hemicellulose. X-ray diffraction analysis showed that the crystal index of cellulose from oil palm leaves was 10.1%. FTIR analysis showed that the enormous absorption value, which was the stretching vibrations of the-OH group ranging from 2919.17 to 2914.82 cm^{-1}.

Cellulose microfiber from oil palm leaves maintained the viability of L. fermentum InaCC B 1295 for up to 28 d of storage at room and refrigerated temperatures. The survival of strain B1295 at low pH and presence of bile was very high, characterized by a decrease in the number of cells by less than 0.5 log CFU/mL during storage of 35 d at room and refrigerated temperatures. Therefore, Cellulose microfiber from oil palm leaves has the potential to be used as an encapsulant for probiotics.

Author keywords

Cellulose ; CMF; Oil palm leaves ; Physicochemical properties; Probiotic

SciVal Topics

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