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Fungal pretreatment of oil palm empty fruit bunch (opefb) using locally isolated fungus for fermentation feedstock

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Abstract. Oil palm empty fruit bunch (OPEFB) is one of the biomass generated from palm oil mills. OPEFB contained lignocellulosic components that can be converted into the value-added product through several pretreatment such as physical, chemical, physicochemical and biological pretreatments. Currently, physicochemical pretreatment is the most common pretreatment used to pretreat and convert OPEFB into fermentation feedstock. However, this type of pretreatment requires high energy input and chemical usage that leads to environmental issues. Therefore, mild pretreatment such as biological pretreatment can be considered as one of the alternatives to pretreat OPEFB as it requires low energy and serves as environmental friendly pretreatment. Biological pretreatment can be divided into two which is fungal pretreatment and enzymatic pretreatment. Particularly, biological pretreatment using ligninolytic fungus is cheaper compared to enzymatic pretreatment. The wood-rot fungi, especially white-rot fungi are the fungi that able to produce the ligninolytic enzymes and contribute to the modification of lignocellulosic structure and hemicellulose removal. The isolated fungus in this study is one of the white-rot fungi that most likely has the ability for biodegradation as any other well-establish fungi. Thus, biological pretreatment using isolated fungus will be carried out in this study to convert the OPEFB into fermentation feedstock as the value-added product.

Keywords: Biological pretreatment, oil palm empty fruit bunch, lignocellulose, fermentation feedstock