COMPARSION OF BIOTRANSFORMATION IN OIL PALM FROND AND OIL PALM TRUNK INTO BIOETHANOL

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Partial Fulfillment of the Requirements for the
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DECLARATION

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TABLE OF CONTENTS

ABSTRACT

COMPARISON OF BIOTRANSFORMATION IN OIL PALM FROND AND OIL PALM TRUNK INTO BIOETHANOL

Bioethanol is one of alternative energies that replace fossil fuel. Lignocellulose materials are good for bioethanol production. The primary feedstock for first generation of bioethanol is obtained from other starch crops such as corn, wheat and sorghum. Onwards, bioethanol produced from materials such as cellulose or hemicelluloses are called second generation bioethanol. Several materials that have higher benefit to people are Oil Palm Frond (OPF) and Oil Palm Trunk (OPT). The change from OPF and OPT to second generation bioethanol requires several steps to be followed. For OPF, the substrate preparation, culture maintenance and inoculum preparation process. Then, it is followed by solid-substrate fermentation (SSF), fermentable sugars extraction and lastly ethanol fermentation. For OPT, there are 4 levels that be followed, it is Oil Palm Trunk sap extraction process, fermentation process, distillation process and lastly, purification process. The two materials chosen for this report are to determine the process of ethanol production. In addition, to find out the chemical composition between OPF and OPT and to compare between OPF and OPT in the percentage of ethanol yield. As a result, the ethanol yield will increased with increasing cellulose loading and higher percentage rate of Holocellulose and Cellulose influenced the rate of ethanol yield.

***Keyword**: Oil Palm Frond (OPF), Oil Palm Trunk (OPT), Bioethanol, Ethanol production, Percentage ethanol yield*