ENZYMATIC HYDROLYSIS FROM OIL PALM EMPTY FRUIT BUNCH FOR XYLOSE PRODUCTION

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Oil Palm Empty Fruit Bunch is one of lignocellulosic biomass that has potential to be utilized as a source of renewable energy such as bioethanol. In order to increase profitability, hydrolysis of hemicellulose can be considered to produce high value chemicals such as xylitol. Xylitol is the result of degradation of xylose. This research main to obtain high yield of xylose by doing enzymatic hydrolysis to break down hemicellulose by using diluted sulfuric acid for pretreatment process, different pH and the ratio between Cellic® Ctec2 and *enzyme* Cellic® Htec2 on enzymatic hydrolysis process. After undergoing pretreatment process, xylose yield was 25.06% on dry basis. The optimum condition for enzymatic hydrolysis with temperature 50°C using 150 rpm, was found to be with enzyme ratio of Cellic® Ctec2 and *enzyme* Cellic® Htec2 1:5 and pH 5.5 after 12 hours. The release yield of xylose and glucose respectively was 78.95% and 14.25% at dry basis.

Keywords: OPEFB, Enzymatic hydrolysis, Xylose, Lignucellulosic, Xylitol

DEDICATION

I dedicate this works for my parents, and my beloved country, Indonesia.
This thesis also dedicated to Pusat Penelitian Kimia Lembaga Ilmu Pengetahuan Indonesia (P2KLIPI), that granted me permission to use their facilities and offered me assistance in the making of this research.

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TABLE OF CONTENT