Oil palm (Elaeis guineensis) trunk as a resource of starch and other sugars

ABSTRACT

Large quantities of oil palm trunks are available annually during the replanting activities when the oil palm tree passed their economic age, on an average after 25 years are replace with young trees. Basically the oil palm trunks contains about 18- 21% of lignin, 65-80% of holocellulose (a-cellulose and hemicellulose) and quite significant amount starch. This work is aimed to determine the total extractable starch and sugars content from oil palm trunks by using steeping method and dilute acid hydrolysis. The effect of different oil palm trunk powder size on starch, xylose and glucose yield was evaluated. The effect of extraction parameter for each extraction method on the yield of starch and sugars were studied. The highest starch yield was obtained when steeped in the presence of lactic acid, while the highest xylose yield was obtained by 60 min hydrolysis of 60 mesh of oil palm powder with 2% sulfuric acid. For glucose yield, hydrolysis efficiency of 82% was obtained for conversion of oil palm trunk to glucose using two-stage concentrated sulfuric acid hydrolysis. Conclusively oil palm trunk can be considered as a resource of substantial amounts of starch and sugars.

Keyword: Glucose; Oil palm trunk; Starch; Xylose