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MAXIMISING PRODUCTION OF PREBIOTIC SUGAR

(CELLOBIOSE) FROM SAGO FROND

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ABSTRACT

Numerous fronds are discarded as waste upon harvesting of sago logs for starch production. Currently, these fronds are left to degrade in sago estates which potentially pose fire hazard in the dry season, concomitantly accommodating various pests that endanger the livelihood of the sago farmers. The objective of this study is to utilize the frond for the production of cellobiose, a non-table sugar known to harbour various prebiotic properties. Enzymatic hydrolysis was performed on treated sago frond fibre utilizing the cellulolytic enzyme Celluclast 1.5L. Characterization of the lignocellulosic component revealed that adolescent sago fronds have the highest cellulose content (41.43%) which is beneficial for high yield of cellobiose. Pruned sago fronds have the highest lignin (40.63%) which hinders the hydrolysis process.

Nevertheless the hemicellulose content was found to be approximately similar (between 15 to 18%) which promotes the production of cellobiose. Optimum enzymatic hydrolysis was achieved at 6% (w/v) sago frond powder coupled with 10% (v/v) enzyme and incubated for 48 hours, producing a maximum recovery of cellobiose at 25.5%.

Key words: sago frond, lignocellulosic, cellobiose, glucose, Celluclast 1.5L