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Sugars from sago frond as prebiotic substrate to enhance the growth of *Lactococcus lactis* IO-1 and production of L-lactic acid.

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Abstract

Sago palm is often discredited for exhibiting long maturity period and barrenness of pre-harvest products, which restrain its potentials as an alternative and eternal starch provider. The use of sago fronds to produce prebiotic and fermentable sugars from pruned palms and fronds discarded upon harvesting is a possible enterprise to provide income for the cash-strapped sago farmers while waiting for the sago trunks to be harvestable. Dried sago frond powder coupled with the cellulolytic enzyme and incubated for 48 hours, producing a maximum recovery of cellobiose at 25%. This is of great advantage in reducing the cost of large-scale processes since the yield and productivity from SFS is comparable to the Standard Medium and SFS amended with yeast extract at 0.85g/g and 85%, respectively. Meanwhile, the composition of cellobiose as main sugar component increase the viability of the *Lactococcus lactis* IO-1 by prolong the lifespan of the cell by perform as slow release carbon source, in fact, cellobiose was protected by β (1-4) glycosidic bond made it consumable to specific probiotic in human digestive system conceive that cellobiose as potential prebiotic component for human. Clearly, the use of sago frond is highly economical and sustainable as the raw material for the manufacturing of fermentable sugars and subsequently as the sustainable substrate for large-scale production of L-lactic acid.

