



Oral presentation

Poster presentation

AFOB Regional Symposium 2014 (ARS2014)

February 9–11, 2013

Kuala Lumpur, Malaysia

Enhanced Poly(3-hydroxybutyrate) Production from Oil Palm Frond Juice by *Cupriavidus necator* NCIMB 11599

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A substantial amount of renewable sugars can be obtained by simply pressing the oil palm frond (OPF) using sugarcane press machine. OPF juice can be utilized as a carbon source for the production of poly(3-hydroxybutyrate), P(3HB) by using a wild type strain of *Cupriavidus necator* CCUG 52238^T. Unfortunately, lesser amount of P(3HB) content *i.e.* 32 wt.% was obtained when 30% (v/v) of OPF juice was supplemented as the sole carbon source in shake flasks experiment. An attempt has been made to further enhanced the P(3HB) production using a mutant strain of *Cupriavidus necator* NCIMB 11599 in a 2L fed-batch bioreactor. The P(3HB) produced from this study was then characterized for its physical, thermal and mechanical properties. From the fed-batch experiment supplemented with concentrated OPF juice, we managed to obtain higher cell dry mass of 40 g/l with 75 wt.% of P(3HB) accumulation. Images of bacterial cells taken at 60 h of cultivation period with a Transmission Electron Microscope (TEM) showed the vast majority of microbial cells contained many P(3HB) granules with a few cells autolysis occurred, indicating the suitable time for cells harvesting. Number average molecular weight, mechanical and thermal properties of P(3HB) obtained from OPF juice showed an almost similar properties to those reported in the literature indicating that OPF juice can become viable low-cost substrate alternative in P(3HB) production.

(221 words)

Keywords : Oil palm frond juice, Renewable sugars, Poly(3-hydroxybutyrate), *Cupriavidus necator* NCIMB 11599