

Enzymatic saccharification of pretreated solid palm oil mill effluent and oil palm fruit fiber.

ABSTRACT

The effectiveness of various chemicals pretreatment (NaOH, HCl, NH₃, HNO₃ and EDTA) on the enzymatic saccharification of solid palm oil mill effluent (POME) and oil palm fruit fibre (OPFF) was investigated. The results showed that NaOH seem to be the most suitable chemical pretreatment for enhancing sugar production and the degree of hydrolysis from saccharification of OPFF. NaOH at a concentration of 2% (w/v) appears to be optimal for alkaline pretreatment of OPFF. However, chemical pretreatment of solid POME using NaOH, NH₃, HNO₃, HCl and EDTA was found to be ineffective in enhancing the degree of hydrolysis and sugar production as compared to chemically untreated solid POME. Autoclaving OPFF at 121°C, 15 psi for 5 minutes improved the degree of hydrolysis up to 2.4 times. However, the degree of hydrolysis was not significantly affected for solid POME under the same conditions.

Keyword: Lignocellulosic materials; Cellulase; Fermentable sugar; Palm oil mill effluent; Oil palm fruit fiber.