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Microbial Lipids Production by *Cryptococcus curvatus* from Vegetable Waste Hydrolysate

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Abstract

This study primarily evaluated the effect of pre-treatment on release of reducing sugars (RS) from vegetable waste (VW). Different acids and alkalis viz., H_2SO_4, HCl, HNO_3, H_3PO_4, NaOH and KOH were evaluated at varied concentration (0.5, 1.0, 1.5 and 2.0%) for pretreatment. The highest RS yield of 472.36±1.89 g/l and 439.13±1.04 g/l was obtained with 1.5% H_2SO_4 and 2% HCl respectively. Secondly, pre-treated vegetable waste hydrolysates (PT-VWH) were evaluated for yeast fermentation using *Cryptococcus curvatus* for lipid production. Maximum biomass (9.46 g/l and 8.12 g/l) and lipid (28.3±0.5% and 26±0.5%) was obtained with 1.5% H_2SO_4 PT-VWH and 2% HCl PT-VWH respectively. The FAME profile revealed that the cellular fatty acids were predominantly palmitic, stearic, oleic and linoleic acid. The presence of these fatty acids in majority has beneficial effect on the biodiesel quality.

Keywords: Pre-treatment; Reducing sugars; Oleaginous yeasts; Biodiesel; FAME