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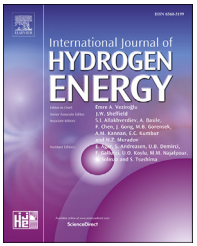

Fermentative hydrogen production from indigenous mesophilic strain *Bacillus anthracis* PUNAJAN 1 newly isolated from palm oil mill effluent

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ABSTRACT

In the present study, a new mesophilic bacterial strain, identified as *Bacillus anthracis* strain PUNAJAN 1 was isolated from palm oil mill effluent (POME) sludge, and tested for its hydrogen production ability. Effect of physico-chemical factors such as temperature, initial pH, nitrogen source and carbon sources were investigated in order to determine the optimal conditions for hydrogen production. The maximum hydrogen yield of 2.42 mol H_2/mol mannose was obtained at 35 °C and initial pH of 6.5. Yeast and mannose were used as the main carbon and nitrogen sources respectively in the course of the hydrogen production. Apart from synthetic substrate, specific hydrogen production potentials of the strain using POME was calculated and found to be 236 ml H_2/g chemical oxygen demand (COD). The findings of this study demonstrate that the indigenous strain PUNAJAN 1 could be a potential candidate for hydrogen using POME as substrate.