 IDENTIFICATION OF FERMENTATIVE BIOHYDROGEN BY MIXED CULTURE USING GLUCOSE AS SUBSTRATE

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Abstract

Identification of fermentative biohydrogen by mixed cultures, using glucose as a substrate have been conducted in this research. Fermentation carried out with batch systems and anaerobic conditions for 50 hours with 2% glucose at 40°C by keeping the pH around 5-6 and monitored every 3 hours. The resulting gas volume was calculated by water displacement system. Sugar residues were analyzed by DNS (3,5-dinitrosalicylic acid) and the amount of cells with turbidimetric method. Qualitative test using hydrogen sensor to indicated the presence of H₂. The study presented that the production biohydrogen on substrate concentration of 2% with the hydrogen content of 13,3% using gas chromatography from total biogas volume of 970 mL; 129,01 mL of H₂ cumulative and leaving glucose 2,25 g/L. The results of identified strains from mixed cultures showed that Bacillus cereus roled in hydrogen production.

Key words: Biohydrogen, fermentation, mixed cultures, glucose, Bacillus cereus, gas chromatography