Effect of Various Buffer Systems and Yeast Extract on Hydrogen Producing Cultures of *Caldicellosiruptor saccharolyticus*

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The extremely thermophilic bacterium, *Caldicellosiruptor saccharolyticus*, produces H_2 during the dark fermentation on sucrose[1]. The pH of the culture medium sharply decreased due to the accumulation of various organic acids, and this inhibited the H_2 production seriously[2]. Three buffer systems were examined to relieve the inhibition. The bicarbonate buffer system containing 5% CO_2 in gas phase was the best system for H_2 production. When initial CO_2 concentration was 5% in gas phase, the H_2 production and H_2 yield were estimated to be 1632 ml/l and 2.69 mol H_2/mol sucrose, respectively.

Also, the H_2 production of *C. saccharolyticus* was affected by the amount of yeast extract in the medium. When pH was controlled at pH 7.0, the H_2 production and H_2 yield were estimated to be 2177.0 ml/l and 4.3 mol H_2/mol sucrose on concentration of 1 g yeast extract/l, respectively. And the maximum specific H_2 production rate was 29.9 mmol/g DW/h on concentration of 1 g yeast extract/l. These results indicate that *C. saccharolyticus* has a high potential as a H_2 producer.

References

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