Hydrogen production from different sources by *Clostridium beijerinckii* KCTC 1785

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Abstract

Hydrogen production from two different sources was investigated. First Reinforced Clostridial Medium was used as a culture medium for *Clostridium beijerinckii* KCTC 1785. The culture conditions were as follows: medium pH 5.5, culture temperature 35℃, and agitation speed 150 rpm. In this condition, 4,600 ml biogas was generated from 6,000 mg/L glucose during 15 hr, and hydrogen content in the biogas was 32% (1470 ml). It was found that yeast extract or tryptose in the medium was essential for hydrogen production. Secondly food waste (50,000 mg/L COD), which was mixed with water, was sterilized and used as a culture medium for *Clostridium beijerinckii* KCTC 1785. The operation conditions were as follows: pH 5.5, temperature 40℃, and agitation speed 150 rpm. About 5,500 ml biogas was produced from food waste for 36 hr, and hydrogen content was 38% (2,100 ml). During fermentation acetic or butyric acid was produced according to the pH conditions, and more than 3,000 mg/L of each acid inhibited hydrogen production.

References

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