

Application of *Acinetobacter* sp. KKU44 for Cellulase Production from Agricultural Waste

Authors : Surasak Siripornadulsil, Nutt Poomai, Wilailak Siripornadulsil

Abstract : Due to a high ethanol demand, the approach for effective ethanol production is important and has been developed rapidly worldwide. Several agricultural wastes are highly abundant in celluloses and the effective cellulose enzymes do exist widely among microorganisms. Accordingly, the cellulose degradation using microbial cellulose to produce a low-cost substrate for ethanol production has attracted more attention. In this study, the cellulose producing bacterial strain has been isolated from rich straw and identified by 16S rDNA sequence analysis as *Acinetobacter* sp. KKU44. This strain is able to grow and exhibit the cellulose activity. The optimal temperature for its growth and cellulose production is 37 °C. The optimal temperature of bacterial cellulose activity is 60 °C. The cellulose enzyme from *Acinetobacter* sp. KKU44 is heat-tolerant enzyme. The bacterial culture of 36 h. showed highest cellulose activity at 120 U/mL when grown in LB medium containing 2% (w/v). The capability of *Acinetobacter* sp. KKU44 to grow in cellulosic agricultural wastes as a sole carbon source and exhibiting the high cellulose activity at high temperature suggested that this strain could be potentially developed further as a cellulose degrading strain for a production of low-cost substrate used in ethanol production.

Keywords : cellulose enzyme, bagasse, rice straw, rice husk, *acinetobacter* sp. KKU44

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