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BIODEMINERALIZATION OF SHRIMP SHELL VIA AEROBIC AND ANAEROBIC CONDITIONS: GROWTH KINETIC STUDIES

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Abstract

In the process of chitin extraction, shrimp shell powder was treated by *Lactobacillus plantarum* culture. The efficiency of microbial demineralization (DM) under aerobic and anaerobic conditions was investigated. The shrimp shell powder was incubated at 30 °C for 6 days with *L. plantarum*. In order to prepare microbial culture, inoculum size was 5% for culture inoculation. Date syrup with total reduce sugar concentration of 30 g.L⁻¹ was used. The value of pH in anaerobic condition was lower than in aerobic fermentation in demineralization process. From the obtained results it was observed that low pH which leads to high DM of shrimp shell. The percentages of DM under aerobic and anaerobic conditions were 61 and 80%, respectively. To obtain the substrate consumption and microbial growth parameters, several kinetic models such as Monod, Eadie-Hofstee and Logistic equations were evaluated. Monod and Logistic models were quite well fitted with experimental data obtained in aerobic and anaerobic processes. The obtained R² value was greater than 95%.

Key words: aerobic, anaerobic, chitin, demineralization, kinetic model

Received: October, 2011; Revised final: July, 2012; Accepted: August, 2012

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