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PRODUCTION OF BIOETHANOL FROM WHEY MILK VIA BIOTECHNOLOGY

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ABSTRACT

Hydrolysis of lactose and production of ethanol as a biofuel was evaluated and conducted in the present study. Lactose was hydrolyzed by Lactase (β -D-galactosidase) which produced by *Candida pseudotropicalis* that grown in whey and synthetic media. In addition, optimum pH and incubation temperature for lactose hydrolysis by *Candida pseudotropicalis* were studied and were found to be pH 3 and 37°C respectively. On the other hand, two isolates and one strain of *Saccharomyces cerevisiae* were used to produce bioethanol from glucose and galactose which released after hydrolysis of lactose by *Candida pseudotropicalis*. The present study showed that the strain was the best in bioethanol production from glucose with level reached to 1.21 % (v/v). Moreover, intergeneric protoplast fusion was done between *Candida pseudotropicalis* and *Saccharomyces cerevisiae* to be as one microorganism instead of two to facilitate, besides optimize the efficiency of bioethanol fermentation and production by the fusant which give 3.27% bioethanol from whey cheese.

Keywords: Bioethanol production, *Candida pseudotropicalis*, Intergeneric protoplast fusion. Lactose, *Saccharomyces cerevisiae*, Whey cheese,