

# FERMENTATIVE PERFORMANCE OF *Pichia stipitis* AND *Candida guilliermondii* YEASTS GROWN IN SUGARCANE BAGASSE HEMICELLULOSIC HYDROLYSATE SUPPLEMENTED WITH DIFFERENT NUTRIENTS

Silva, D. D. V.; Cândido, E. J.; Silva, S. S.; Felipe, M. G. A.

Engineering College of Lorena, University of São Paulo, Brazil

**Abstract:** Nutritional supplementation of the medium is very important in ensuring successful of the fermentation, since yeast cells require a wide range of nutrients for their growth and metabolic functions. It is also known that the nutrients required can be different depending on the yeast. Therefore, the fermentative performance of *Pichia stipitis* and *Candida guilliermondii* growth in sugarcane bagasse hydrolysate supplemented with different nutrients was evaluated. Experiments were carried out with sugarcane hemicelulosic hydrolysate supplemented with rice bran extract (an important source of vitamins and amino acids that greatly furthers the development of microorganisms),  $(\text{NH}_4)_2\text{SO}_4$  and  $\text{CaCl}_2$  (H1); peptone and yeast extract (H2);  $(\text{NH}_4)_2\text{SO}_4$ ,  $\text{CaCl}_2$ , peptone and yeast extract (H3) and a control experiment employing non-supplemented hydrolysate (H4). Nutritional supplementation of hydrolysate favored xylose consumption, cell growth and ethanol and xylitol production by yeasts. *P. stipitis* produced only ethanol, while *C. guilliermondii* produced xylitol as the main product and ethanol and glycerol as byproducts. The maximum values of  $Y_{P/S}$  (0.83g/g) and  $Q_P$  (0.56g/l.h) were observed on hydrolysate H1 for xylitol by *C. guilliermondii* after 48h of fermentation, corresponding to a xylose to xylitol conversion efficiency of 90.5%. Maximum values of  $Y_{P/S}$  (0.46g/g) and  $Q_P$  (0.29g/l.h) were obtained on hydrolysate H3 for ethanol by *P. stipitis* after 48h of fermentation, corresponding to a xylose to ethanol efficiency conversion of 92%.

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