A Promising New Yeast for Fermentation at High Temperatures

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Keeping temperatures at 30°C to 34°C in large-scale industrial bioreactors (thousands of liters capacity) in tropical climates has been a challenging task. Thermotolerant strains of *Saccharomyces cerevisiae* were able to grow overnight on solid medium at 40-42°C, nevertheless the fermentation at 40°C in liquid cultures of *Saccharomyces cerevisiae* (published elsewhere) could only be observed at glucose concentrations ≤ 10% (total reducing sugar, ART). Fermentation and growth assays were carried out as recommended by Barnett et al. (*Yeasts: Characteristics and identification,* Cambridge University Press, 2000) for characterization and in shaken Erlenmeyers flasks for ethanol production. Seventy strains isolated in our laboratory were identified as strains of *Issatchenkia orientalis* (data not published). In discrepancy with data from literature, this type of yeast was able to grow and ferment sucrose on solid and liquid medium at 30-40°C. Maximal levels of ethanol (4.5-5.0%, v/v) were produced in liquid YPD medium containing 10% glucose at temperatures ranging from 40°C to 43°C. Another peculiar attribute of this yeast was the poor growth observed on sucrose and xylose plates at 30°C compared to the strong growth obtained at 40°C. Growth of *I. orientalis* on glycerol plates was also stronger at 40°C, but its growth activity in non-hydrolyzed molasses was greater than its fermentative metabolism. It seems possible to use this new yeast for the fermentation of molasses at high temperatures and for the conversion of xylose from cellulolytic masses into cell biomass.

Key words: *I. orientalis*, growth, fermentation, ethanol, high temperatures.
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