

TITLE: ASSESSING NATIVE YEASTS FROM CACHAÇA FERMENTATIONS AS CANDIDATES FOR SPECIALTY BEER PRODUCTION

AUTHORS: CORNIANI, L. S.; PORTUGAL, C. B.; ALMEIDA, M. B.; CHRISTOFOLETI-FURLAN, R. M.; CRUZ, S. H.

INSTITUTION: ESCOLA SUPERIOR DE AGRICULTURA “LUIZ DE QUEIROZ”, UNIVERSITY OF SAO PAULO (AV. PÁDUA DIAS, 11, CEP 13418-900, PIRACICABA-SP, BRAZIL)

ABSTRACT: Different bioprocesses other than the brewery one has been searched for novel yeast strains for brewing. This work aims to prospect yeasts from cachaça fermentations and evaluate their ability to produce specialty beers. We assessed spontaneous fermentations in three small distilleries during four months in the region of “Circuito das Águas” (Sao Paulo, Brazil). Samples were plated in WLN for previous screening of colony morphotypes, followed by genomic DNA extraction and specific identification of *Saccharomyces cerevisiae* using primers SC1d/SC1r in a single PCR reaction. 292 isolates were obtained, and 47 strains were selected for the molecular characterization. Those strains identified as *S. cerevisiae* showed a 301bp product and were genotyped by interdelta sequence typing, using the primer pair D12/D21, and the polymorphic profiles were characterized using the Gel Analyzer software. Two strains could be differentiated in the distillery 1, with one dominant during the four months; the same was observed in the distillery 2 for other two different strains. In the case of the distillery 3, two strains seemed to alternatively dominate fermentations in different seasons. Afterwards, those six *S. cerevisiae* strains were selected for early physiological characterization, in which microbial growth was assessed in synthetic YP medium with a sole carbon source (glucose, fructose, sucrose or maltose) in microculture plates. The assays were performed with initial 3×10^6 cell/mL (28 °C), and the growth estimated by absorbance (620 nm) reading (1-h interval, 24 h). The strain L-242 presented the highest maximum specific growth rate (μ_{max}) and biomass formation (Δ_{abs}) for all the carbon sources studied, including maltose; L-045 showed the worst performance. Intermediate physiological profiles were recognized in the case of L-123, L-145, L-252 and L-262. These preliminary results suggest that different autochthonous *S. cerevisiae* strains may dominate cachaça fermentations in different producing units in the same geographic region. This could be due to several aspects, including the plant cultivars, cultural traits and the microclimate conditions. On the other hand, these early data show that native yeast strains isolated from cachaça distilleries could display desired traits to be proposed as inoculants in the production of specialty beers. More detailed research is mandatory, and the next steps may suggest robust native yeast starters for innovative brewing process.

Keywords: *Saccharomyces cerevisiae* | genetic fingerprint | physiological characterization | brewing

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