Title: SELECTION OF CULTURE MEDIUM FOR THE CULTIVATION OF *SACCHAROMYCES CEREVISIAE* USED AS THE INOCULUM IN HOMEMADE BEER

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Abstract:

Saccharomyces cerevisae is the most used microorganism in beer production. Different strains of this yeast convert sugars as maltose and sucrose in alcohol, carbon dioxide and other organic compounds that give the characteristic flavor for each kind of beer. The fermentation performance and the quality of the beer are directly affected by the manipulation of the yeast. The inappropriate cultivation of cells used for the inoculum fermentation generates delay in fermentation, waste of raw materials and unwanted flavors in the product. Large brewing companies develop their own strains as an industrial secret, while microbrewers or homebrewers usually rely on commercial strains. The aim of this work was to study different culture media in order to improve the brewing yeast viability and vitality, fundamental for quality fermentation. The growth kinetics of three commercial strains of *Saccharomyces cerevisiae* was studied for two culture media and different parameters. The yeast strains Safbrew T-58, Saflager S-23, Safale US-05 (Fermentis) were inoculated at a starting concentration of 10^6 cell/ml in 400 mL of medium one (sucrose, 10.0; malt extract, 6.0; yeast extract, 5.0; $(NH_4)_2SO_4$ 5.0; $MgSO_4.7H_2O$, 0.5; KH_2PO_4, 1.5; per liter and pH 6.0) and medium two (malt extract, 10.0; $(NH_4)_2SO_4$ 5.0; $MgSO_4.7H_2O$, 0.5; KH_2PO_4, 1.5; per liter and pH 6.0). Yeast growth kinetics were assessed in 1000 mL Erlenmeyer flasks under 180 or 200 rpm and 25 or 30 ^oC during 24 h. Samples were taken at regular intervals and the cell concentration was measured by optical absorbance (540 nm) and Neubauer chamber counting. Both media were satisfactory for the growth of the three strains of *Saccharomyces cerevisiae* but the best growth rate was achieved in medium one under 200 rpm and 25 ^oC. The strain Safbrew T-58 showed the highest growth rate. The results showed that the medium one is the most appropriate to get an inoculum with the viability and vitality for beer fermentation.

Keywords: *Saccharomyces cerevisiae*, beer fermentation, Brewing yeast, craft breweries.

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