Efficiency of sugar-to-ethanol conversion by different *Saccharomyces cerevisiae* strains during raspberry must fermentation

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The use of selected yeasts for winemaking gives multiple advantages over the traditional spontaneous fermentation. There is general agreement among experts that these yeasts should show low production of volatile acidity, high tolerance to alcohol, ethanol production according to the amount of sugar present in the must, total fermentation of sugars, high fermentation rate, growth at high temperature, low hydrogen sulfide production, low foaming, killer phenotype, low acetaldehyde production and good glycerol production. The objective of this study was to evaluate the production of ethanol by different *Saccharomyces cerevisiae* strains from raspberry must. Yeasts were grown in raspberry must with sugar content adjusted to 16º Brix with sucrose syrup and pH 4.0 adjusted with calcium carbonate. Batch fermentations (100 ml) were carried out at 22ºC. Sucrose, glucose, fructose and ethanol were determined by HPLC. The kinetics parameters, ethanol yield factor (*Y_p/s*), fermentation efficiency (*E_f*), % of substrate conversion to ethanol and ethanol productivity (*Q_p*) were calculated. *S. cerevisiae* VR-1 gave the highest *Y_p/s* (0.49 g/g), followed by the strains UFLA FW 15 and CAT-1 (0.48 g/g). Among the yeast strains tested, *S. cerevisiae* UFLA CA 155 had the lowest *E_f* (77.5%) and *S. cerevisiae* VR-1 achieved the highest value of *E_f* (96%) at the end of fermentation. All the yeasts, except *S. cerevisiae* UFLA FW 1162, showed high values (> 97%) of conversion of substrate to ethanol. *S. cerevisiae* UFLA FW 15, VR-1 and BG showed the highest *Q_p* of 1.49 g.l⁻¹.h⁻¹. The lowest *Q_p* (1.15 g.l⁻¹.h⁻¹) was found for the strain UFLA FW 1162. It can be concluded that *S. cerevisiae* VR-1 showed the best performance for ethanol production during raspberry must fermentation.

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