

Yeasts isolation for bio-reduction of wines volatile acidity: *Combined use of differential and selective culture media*

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Abstract

The main component of the volatile acidity of wines is acetic acid. The maximum acceptable limit for volatile acidity in most wines is 1.2 g/L of acetic acid due to the associated unpleasant vinegar aroma and acid taste. Acetic acid is a by-product of alcoholic fermentation by *Saccharomyces cerevisiae* under winemaking conditions. However, this acid may also appear in wine due to spoilage agents, such as the acetic acid bacteria and spoilage yeasts. Winemakers have been using a refermentation process to lower the concentration of acetic acid of wines with high volatile acidity, which consists in mixing the acidic wine with freshly crushed grapes or marcs in a proportion of no more than 20-30% (v/v). Though this process implies low costs it harbors the risk of unexpected and detrimental effects on refermented wines. Thus, one challenge to find new solutions for the reduction of excessive volatile acidity is the selection of yeast from refermentation processes of acidic wines to use as starters in a controlled biological process. To this end we set up an isolation protocol with Wallerstein Laboratory Nutrient Agar (WL) to select yeast strains from refermentation processes of acidic wines carried at the winery scale. Among the isolates obtained, 135 were then randomly selected, based on the different colony color pattern and size, and tested for their ability to consume acetic acid in the presence of glucose. For this purpose we used a modified version of a *Zygosaccharomyces bailii* differential medium containing acetic acid and glucose. Characterization of the isolates obtained in this medium by fingerprinting with primer T3B confirmed three *Saccharomyces* strains and one non-*Saccharomyces* strain as predicted by WL and L-Lysine media. Our previous studies revealed that the yeast strains selected by this approach are adequate for the correction of acidic musts and wines with excessive levels of volatile acidity.

Keywords: Volatile acidity; refermentation; acidic wines; winery yeast isolates.