Abstract

Yeasts belonging to the genus Dekkera/Brettanomyces, especially the species Dekkera bruxellensis, have long been associated with the production of volatile phenols responsible for off-flavour in wines. According to recent reports, the species Pichia guilliermondii could also produce these compounds at the initial stages of fermentation. Based on the abundance of P. guilliermondii in Patagonian winemaking, we decided to study the relevance of indigenous isolates belonging to this species as wine spoilage yeast. Twenty-three indigenous isolates obtained from grape surfaces and red wine musts were analyzed in their capacity to produce volatile phenols on grape must. The relationship between molecular Random Amplified Polymorphic DNA (RAPD) and physiological (killer biotype) patterns detected in indigenous populations of P. guilliermondii and volatile phenol production was also evaluated. Different production levels of 4-ethylphenol, 4-vinylguaiacol and 4-ethylguaiacol were detected among the isolates; however, the values were always lower than those produced by the D. bruxellensis reference strain in the same conditions. High levels of 4-vinylphenol were detected among P. guilliermondii indigenous isolates. The combined use of RAPD and killer biotype allowed us to identify the isolates producing the highest volatile phenol levels.

Keywords

Pichia guilliermondii, Volatile phenols, Spoilage yeasts, RAPD, Killer biotype.