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SPOILAGE POTENTIAL OF BRETTANOMYCES BRUXELLENSIS STRAINS ISOLATED FROM ITALIAN WINES

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ABSTRACT

Brettanomyces bruxellensis is an important wine spoilage agent. In this study a population of *Brettanomyces* strains isolated from Italian wines was thoroughly investigated to evaluate adaptability to wine conditions and spoilage potential. The presumptive isolates of *Brettanomyces* were identified at species level with 26S rRNA gene sequencing and species-specific PCR, and subsequently subjected to analysis of intra-species variability through the study of intron splice sites (ISS-PCR). Although, some strains were tracked in wines from different regions, extensive genetic biodiversity was observed within the *B. bruxellensis* population investigated. All strains were evaluated for their growth ability in the presence of ethanol, high sugar content, low pH, different temperatures and sulphur dioxide, using optical density and flow cytometry measurement. The ability of yeasts to produce ethyl phenols in red wines with different chemical compositions was evaluated by means of high performance liquid chromatography with electrochemical detection (HPLC-ECD). The results highlighted wide variability in *B. bruxellensis* in response to wine limiting factors and in terms of the accumulation of ethyl phenols. As regards this last aspect, the differences found among strains were closely related to chemical composition of wine and strain resistance to environmental stress factors, making *a priori* evaluation of risk of wine alteration quite difficult. These results suggest that strategies for the control of *Brettanomyces* should be tailored on the basis of strain distribution and wine characteristics.

KEYWORDS

Wine spoilage, Yeast physiology, *Brettanomyces*, Microbial contamination, Volatile phenols