Sociedad Argentina de Microbiología General

XIX CONGRESO DE LA SOCIEDAD ARGENTINA DE MICROBIOLOGÍA GENERAL

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Centro cultural y Pabellón Argentina de la Universidad Nacional de Córdoba, Córdoba, ARGENTINA.

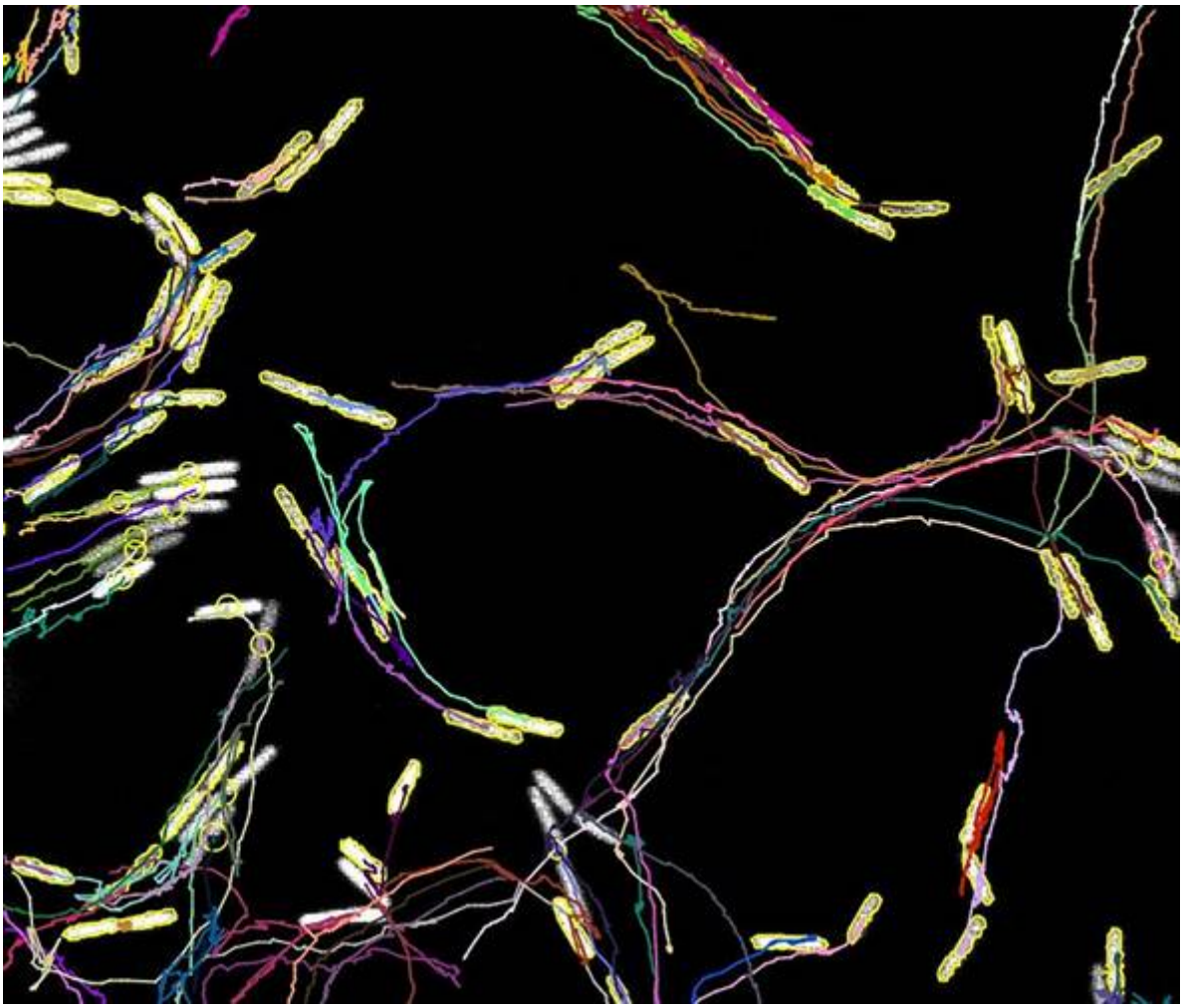

Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

169 - Biotecnología y Bioprocesos

EVALUATION OF TECHNOLOGICAL PROPERTIES OF PATAGONIAN PSYCHROTROPHIC STRAINS OF OENOLOGICAL INTEREST

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Malolactic fermentation (MLF) is a process conducted by lactic acid bacteria (LAB) that converts L-malic acid into lactic acid and CO_2. This process contributes to the microbiological stability and complex aromatic profile of wine. In the region of Patagonia, the unpredictable spontaneous malolactic fermentation is linked to the low climatic temperatures and the stressed conditions of wine pH and alcohol concentration. To address this, commercial malolactic starters containing LAB are used to facilitate the MLF. However, in our country, all available commercial malolactic starters are foreign. Therefore, it is important to develop indigenous LAB starter cultures that are well-adapted to local conditions, thereby preserving the terroir of the region's wine. From a collection of Patagonian psychrotrophic LAB of *Oenococcus oeni* and *Lentilactobacillus hilgardii* obtained from spontaneous MLF, two strains, UNQOe19 and UNQLh1.1, were selected based on their known oenological properties. This work aimed to evaluate the tolerance of these LAB strains to stressful wine conditions and their viability after being preserved through freeze-drying, to be used as autochthonous malolactic starters. To assess tolerance, the absorbance was measured in MLO for UNQOe19 and in MRS for UNQLh1.1 during 15 days, under different conditions: 1) different levels of lysozyme (100, 250, and 500 ppm); 2) pH levels ranging from 3.5 to 3.8; 3) ethanol concentrations of 10% and 14%; 4) varying levels of molecular SO2 (0.25, 1.25, and 2.5 mg/L); 5) unsupplemented commercial medium was used as positive control. To evaluate the tolerance to conservation by freeze-drying, the cultures were preserved in maltodextrin and trehalose at 20%. The viability of the preserved cultures was determined after three months using the plate count method. The strain UNQLh1.1 showed tolerance under all conditions evaluated, including different pH levels, molecular SO2 concentrations, lysozyme levels, and ethanol percentages. Strain UNQOe19 displayed tolerance to all pH levels tested and was found to be optimal at pH 3.7 and 3.8. Its tolerance to 10% ethanol was highest at 5 days and then began to decrease, while its tolerance to molecular SO2 was detected only at a concentration of 0.25 mg/L. The conservation process of freeze-drying showed that both strains were resistant to this method. However, strain UNQLh1.1 decreased two logarithmic orders of

CFU/ml in both preserving agents compared to the initial values of viability. Strain UNQOe19 did not survive preserved in maltodextrin and decreased three logarithmic orders in trehalose compared to the initial viability values. In this study, both the UNQOe19 and UNQLh1.1 psychrotrophic strains showed they could successfully carry out MLF at low temperatures. This study demonstrates that these strains have the potential to be freeze-dried and used as native malolactic starters in winemaking, which can enhance the regional characteristics of the wine.

Palabras clave: Oenococcus oeni- Lentilacobacillus hilgardii- Technological properties- Malolactic starter