

ISOLATION AND CHARACTERIZATION OF *SACCHAROMYCES CEREVISIAE* STRAINS FROM SPONTANEOUSLY FERMENTED WINES PRODUCED IN THE BADACSONY WINE REGION

ANNA HILD¹, BARNA SZŐKE³, ANDREA POMÁZI¹, JÁNOS MÁJER³, FERENC OLASZ², TIBOR FARKAS²

¹Department of Microbiology and Biotechnology, Faculty of Food Science, Szent István University, Budapest; ²Agricultural Biotechnology Institute, National Agricultural Research and Innovation Centre, Gödöllő; ³Research Institute for Viticulture and Enology, National Agricultural Research and Innovation Centre, Badacsonytomaj, Hungary

In traditional wine making must is fermented spontaneously and different yeast species take part in the process. In modern industrial wineries, in order to avoid the potential risks of spontaneous fermentation (e.g. stuck fermentation, emergence of off-flavours), must fermentation is directed, which means that the must is inoculated with selected commercial starter cultures that suppress the native microbiota and take over the fermentation. However, recently there is a growing demand for wines with more individual characters and this is often achieved by using indigenous yeast strains instead of commercial starter cultures. The aim of our study is to isolate indigenous wine yeast strains from the Badacsony wine region that can be used as starter culture in directed fermentation. In the first pilot experiment a must from a family vineyard in Szigliget (also part of the Badacsony wine region) was fermented spontaneously under laboratory conditions. Culture conditions were optimized, and we also tried to explore the microbiota of the must. Bacterial and yeast strains have been identified by determining the sequence of 16S RNA and ITS regions, respectively. In the spontaneously fermented must 8 yeast (*Candida*, *Lachancea*, *Saccharomyces*, *Rhodotorula*, *Hanseniaspora*, *Issatchenkia*, *Torulaspora*, *Cryptococcus*) and 2 bacterial genera (*Gluconobacter*, *Bacillus*) have been detected. For the isolation of indigenous wine yeast strains 13 spontaneously fermented wine samples, produced at a traditional winery of Badacsony and at the aforementioned family vineyard, were investigated. *Saccharomyces* strains were identified by genus specific colony PCR. The isolated strains were divided into 14 groups on the basis of the electrophoretic patterns of the interdelta PCR. A dendrogram representing the relationship between the 14 groups was set up from the patterns. The interdelta PCR was also carried out with 27 commercial starter cultures to exclude re-isolated starters. None of our isolates were identical to the investigated starter cultures. It was concluded that the two wineries have their own microbiota, as no isolate has been detected at both locations. On the other hand, in each spontaneously fermented wine several *Saccharomyces cerevisiae* strains were detected. Microbiological characterization (ethanol-, sulfur dioxide-, osmo-tolerance, acid production, killer activity) of the *Saccharomyces cerevisiae* isolates has been carried out. The evaluation of the oenological potential of the isolates is currently carried out in microvinification tests. After microvinification the analytical and sensory properties of the wines will be investigated. In the future we are planning to explore the microbiota of the spontaneously fermented wines by using metagenomic analysis.