Eco-yeast: pilot project for the production of an organic yeast for producing sparkling wines

Leader:
Juvé & Camps, SA

Other recipient members:
Freixenet, SA; Segura Viudas, Gramona, SA; Torelló Llopart, SA; INNOVI Association of Innovative Companies

Other non-recipient members:
All partners of INNOVI

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https://www.innovi.cat/ecollevat/

01. Rationale

Most wineries use commercial yeast starters to initiate the fermentation of wines and sparkling wines, and nowadays, the use of organic yeasts for secondary fermentation is a minority practice. This leads to a clear homogenisation of processes related to the fermentation of sparkling wines. However, in recent years there has been a growing interest in isolating yeast strains from the vineyards themselves to increase product differentiation and obtain a company label through a system that uses the existing biodiversity of micro-organisms from the field. Moreover, there is an increasing appreciation of organic production of wines and cavas by national and international markets.

This project aims to establish an organic production itinerary for indigenous yeast strains from Catalan wine-growing areas, adapted to the *terroir* and the characteristics of the grape varieties being cultivated. In order to use these yeasts as a starter culture, spontaneous fermentation is imitated to a certain extent, but with controlled knowledge of the yeast strains that are at work, thus producing wines and cavas that are unique to the region. This itinerary can give rise to "à la carte" yeast production services for wineries interested in individualising and singling out part of their production with the prior selection of yeasts from their estates or the use of the indigenous P29 yeast from INCAVI.

The main objective of the study was the creation of an itinerary for the production of organic yeasts as starter cultures for wines and sparkling wines.

The different specific objectives were:

- Differentiate and personalise the high-end wines and cavas of different wineries through the use of indigenous yeasts.
- The multiplication of three strains of *Saccharomyces cerevisiae* (P29, FREIXENET and SEGURA VIUDAS) with known behaviour under organic conditions.
- The improvement of the final yeast population and viability, and therefore increased control over fermentation.
- The optimisation of the long-term preservation of the yeasts.

Through this project, it has been possible to carry out the following actions:

- Evaluation of the effect of different growth parameters (temperature, pH and nutrient content) and nutrient substrates, in order to select the optimal growth conditions for each yeast strain.
- Pilot tests at laboratory scale (2 L) to optimise culture media and growth parameters for strains P29, FREIXENET and SEGURA VIUDAS.
- Scale-up of the project to a 25 L volume bioreactor.
- Evaluation and optimisation of the preservation conditions of the three strains.
- Application and monitoring of the behaviour of the organic yeasts in the cellars.

02. Results and conclusions

The expected benefits or results of the project are as follows:

- Incorporation of a yeast, the P29 owned by INCAVI and some other strain to be decided within the framework of the project, with possible organic certification, to the oenological itinerary of the winemaking process of the participating wineries.
- Enhanced individualisation of the wines of each winery through the use of these yeasts.
- Incorporation of a differentiating sustainability/authenticity characteristic in the products by using indigenous, organically-produced yeasts from the wine-growing area where each company is located.
- Preference of the project's partner wineries when using INCAVI's yeast production service.
- Proximity to the sector that makes it possible to work with concentrated liquid yeasts.

With the results obtained from INCAVI and those received so far from the wineries, it can be concluded that the objective of the Operational Group, which was to obtain an itinerary for the production of organic yeasts, has been satisfactorily achieved with the three strains of *S. cerevisiae* evaluated using organic pasteurised must. Furthermore, with regard to strain P29, this micro-organism is certified as not being derived from or not containing genetically modified organisms. Therefore, a pathway has been obtained that allows reproducible production of the pied de cup with high populations with a viability always greater than 90%. Furthermore, in the cases where it was possible to compare secondary fermentation parameters with controls, these were practically identical.

Photo: Operational Group.

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