



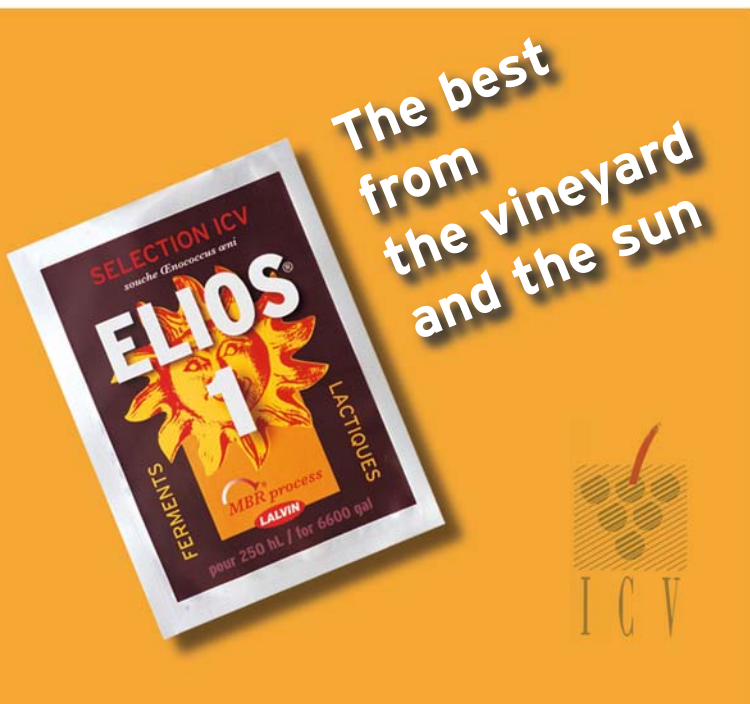
# ELIOS 1

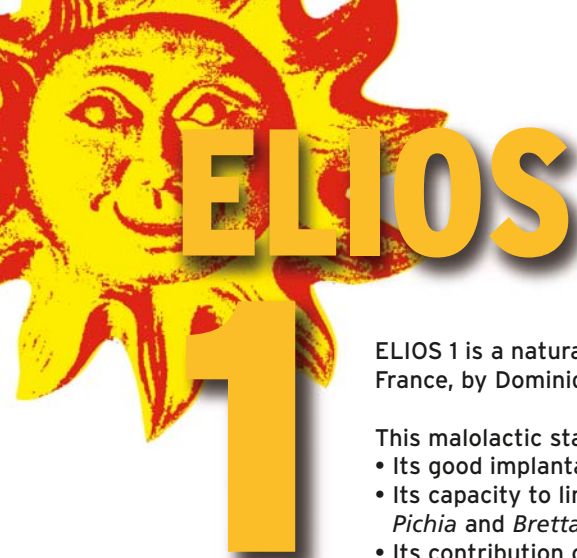
ICV SELECTION

## Malolactic Starter Culture

This new lactic acid bacteria was isolated, selected and tested by the *Institut Coopératif du Vin* (ICV) for use by professional winemakers.

- ELIOS 1 is a naturally selected *Oenococcus oeni* bacteria that has not undergone any genetic modification during isolation, selection or production.
- ELIOS 1 is produced, lyophilized and packaged by Lallemand.
- Trials for ELIOS 1 were conducted on a winemaking production scale during the 2003 harvest.
- ELIOS 1 complies with the oenological Codex published by the OIV, as well as FAO rules, notably for the absence of heavy metals and toxic fungicides.





ELIOS 1 is a naturally selected strain that was isolated in 2000 in the Tuchan region of Languedoc, France, by Dominique Delteil and Daniel Granès (ICV).

This malolactic starter culture was selected for:

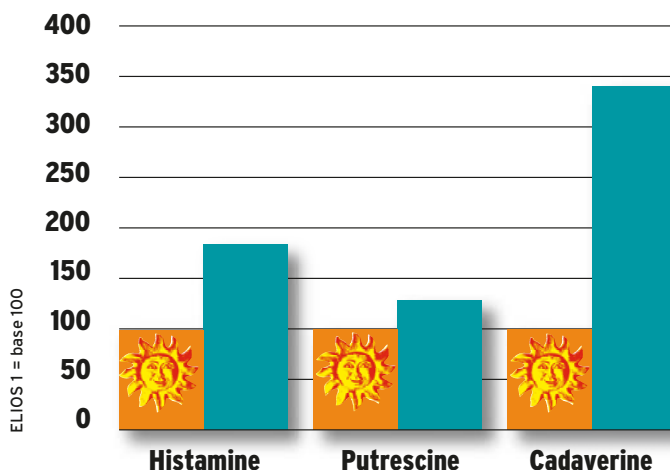
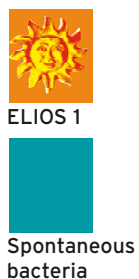
- Its good implantation
- Its capacity to limit the development of spoilage organisms (e.g., *Lactobacillus*, *Pediococcus*, *Pichia* and *Brettanomyces*) in red wines from Mediterranean areas
- Its contribution of red fruit, jam and pepper aromas
- Its development of foremouth and tannin intensity.

### MAIN TECHNICAL CHARACTERISTICS

- Quick and reliable degradation of malic acid in most Mediterranean and Rhône red wines
- Ethanol tolerance up to 15.5%/vol
- Low production of volatile acidity when using good fermentation practices (GFP), especially:
  - Absence of residual sugars
  - Homogenous addition of sulphite made the week after the end of malic acid degradation
- Low production of biogenic amines
- Low production of sulphur compounds and other off-flavours

### PRECAUTIONS

- Wait until the end of alcohol fermentation before using
- Use in wine between 18°C and 25°C and only under constant temperature conditions
- Use in red wines with pH over 3.4
- Use in wines with free SO<sub>2</sub> lower than 10 mg/L or with total SO<sub>2</sub> lower than 50 mg/L
- Use when less than 10 g/hL of SO<sub>2</sub> has been used at the crusher
- When the final alcohol is greater than 14%/vol, the pH should be greater than 3.5 and the total SO<sub>2</sub> less than 35 mg/L



**Effect of ELIOS 1 on the biogenic amine level of a 2001 SYRAH**  
Trial by the ICV R&D department, 2003

Histamine: Biogenic amine with noted allergic reactions.

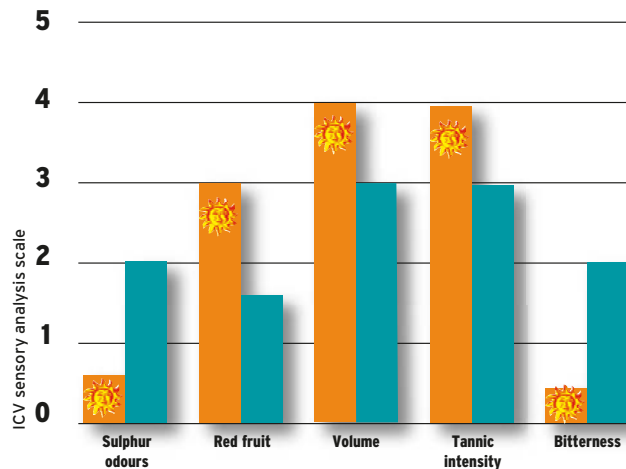
In Switzerland, the maximum level is 10 mg/L.

Putrescine: Biogenic amine with a foul animal odour (rotten meat!).

Cadaverine: Biogenic amine with a foul animal odour (decomposing animal!).

## CURRENT USES

- In Mediterranean and Rhône red wines to prevent the growth of spoilage organisms (e.g., *Lactobacillus*, *Pediococcus*, *Pichia* and *Brettanomyces*).
- In premium red wines to develop fresh, varietal aromas and good mid-palate intensity. Excellent sensorial complement to wines fermented with ICV-GRE and ICV-D21.
- In ultra-premium red wines made from very balanced, mature grapes to develop fresh fruit aromas, licorice and tannic intensity in the mid-palate. Sensorial synergy with wines fermented with ICV-D80 and ICV-D21. Reorientation of the style of ICV D254 fermented wine towards fresher fruit aromas and more perceptible tannins in the mid-palate.
- In rosé and white Mediterranean premium wines to develop mature aromas and help maintain the sensorial stability, notably to prevent risks associated with shipping.
- In Californian wines to develop the fresh, intense varietal aromas of Pinot Noir. Reorientation of the aromatic style of Zinfandel to avoid ethereal aromas and the classic drying tannins of this varietal.

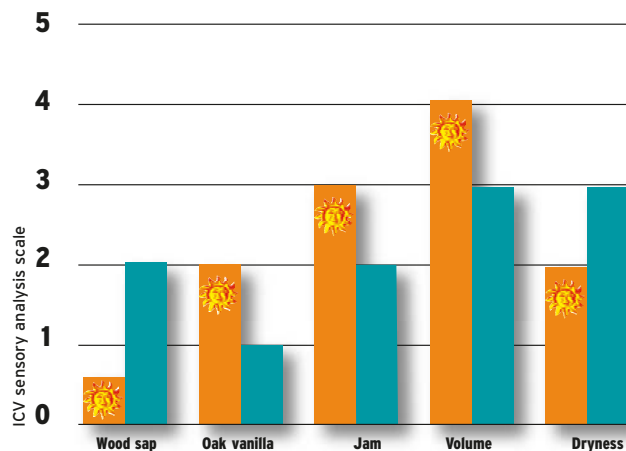


**Effect of ELIOS 1 on the sensory profile of a red Syrah wine**

**Malolactic fermentation performed in tank**

**Trial by the ICV R&D department, 2003**

**Sensory analysis 3 months after fermentation**



**Effect of ELIOS 1 on the evolution of the sensory profile of a red Syrah wine**

**Malolactic fermentation performed in new barrels in 2002**

**Sensory analysis after 12 months in bottle.**

Wood sap: Aromatic descriptor corresponding to green wood.

Oak vanilla: aromatic descriptor corresponding to soft, spicy aromas.



**Produced by:**

*Selected from nature*



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