



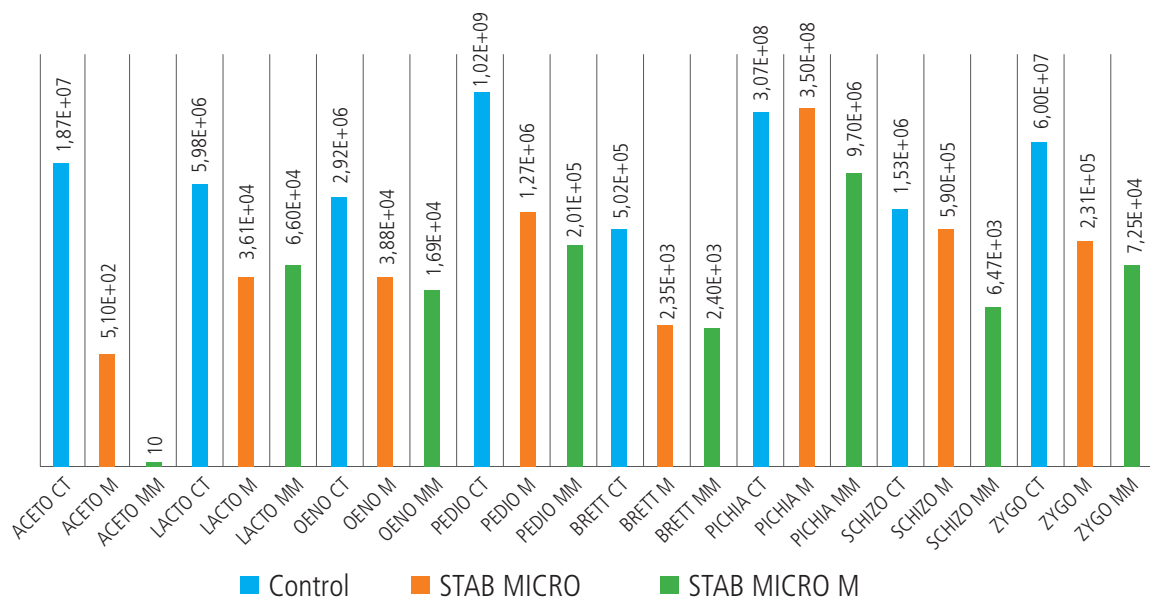
## ENARTIS STAB MICRO M: from grapes to malolactic fermentation, activated chitosan improves wine quality

In the early stages of vinification, the risk of spoilage microbes growing and consequently the winemaker losing sleep is huge.

Enartis Stab Micro M, a preparation based on activated chitosan, is the perfect tool for controlling contaminants from grapes to malolactic fermentation and producing high-quality wines.

### ENARTIS STAB MICRO M

Enartis Stab Micro M is a fining agent containing activated chitosan and chitin-glucan, developed for the treatment of turbid musts and wines, where the presence of solids limits the antimicrobial effect of pure chitosan (*Figure 1*). Enartis Stab Micro M can be used to control the development of numerous contaminants – *Brettanomyces*, *Acetobacter*, *Pediococcus*, *Lactobacillus*, *Oenococcus*, *Zygosaccharomyces* etc. – and limit the production of undesirable metabolites such as volatile acidity, sulphur compounds and volatile phenols.



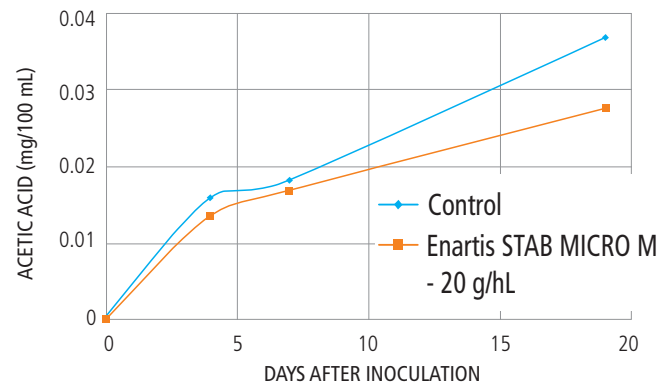
**Figure 1:** in a cloudy juice (180 NTU), the antimicrobial effectivity of a complex made of activated chitosan + chitin-glucan (STAB MICRO M) is higher than that displayed by pure chitosan (STAB MICRO)



## MAIN APPLICATIONS OF ENARTIS STAB MICRO M

### Limiting the production of volatile acidity

In the case of unhealthy grapes, the use of Enartis Stab Micro M in the press, in the must or during fermentation reduces the development of yeasts and bacteria, in particular *Acetobacter*, which can produce significant quantities of acetic acid and other metabolites that can affect the quality of wine (*Figure 2*).



**Figure 2:** ENARTIS STAB MICRO M reduces the volatile acidity produced by grape and juice contaminants

### Reduce or eliminate the use of sulphur dioxide

ENARTIS STAB MICRO M can be applied as an antimicrobial alternative to sulphur dioxide. Furthermore, chitosan performs its own antioxidant action. In fact it has the capacity of reducing phenomena like browning and pinking appearance, loss of aromatics, increase of acetaldehyde and loss of free  $\text{SO}_2$ , thanks to its capabilities of chelating metals that activate the oxidative process and of absorbing brown pigments and their precursors. The combined use of Enartis Stab Micro M and other antioxidant substances such as tannins, glutathione and ascorbic acid, reduces or eliminates the addition of sulphur dioxide and produces more healthy wines. (*Figure 3*)

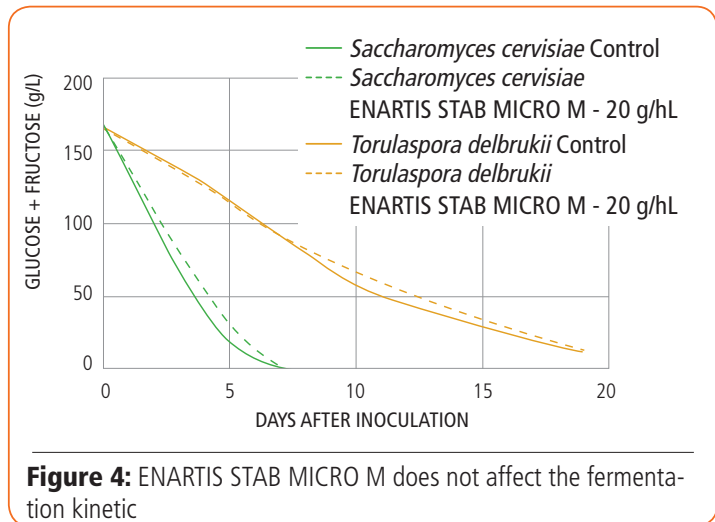


**Figure 3:** The application of Enartis Stab Micro M during settling reduces the browning tendency of the juice



## Make a “healthy” spontaneous fermentation

Spontaneous fermentation can highlight the uniqueness of the ecosystem made up of environment, vineyard and cellar but this practice is not without risk. The dominance of yeast with poor oenological attributes can lead to stuck fermentation or production of faulty wines. Taking advantage of *Saccharomyces cerevisiae* and *Torulaspora*'s low sensitivity to chitosan, Enartis Stab Micro M is added to the must to help their dominance over non-*Saccharomyces* yeast and bacteria and increase the chances of a regular and complete fermentation (*Figure 4*)



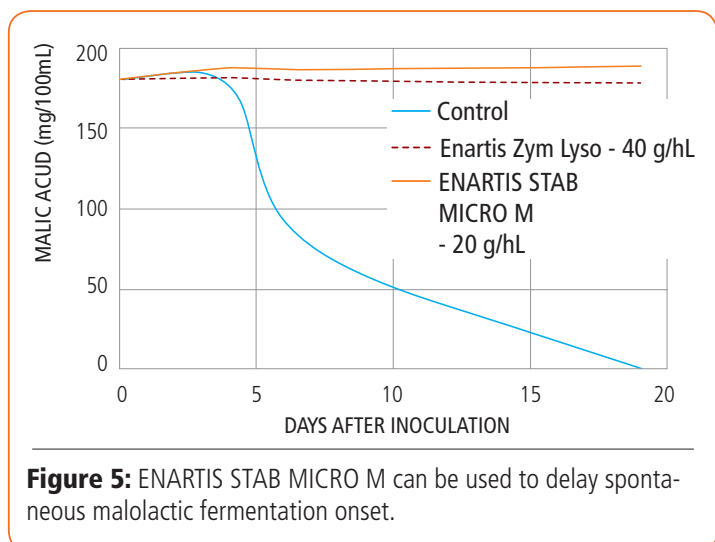
**Figure 4:** ENARTIS STAB MICRO M does not affect the fermentation kinetic

## Complete a stuck fermentation

In the case of stuck fermentation, Enartis Stab Micro M is used to stop the growth of acetic and malolactic bacteria which otherwise metabolize residual sugars, raise the content of acetic acid and inhibit fermentation restart.

## Assist with colour stability

At the end of the alcoholic fermentation, the high concentration of anthocyanins and tannins and the absence of sulphur dioxide constitute the ideal conditions for intervening with an addition of oxygen aimed at promoting colour stabilization. The use of Enartis Stab Micro M delays the start of malolactic fermentation and allows time to complete micro oxygenation. (*Figure 5*).

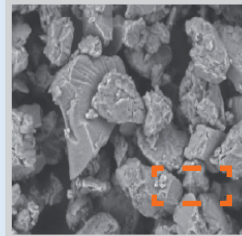


**Figure 5:** ENARTIS STAB MICRO M can be used to delay spontaneous malolactic fermentation onset.

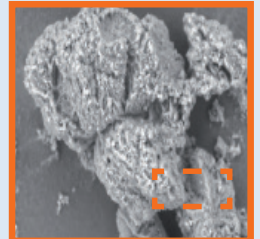


## What is activated chitosan and how it is different from standard chitosan?

Chitosan antimicrobial action is accomplished by contact. The positive charges present on its surface attract wine and juice microorganisms that are all negatively charged. Subsequently, it alters the permeability of the cell membrane and causes the microorganism to die for osmotic shock.



STANDARD CHITOSAN



ENARTIS ACTIVATED CHITOSAN

Activated chitosan, the main component of Enartis Stab Micro M, is obtained with a unique production process that amplifies its antimicrobial action. During production, organic acid treatment increases chitosan positive charge, solubility and contact surface. The activated chitosan plays a faster and wider action than a “standard” chitosan.