

PINNACLE™

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Pinnacle Mycobrio™ product information



Origin:

Pinnacle Mycobrio™ is a chitosan preparation of fungal origin, specifically designed for microbial stabilisation of must and wine.

Characteristics:

- **Pinnacle Mycobrio™** is a chitosan-based preparation with high antimicrobial activity.
- **Pinnacle Mycobrio™** is stored in an acidic solution that means it is already pre-activated and will start to work immediately.
- **Pinnacle Mycobrio™** facilitates the elimination of most native grape bacteria and yeast (*Brettanomyces*, *Zygosaccharomyces*, *Oenococcus*, *Lactobacillus*, *Acetobacter*, etc) that can alter the organoleptic characteristics of wine.
- At the recommended doses, it does not affect the normal course of alcoholic fermentation.
- **Pinnacle Mycobrio™** is allergen-free, gluten-free, vegan-friendly and kosher.

Application:

By using this product at different stages of the winemaking process, different outcomes can be achieved. This tool helps winemakers to have more control over the winemaking process, especially to manage the naturally occurring microflora.

Pinnacle Mycobrio™ can be used in one or more successive additions to maintain inhibition on the spoilage microorganisms.

- **Pinnacle Mycobrio™** can be used to prevent different microbial problems. Firstly, to reduce the naturally occurring microbial population in the grape juice, especially on low quality grapes with high microbial loading. Typically, it can be used on *Botrytis* infected grapes.

By reducing the microbial population, it will improve the clarification at the end of fermentation but also prevent the formation of off flavours due to the metabolism of some of these spoilage microorganisms that are present in the juice.

- High pH juices are also good candidates for **Pinnacle Mycobrio™**, since SO₂ is less effective at higher pH's. **Pinnacle Mycobrio™** can be a very effective tool for Organic or Biodynamic wines. It can help to reduce or eliminate the usage of SO₂.
- **Pinnacle Mycobrio™** can be used to prevent malolactic fermentation (MLF). It can be used to delay or totally inhibit MLF as a non-allergenic alternative to Lysozyme. If **Pinnacle Mycobrio™** is used at the end of alcoholic fermentation it may delay the onset of MLF, depending on the dosage. If MLF is required, delay the addition to wine until after MLF.
- In the case of sluggish or stuck fermentation **Pinnacle Mycobrio™** can be used to control the development of unwanted microbes.
- **Pinnacle Mycobrio™** can also be used in the treatment of wines to reduce or inhibit *Brettanomyces* in wine, especially wines that will be aged in barrels.
- The common ways that *Brettanomyces* is spread around wineries include:
 - Wine transfers.
 - Putting clean wine into contaminated barrels or vice versa.
 - Cross contaminating barrels via topping
 - Sampling or barrel stirring.
- **Pinnacle Mycobrio™** can also be used in your top-up wine.

The information presented is based on our research and commercial testing and provides a general assessment of product performance. Nothing contained herein is representative of a warranty or guarantee for which the manufacturer can be held legally responsible.

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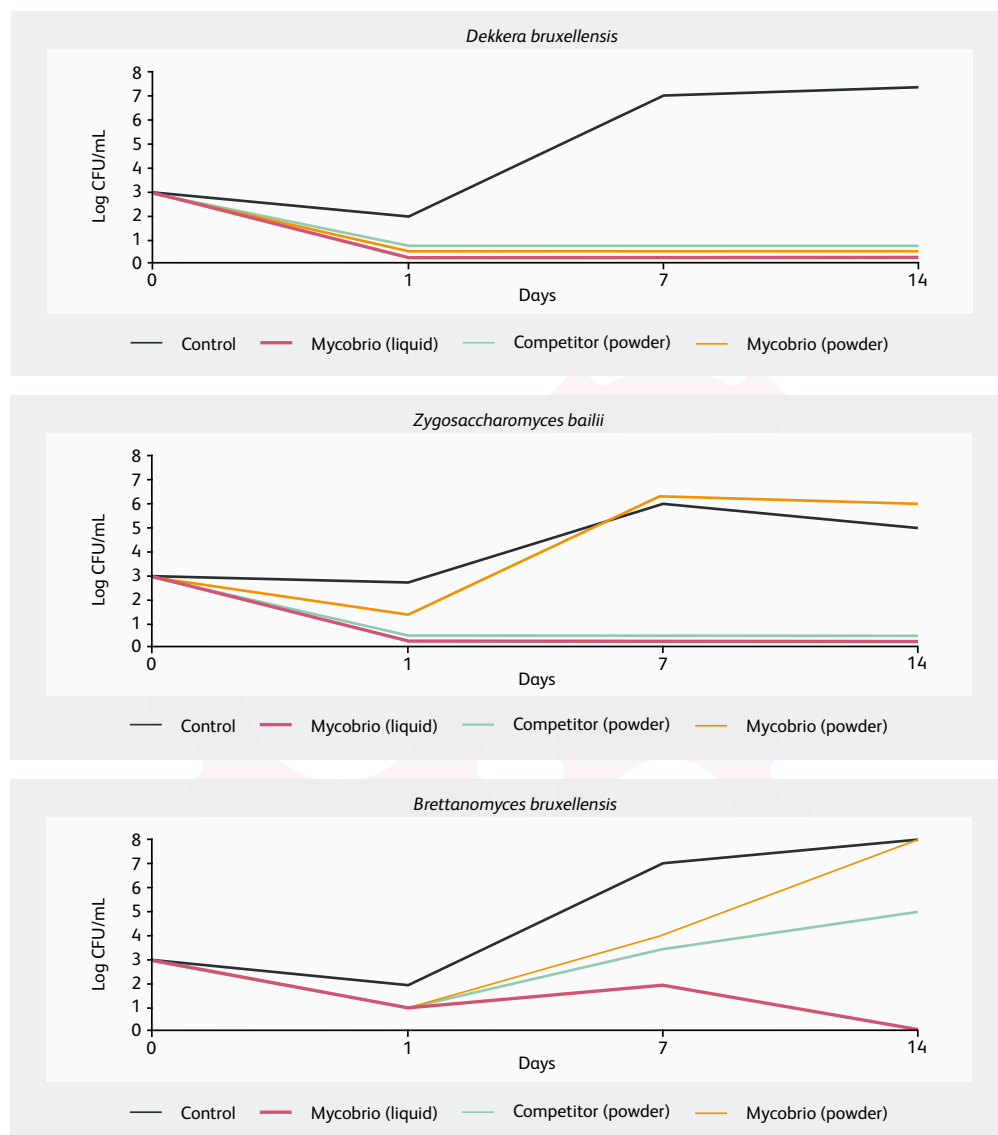


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Effectiveness of Pinnacle Mycobrio™



Juice samples were inoculated with the challenge microorganisms at Log 3 CFU/ml. Samples were incubated at 22°C and sampled at day 1, 7 and 14 by standard plate count methods. Results are shown in Log CFU/ml.

Formulation:

Pinnacle Mycobrio™ is a natural polysaccharide fraction (fibre) from white button mushrooms (*Agaricus bisporus*), purified in a sustainable method and thus making this a truly environmentally sound and sustainable product. **Pinnacle Mycobrio™** is a revolutionary new biocontrol agent produced by **Chinova Bioworks**. It is in a liquid form for easy handling.

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Scientific background:

Chitosan is a nontoxic natural antimicrobial polymer and is approved by GRAS (Generally Recognized as Safe by the United States Food and Drug Administration). The antimicrobial activity of chitosan relies on a range of elements, such as species of microorganisms, molecular weight, and degrees of deacetylation, chemical structure, and the functionality or derivation of chitosan.

Chitosan and chitosan derivatives can kill microbes by neutralising negative charges on the microbial surface. The antimicrobial properties are primarily confined to a pH below 6. It also causes *Brettanomyces* cells to aggregate to the bottom of a tank/barrel. **It is important to know that chitosan is mainly fungistatic and not fungicidal, meaning that the microbial population can increase again after a certain amount of time if the wine is not racked off the chitosan-Brett lees.**

In addition, evidence about its antioxidant and radical scavenging activities have been recently reported in wine conditions.

Instructions for use:

- Add liquid **Pinnacle Mycobrio™** to crusher or juice and mix by pump over from bottom to top. Chitosan acts by contact therefore a well-mixed tank increases its effectiveness.
- The product can be removed after a few days by racking and/or filtering the wines. In case of a preventative treatment during aging in tanks or barrels, Pinnacle Mycobrio™ can remain in contact with wines for months.
- In this case, periodic mixing is necessary to improve its efficacy. It is recommended that for highly contaminated wines ($>10^4$ CFU/ml) the wine is racked after around 10 days after application to reduce the microbial load.

Colour:

Amber liquid.

Dosage:

Preventative: 5-10 ml/hL

Curative: 10-15 ml/hL

Dosage depends on characteristics of the wine (pH, turbidity, microbial load, etc.).

EU regulations: Maximum legal dosage 200 g/hL

Storage conditions:

Store the product in a cool place, away from direct light and heat.

Shelf life:

18 months.

Packaging:

1 L and 10 L container

ANALYTICS	
Arsenic (ppm)	<0.2
Lead (ppm)	<1
Cadmium (ppm)	<0.2
Mercury (ppm)	<0.2
MICROBIOLOGICAL ANALYTICS	
Yeast and Moulds (cfu/ml)	<10
Coliforms (cfu/ml)	<10
Enterobacteriaceae (cfu/ml)	<10
Salmonella	Not Detected

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