

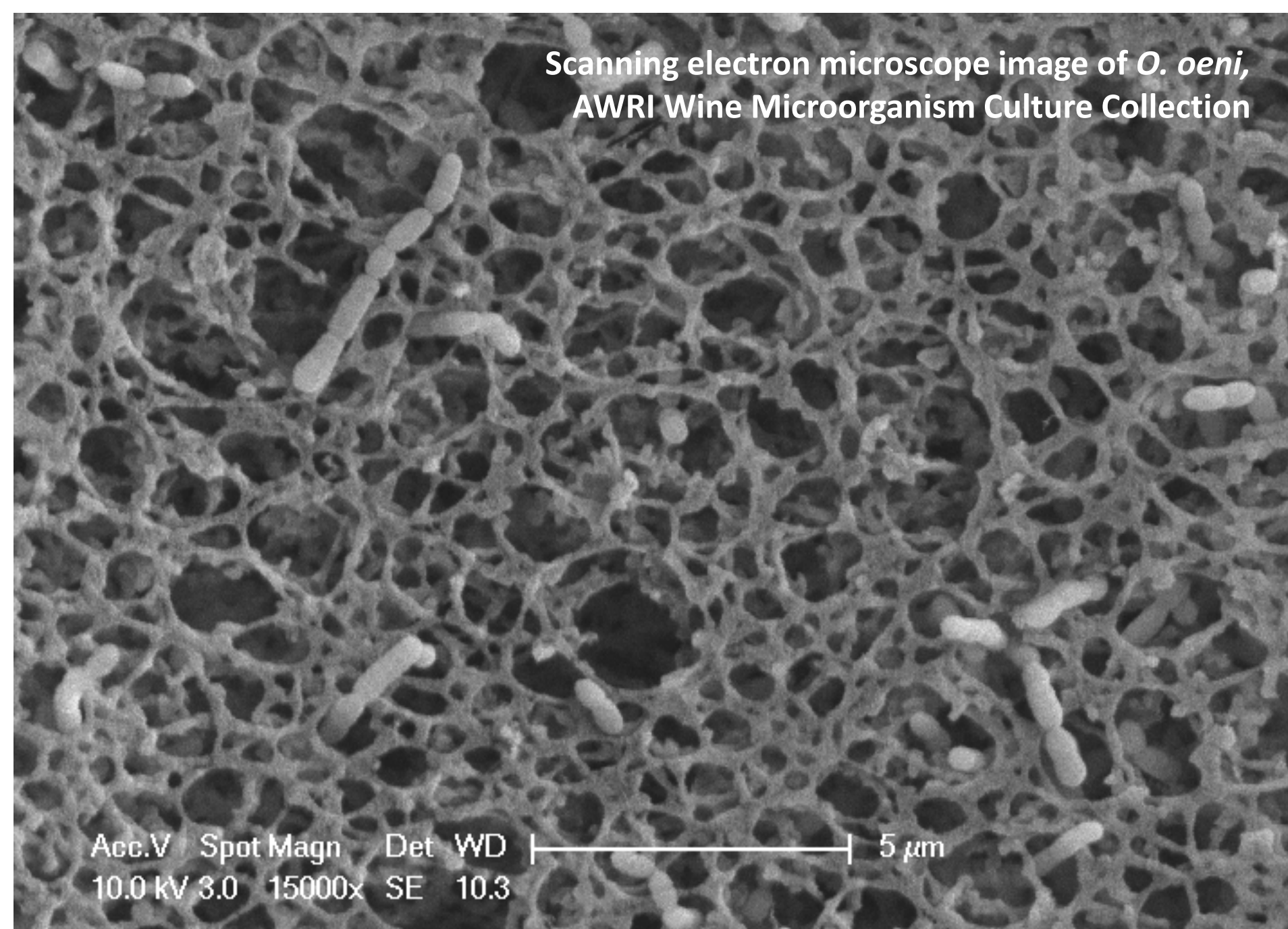
# MLF and SO<sub>2</sub> stress – what are the real limits for malolactic bacteria?



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## Background

- *Oenococcus oeni* is sensitive to molecular/free forms of sulfur dioxide (SO<sub>2</sub>)
- Acetaldehyde-bound SO<sub>2</sub> can also inhibit *O. oeni* and malolactic fermentation (MLF)
- Total SO<sub>2</sub> concentrations <30-40 mg/L are favourable for *O. oeni* growth in wine, although MLF may also occur at >50-60 mg/L total SO<sub>2</sub>.
- The potential SO<sub>2</sub> tolerance of *O. oeni* strains in white wine may be underestimated using sequential inoculation testing methods.

## Questions

- Can the SO<sub>2</sub> tolerance of *O. oeni* be more accurately determined using co-inoculation techniques?
- What conditions drive successful MLF during co-inoculation of white wine ferments?

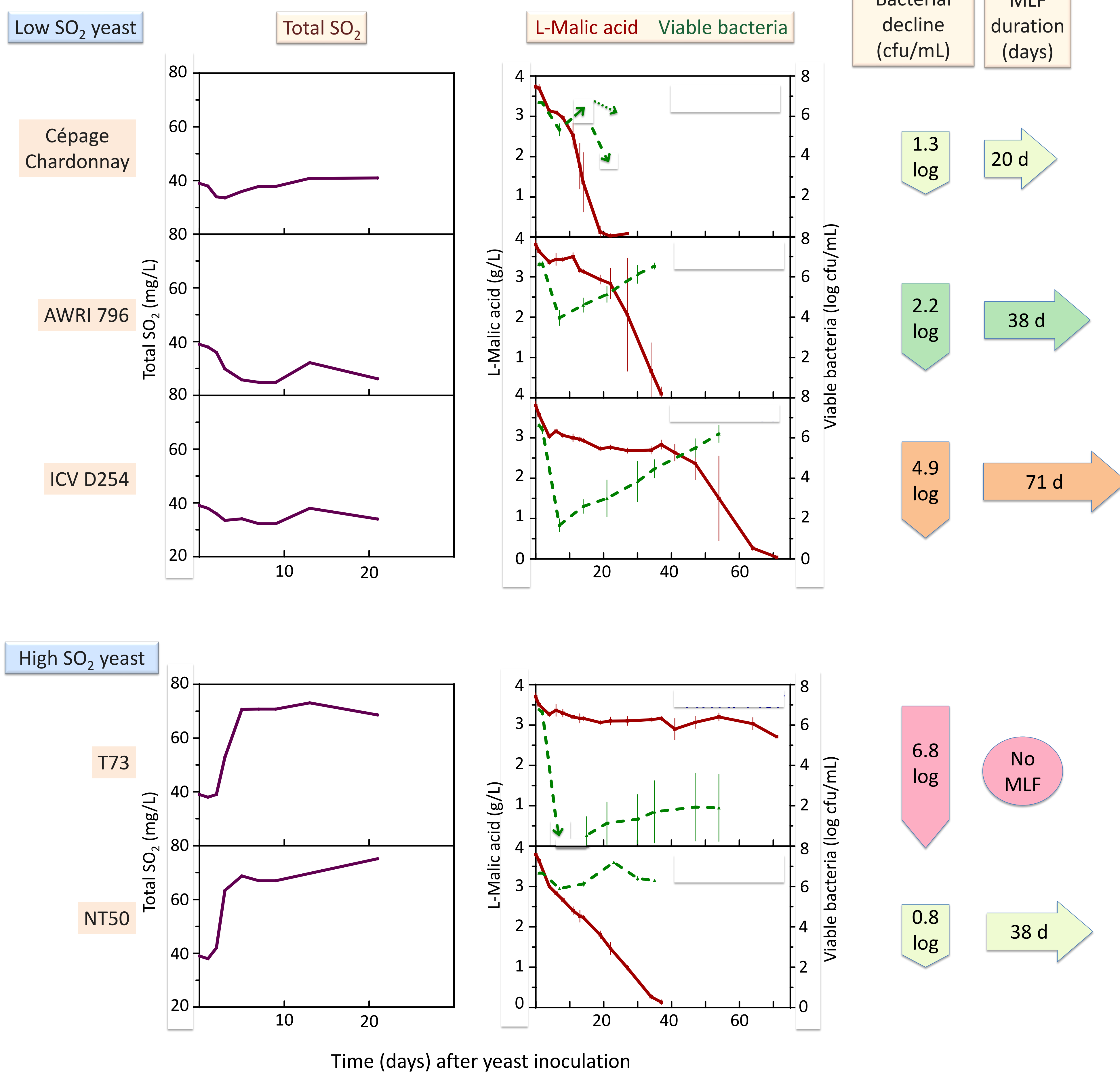
## Methods

- The impact of yeast-derived SO<sub>2</sub> on growth and MLF activity of a malolactic starter culture *O. oeni* YV Select™ was assessed in Chardonnay juice (pH 3.3, 39 mg/L total SO<sub>2</sub>) by co-inoculation, 24 hours after yeast inoculation.
- Five *S. cerevisiae* strains with varying SO<sub>2</sub>-producing ability were tested.
- Fermentations were conducted in triplicate 500 mL volumes.

## Results

- The viability of *O. oeni* following co-inoculation exhibited a yeast strain-dependent decline.
- The loss in bacterial viability and MLF duration varied widely for both low and high SO<sub>2</sub>-producing yeast strains.
- Co-inoculation with one high SO<sub>2</sub>-producing yeast (NT50) yielded minimal loss in bacterial viability and MLF completion in 38 days.
- Another high SO<sub>2</sub>-producing yeast (T73) caused complete decline of the bacterial population, with no MLF activity over 71 days.

## Growth and MLF by *O. oeni* YV Select in Chardonnay after co-inoculation with yeast strains displaying varying SO<sub>2</sub> production



## Conclusions

- *O. oeni* can exhibit tolerance to high concentrations of yeast-derived SO<sub>2</sub> (>60-70 mg/L total SO<sub>2</sub>) in Chardonnay when using a co-inoculation strategy.
- Tolerance of *O. oeni* to high concentrations of yeast-derived SO<sub>2</sub> is highly yeast strain dependent.
- Yeast-derived factors other than SO<sub>2</sub> also have a major impact on the survival of *O. oeni* during co-inoculation.
- The yeast metabolites that influence *O. oeni* survival following co-inoculation are being further explored.



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