

Special yeast reduce alcohol, improve wine

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A team of Australian researchers has taken a giant step towards controlling a growing problem in the wine community. They have identified special yeast that produce a lower level of alcohol, helping to preserve the flavor. Their research is published ahead of print in the journal *Applied and Environmental Microbiology*.

The alcoholic content of wine has crept gradually northward in the last 10-15 years, from 12-12.5 percent to beyond 15 percent. What might sound trivial to aficionados of hard liquor is seen by some oenophiles as a disturbing trend, threatening the flavor and character of some wines. That, plus issues of [public health](#), as well as taxes (in some countries, on [alcoholic content](#)), have created a need for approaches to lowering [alcohol content](#).

The investigation began with a systematic screening of non-*Saccharomyces* yeast as a means of achieving such a reduction, says corresponding author Cristian Varela of the Australian Wine Research Institute, Adelaide, South Australia. The investigators evaluated 50 different isolates from 40 species and 24 genera for their capacity to produce wine with reduced ethanol concentration. They chose the most successful of these yeasts, *Metschnikowia pulcherrima* AWRI1149, for experiments in which it was set to work separately on Chardonnay and Shiraz musts.

Once the slower-growing *Metschnikowia* yeasts had consumed 50 percent of the sugar, *S. cerevisiae* were added to the mix to complete the process. This "sequential inoculation" reduced the alcohol content in Shiraz from

15 percent to 13.4 percent (and somewhat less in Chardonnay). Controls not inoculated with non-*Saccharomyces* strains did not produce reduced alcohol content, according to the report.

"The reduction isn't all that great, but it's in the right direction, and with more work, they might get that even lower, perhaps by letting the non-*Saccharomyces* yeast go longer before you throw in the *Saccharomyces*, says Alan Bakalinsky, of Oregon State University, Corvallis, who was not involved in the research.

This reduction in alcohol will be of great benefit to the industry says Louisa Rose, of Yalumba and Hill-Smith Family Vineyards, Angaston, South Australia, who is also a director of the Australian Wine Research Institute. "It is using techniques—sequential fermentation—that can easily be used in the winery on a commercial scale."

Previous studies investigating the effects of non-*Saccharomyces* yeasts on alcoholic fermentation have focused on few species and been concerned principally with the formation of the flavor compounds that might impact negatively on wine quality. None of these led to reductions in alcohol content as substantial as those he reported, says Varela.

The rise in alcohol content in wine has resulted from later harvesting of red grapes. This allows the tannins—responsible for astringency and bitterness—to soften, and in some varieties, it helps minimize the presence of off-flavors, like methoxypyrazines (green pepper/asparagus sensory notes.) But on the downside, the boost in alcohol content reduces aroma and flavor intensity, as well as otherwise impairing the oenological experience. Reducing the alcohol would enable the best of both worlds.

It would also reduce consumer costs in countries where [alcohol consumption](#) is taxed, and accede to national and international public

health recommendations to lower the alcohol content of alcoholic beverages, such as [wine](#).

More information: [www.asm.org/images/Communicati...
ps/2014/0114wine.pdf](http://www.asm.org/images/Communications/2014/0114wine.pdf)

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