

Cold-tolerant yeast strains for cider and wine makers to improve product quality

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The new cold-tolerant hybrid strains developed by VTT Technical Research Centre of Finland enable fermentation at lower and higher temperatures than before. Production at lower temperature reduces the risk of contamination and possibly allows reduction of the use of sulphates. Modulating temperatures can be used to fine-tune product aroma.

In 2015 VTT generated the first new lager brewing yeast <u>strains</u> in 500 years, and has now applied the knowledge obtained to create new yeast strains for the production of <u>wine</u> and cider. A key characteristic of these strains is that they can tolerate a wide range of temperatures from 10 to 37°C. Importantly, the <u>low temperature</u> range reduces the risk of contamination during fermentation, possibly allowing for reduced sulphate use.The tolerance to higher temperatures facilitates large-scale production in active dry yeast form. The wines and ciders produced with these strains are characterized by an increased aromatic complexity.

The ability of a yeast strain to ferment efficiently at low temperature is a desired feature in alcoholic fermentation. Cold fermentations have been used for centuries in the production of lager beer with the lager yeast Saccharomyces pastorianus. The ability of this species to ferment at low temperature is a result of it being a hybrid between an ale yeast and the cold-tolerant wild yeast *Saccharomyces eubayanus*.

Scientists at VTT have now demonstrated that this combination of parents can also be effectively used for wine and cider fermentations. A



wine yeast strain was crossed with the cold-tolerant parent of the lager yeast and the hybrids were tested for cider and wine fermentation.

The results showed that due to the wider range of temperatures tolerated by these species the aromatic properties of the cider and wine can be modulated by varying the fermentation temperature. White wine and cider, for example, benefit from low-<u>temperature</u> fermentations, both for reduced risk of contamination but also for an improved aromatic profile. Undesirable flavours that are typical of the wild parent are eliminated after hybridization and large-scale production is facilitated.

This natural, non-GM approach can be used for tailor-made generation of new strains by careful selection of the parent strains with desirable features. After being successfully applied to beer, wine and cider production, this technique is now being assessed for its use in the baking industry, where yeast must survive for extended periods in frozen dough.

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More information: Kristoffer Krogerus et al. New lager yeast strains generated by interspecific hybridization, *Journal of Industrial Microbiology & Biotechnology* (2015). DOI: 10.1007/s10295-015-1597-6

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FEMS Yeast Research (2017). DOI: 10.1093/femsyr/fox049

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