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# REDUCTION OF ACETIC ACID PRODUCTION DURING WINE FERMENTATION BY SACCHAROMYCES CEREVISIAE X SACCHAROMYCES KUDRIAVZEVII HYBRIDS USING ADAPTIVE EVOLUTION UNDER LIPIDS LIMITATION

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*S. cerevisiae* x *S. kudriavzevii* hybrids are typically used for white wine fermentation because of their cryotolerance. One group of these hybrids presenting a unique ability to release thiols varietal aromas produces as well unacceptable amounts of acetic acid under specific conditions, which is detrimental for wine organoleptic quality. The objective of this work is to reduce this acetic acid production through an adaptive evolution strategy. A first comparison of the different strains for their production of acetic acid revealed the presence of two groups of strains, further called High (HAP) and Low (LAP) acetic acid producers. When comparing the genomes of the different strains, two genetic groups corresponding to the level of acetic acid production were revealed. HAP strains have lost copies of the region C, while LAP present a different balance of chromosome copy number of each species and both of these modifications may contribute to differences in acetic acid production. Thanks to a Box Behnken experimental design aiming to study the impact of environmental conditions on acetic acid production, we showed that lipids modulate acetic acid and thiols production for both LAP and HAP *S. cerevisiae* X *S. kudriavzevii* hybrids during wine fermentation. Based on this conclusion, we used an adaptive evolution strategy based on a long-term batch culture under lipids and oxygen limitation in order to reduce the acetic acid production of those hybrids. After 250 generations, we selected several evolved strains able to release lower amounts of acetic acid in wine while keeping high thiols liberation ability. The genome of these evolved strains will be sequenced in order to identify the mutations involved in the phenotype.