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**METABOLOMICS COMPARISON OF NON-SACCHAROMYCES YEASTS IN SAUVIGNON BLANC AND SHIRAZ**

*Saccharomyces cerevisiae* (SC) is the main driver of alcoholic fermentation however, in wine, non-*Saccharomyces* species can have a powerful effect on aroma and flavor formation. This study aimed to compare untargeted volatile compound profiles from SPME-GC×GC-TOF-MS of Sauvignon blanc and Shiraz wine inoculated with six different non-*Saccharomyces* yeasts followed by SC. *Torulaspota delbrueckii* (TD), *Lachancea thermotolerans* (LT), *Pichia kluyveri* (PK) and *Metschnikowia pulcherrima* (MP) were commercial starter strains, while *Candida zemplinina* (CZ) and *Kazachstania aerobia* (KA), were isolated from wine grape environments. Each fermentation produced a distinct chemical profile that was unique for both grape musts. The SC-monoculture and CZ-SC sequential fermentations were the most distinctly different in the Sauvignon blanc while the LT-SC sequential fermentations were the most different from the control in the Shiraz fermentations. In the Sauvignon blanc fermentations SC-monoculture had the highest number of esters in the highest relative concentrations but all the yeasts had distinct ester profiles. CZ-SC displayed the highest number of terpenes in high concentrations but also produced a large amount of acetic acid. KA-SC was high in ethyl acetate. TD-SC had fewer esters but three distinctly higher thiol compounds. PK-SC had some off odor compounds while the MP had high levels of different methyl butyl-, methyl propyl-, and phenylethyl esters. LT-SC showed a relatively high number of increased acetate esters and certain terpenes. In the Shiraz fermentations on the other hand the LT-SC sequential fermentations were the most significantly different primarily in their ester, alcohol and terpene profiles as well as 1-ethyl-1H-pyrrole-2-carboxaldehyde, a pyrrole which has been described as having a burnt, roasted or smoky aroma. This compound was not found in any of the Sauvignon blanc fermentations. The other Shiraz non-*Saccharomyces* fermentations, with the exception of the LT-SC sequential fermentations, were distinct for their general lack of volatile compounds, a notable exception being terpenes. This differs significantly from the profiles seen in the Sauvignon blanc fermentations. Overall, this study gives a more detailed profile of these yeasts in two different grape musts and shows that non-*Saccharomyces* have great potential for increasing the complexity of both red and white wine volatile profiles.

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