Vinifera master thesis abstract

Thesis title: Effect of sequential fermentation with non-Saccharomyces yeast. A comparison between natural and modern winemaking techniques of extended skin contact and oak chips.

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Confidential: ☐ **Yes** x **No**

Abstract (max 300 words)

Topic position & objectives:
Effect of sequential fermentation with non-Saccharomyces yeast. A comparison between natural and modern winemaking techniques of extended skin contact and oak chips.

This study will include two kinds of winemaking practices utilized by modern and natural winemakers. Fermenting and aging white wines on skins and in barrels, (simulated by the use of French oak chips). The studies of five different yeasts were utilized to evaluate the role yeasts play in fermentation including the derivatives and metabolites of the process both positive and negative. Yeasts to be included are: Saccharomyces Cerevisiae, Saccharomyces Ludwigii, Schizosaccharomyces Pombe, Torulaspora Delbrueckii, and Lachancea Thermotolerans. These yeasts are compared in terms of their fermentation abilities, as well as the comparison of sequential vs. mono-cultured fermentations within these various yeast strains. The study will evaluate fermentation kinetics by Thoma counting chamber and microscope observation as well as daily weight loss. Volatile compound production analyzed by gas chromatography. Phenolic compounds and color formation by spectrophotometry. Also must and wine analysis by near infrared Fourier transform spectrophotometry. Results showcased high sensorial performance by the addition of skins and chips among more neutral yeasts such as S. cerevisiae and S. pombe while it decreased quality among yeasts such as T. delbrueckii. The extra time on skins increased volatile acidity levels throughout all the ferments, while acidity levels perceptually increased with this treatment.

Keywords (5): S. cerevisiae, S. ludwigii, S. pombe, T. delbrueckii, L. thermotolerans, skin contact, white wine, oak chips, phenolic compounds.

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