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INFLUENCES OF YEAST PRODUCT ADDITION AND FERMENTATION TEMPERATURE ON CHANGES IN LIPID COMPOSITIONS OF PINOT NOIR WINES

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Concentration and composition of lipids present in wine have been shown to be dependent on yeast and grape variety. There are two sources of lipids in wine: firm tissues of grapes and alcoholic fermentation by yeast. The temperature of a wine fermentation also affects lipid metabolism; therefore, lipid profiles vary under different wine making processes. This study investigated how many different types and amount of yeast derivative products added would affect the lipid content of pinot noir wines. Changes in lipid composition in wines according to fermentation temperature were also examined. The 2017 Oregon pinot noir grapes were fermented at 8 C and 27 C. After primary and malolactic fermentation, yeast products Autolees and Oenolees (Laffort, USA) were added to the wines for 60 days as separate treatments of Autolees (0.3 g/L, 0.175 g/L, and 0.05 g/L) and Oenolees (0.4 g/L, 0.3 g/L, and 0.2 g/L) or as a mixture of Autolees (0.3 g/L) and Oenolees (0.4 g/L). Liquid-liquid extraction method with chloroform/methanol (2:1 v/v) as the solvent was used to extract total lipids in the experimental wines. The lipids extracted were classified as polar lipids (PL), sterols (ST), free fatty acids (FFA), triglycerides (TG), and cholesterol ester (CE) by thin-layer chromatography. The fatty acids derivatives, fatty acid methyl esters (FAME) were analyzed by gas chromatography mass spectrometry (GCMS). The results of this study contribute

to the understanding of how differences in lipid composition could be useful for determining wine style and wine quality. Fatty acid composition and the poly unsaturated fatty acid (PUFA) ratio n-6/n-3 could be used to evaluate the quality of lipids in wine. In future research, it would substantially contribute to the investigation of the interactions of lipids with other wine components such as tannins and polysaccharide affecting the sensory properties of wine such as taste and mouth feel.

Biography

Quynh Phan is a first-year doctoral student in the Department of Food Science and Technology at Oregon State University. She received her B.S. in Chemistry and a minor in Agricultural studies from California State University, Stanislaus in 2015. After graduation, Quynh worked as a chemistry research intern at the Chemistry department, E & J Gallo Winery. She has extensive experience performing chemical analyses to evaluate the chemical characteristics of different grape varieties throughout their maturation process and analyzing volatile aroma compounds in wines and grape juices. Her passion for chemistry and wine led her to join Dr. Elizabeth Tomasino's research group in 2017 where she started working on lipid content of wine and their link to mouthfeel perception.

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