

Phenolic composition of wines made with the Syrah grape under double pruning in the Brazilian high-altitude cerrado

Caroline Dani^{1,2}, Fernanda Rodrigues Spinelli³, Isabella Bonato⁴ and Rafael Lavrador Sant'Ana⁵

¹ Programa de Pós Graduação em Farmacologia e Terapêutica

² Associação Brasileira de Sommelier - RS

³ Laren/Seapi

⁴ Vinícola Brasília

⁵ Instituto Federal do Distrito Federal

Wine growing has emerged as a significant development opportunity for agribusiness in several new regions of Brazil, including the Federal District, where over ten wineries have been established in the past five years. One key technique contributing to this growth is the double pruning system, a sustainable method that enabled grape cultivation in this emerging region. This method involves trimming the growing shoots during the summer and positioning the fruit ripening phase during a cooler period of the season, allowing the grapes to ripen more thoroughly. The Syrah variety has shown excellent adaptation to this cycle management model. This study aimed to evaluate the physical-chemical and phenolic composition of wines made from the Syrah variety in two harvests, 2022 and 2023, to understand the behavior of the phenolic and technological ripening process of grapes on vines implemented in the federal district. Wines made from 100% of the Syrah variety were evaluated, 6 from the 2023 harvest and 3 from the 2022 harvest. We observed that wines made from different harvests showed differences in total phenolic composition, wines from the 2022 harvest presented higher values (76.68 ± 10.42) than the 2023 harvest (67.05 ± 5.89), $p=0.0221$. Surprisingly, the resveratrol content showed a different behavior, wines from harvest 2023 ($9.36 \pm 0.66 \text{ mg.L}^{-1}$) showed higher levels than the harvest 2022 ($4.77 \pm 10.36 \text{ mg.L}^{-1}$) ($p < 0.0001$). The same difference was observed for catechin levels, harvest 2023 (54.20 ± 2.31) showed higher levels than harvest 2022 ($40.69 \pm 4.07 \text{ mg.L}^{-1}$), ($p=0.0065$). Different from these results and similar to the phenolic total compounds, the cyanidin levels showed lower levels in 2023 harvest ($12.78 \pm 1.14 \text{ mg.L}^{-1}$) than 2022 harvest ($19.19 \pm 1.32 \text{ mg.L}^{-1}$), ($p=0.036$). Different factors could explain these results, such as the thermal range present in this region, located around 1,000 m above sea level, which can reach up to 20°C/day. Also, in the winter, time to harvest, at 2022 (0.00mm) the levels of rain were lower than 2023 (20mm). More studies are needed to observe possible intra-region variations and the behavior of different cultivars. However, the results obtained are auspicious regarding the quality of the wines in question, demonstrating a balance between the main factors involved, such as climate, soil, and relief. These characteristics will certainly be important for defining the terroir of this region, seeking its own identity, which will be constructed based on these and other analyses.