

## AROMATIC PROFILE OF SIX DIFFERENT CLONES OF CHARDONNAY GRAPE BERRIES IN MINAS GERAIS (BRAZIL)

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### Abstract:

**Context and purpose of the study** – Aromas are one of the key points in food analysis since they are related to character, quality and consequently consumer acceptance. It is not different in the winery industry, where the aromatic profile is a combination of viticultural and oenological practices. Based on the development of more aromatic clones and on the potential to produce sparkling wines at Caldas, in the southern region of Minas Gerais (Brazil) (21°55'S and 46°23'W, altitude 1,100m), the aim of this work was the determination of volatile compounds in six different clones of Chardonnay grape berries to better understand which compounds add *bouquet* to the wine, and additionally comprehend the impacts of the edaphoclimatic and annual conditions on the improvement of grape-growing and winemaking practices.

**Material and methods** – The study was conducted in a 6-year-old experimental vineyard located at Caldas city in two consecutive vintages with six different clones (76, 95, 96, 121, 131 and 809 - ENTAV-INRA, France) of the cultivar Chardonnay (*Vitis vinifera* L.) grafted onto 1103 Paulsen rootstock and trained on a vertical shoot positioned trellis. Grapes were harvested in the maturity stage for sparkling wine production. The volatile compounds were analyzed in the grape berries by HS-SPME/GC-MS.

**Results** – Considering the clone vineyards, a total of 84 compounds were identified in both vintages, 2017 and 2018. The statistical analysis showed discrimination between harvests (almost 50%) and discrete discrimination (20.2%) among clones in the PCA analysis. Four well established clusters were identified: clone 809 in 2017 and 2018 harvests; the other five clones from 2018; and a fourth region in which the other five clones from 2017 were slightly dispersed. The difference between vintages was mainly due to acids, sulfur-volatiles and furanoid substances. It was confirmed that clone 809 distinguishes from the others clones since it is highly aromatic (monoterpenoid compounds – e.g. linalool, geraniol, nerol), which adds more flowery and fruity notes to the berries, a Muscat character. Among the differences related to the other clones in 2017, the class of compounds that discriminate clones 95 and 96 were aldehyde and monoterpenoid; and ketone and ester compounds, respectively. Although the vintage demonstrated significant influence on the volatile profile of the clones studied (e.g. precipitation levels during the maturation phase), the data indicates that the genotype is a relevant contributor for the differentiation of volatile compounds in Chardonnay clones.

**Keywords:** *Vitis vinifera*, food analysis, grape, aromatic profile, PCA analysis, HS-SPME, GC-MS, flavour, Chardonnay clones

### 1. Introduction.

