

# AROMA COMPOUNDS PREVISION USING ARTIFICIAL NEURAL NETWORKS: INFLUENCE OF NEWLY INDIGENOUS *SACCHAROMYCES* SPP. IN WHITE WINE PRODUCED WITH *VITIS VINIFERA* CV *SIRIA*

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## KEYWORDS

White Wine; Aroma Compounds; *Saccharomyces*; Yeast; Artificial Neural Networks.

## ABSTRACT

Commercial yeasts strains of *Saccharomyces cerevisiae* are frequently used in white wine production as starters in fermentation process, however, these strains can affect the wine characteristics. The aim of this study was to evaluate the effect of three strains of *Saccharomyces* spp. (var. 1, 2 and 3) on wine aroma compounds produced in microvinification assays. Microvinification assays were carried out with *Vitis vinifera* cv *Síria* grapes using the strains in study as starters. Aroma compounds were identified and quantified by GC-FID and GC-MS. At the end of fermentation process and during the first three months of maturation some aroma compounds were detected, namely propanol, isobutanol, isoamyl acetate, isoamylic alcohol, ethyl hexanoate, ethyl lactate, hexanol, ethyl octanoate, 3-ethylhydroxibutirate, benzaldehyde, 3-methyl-2-butanol, 2,3-butanediol,  $\gamma$ -butyrolactone, ethyl decanoate, diethyl succinate, methionol, 4-hydroxi-2-butyrolactone, heptanoic acid, phenylethyl acetate, ethyl dodecanoate, phenylethanol, octanoic acid, 2-methoxy-4-vinylphenol and decanoic acid.

Artificial Neural Networks (ANNs) were used to predict the concentration of twelve wine aroma compounds from the phenyl ethanol, propanol, isobutanol, hexanol, heptanoic acid, octanoic acid, and decanoic acid concentrations.

Results showed that, either, maturation time and *Saccharomyces* strain used as starter influence the aroma compounds produced. Wines produced with *S. cerevisiae* var. 1 and *S. cerevisiae* var. 2 showed a similar composition in aroma compounds, relatively to the wines produced with the strain *S. cerevisiae* var. 3. However, for *S. cerevisiae* var. 1 and *S. cerevisiae* var. 2 the time of maturation influence the aroma composition of wines.

From a technological approach, the choice of yeast strain and maturation time has decisive influence on the aroma compounds produced.