

EFFECT OF STORAGE TIME ON WINE DNA ASSESSED BY SSR ANALYSIS

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Wine is recognized as one of the most adulterated agri-food products in the world. Among the available traceability methods, DNA is of particular interest because it offers the possibility of uniquely recognizing the cultivar(s) of wine production. Several studies conducted under controlled conditions (at the laboratory or small winery level) support the use of DNA in wine traceability, but the situation may change completely when moving from controlled to uncontrolled realities.

Results from previous work indicate the possibility of performing, more or less easily, varietal recognition on monovarietal production up to the pre-bottling stage of wine.

The later stage of bottling and storage of wine represents a critical step along the wine production chain. In fact, in several previous studies no one had so far monitored the extent to which molecular traceability was feasible during wine storage, before and after bottling.

The present study tries to fill this gap of knowledge by following, in the real case of a largest production wine cooperative in Oltrepò Pavese, Lombardy, Italy, the possibility to trace wine production through DNA analysis during storage period. Two important monovarietal productions: red sparkling Bonarda PDO and white Pinot gris PDO, were followed starting from the end of common oenological practices (racking and tangential filtration) until 1 year after bottling. During the pre-bottling period, storage of PDO Bonarda took place at room temperature (RT) in a cement tank while storage

of PDO Pinot gris, was in a refrigerated steel tank at 10°C, samples were collected every 10 days during four consecutive months, after bottling samples were collected at day 1 and after 2, 8 and 12 months. Globally 16 samples were collected for each wine.

Analysis were carried out by using the 9 SSR markers officially validated by OIV for the recognition of grapevine varieties.

For PDO Pinot gris, vinified in white, the expected genetic profile of the variety was obtained up to the 10th month with 8 SSR out of 9 and up to 12th month with 6 SSR out of 9.

For PDO sparkling Bonarda until the 8 month the expected genetic profile was obtained with 6 SSR out of 9.

DNA analysis evidence that for both wines, traceability on the extracted DNA is possible, at least, until month 8 in standard condition preserved bottles, after that DNA degradation increases hindering, mainly for the red wine, the possibility to a correct varietal identification.

These results suggested that white wines could be analysed for a longer time than red wines. Possible explanations can be the different metabolic composition of the wines that can differentially interfere with DNA extraction and analysis, the different storage conditions of the two wines or the combination and interaction of both factors.