Maturation under different SO₂ environments: The impact on amino acid and volatile profile for two white wines

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Questions

SO₂ is a multifunctional preservative agent used in several steps of the winemaking process. However, the reduction of legal limits, health concerns, and off-flavor aroma has led producers to reduce the concentration used. Will SO₂ reduction change the volatile organic compound (VOCs) profile during wine maturation?

Will monovarietal and blend wines be affected identically?

Methodology

VOCs analysis by HS-SPME-GC/MS and Amino acid analysis by HPLC-DAD after 3 and 6 months maturation over lees

Evolution on bottle

[SO₂] (mg/L): 0 30 60 90 120

Antão Vaz wine Blend wine

Blends analysis by HS-SPME-GC/MS after 3 and 6 months on bottle

Results and Conclusions

A total of 70 VOCs in monovarietal wine and 73 in the blend wine were tentatively identified from a total of 83.

Principal Component Analysis of VOCs analysed for each wine (a and b), shows that both wine are separated by ageing time.

For both wines, volatile profile of initial wine is different.

PC1 separates wines with 3 and 6 months and wines with 12 months. The influence of SO₂ doses is more clear in Antão Vaz wines with 6 months.

Blend wines with 3 and 6 months are very similar.

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Amino acids:

The graphic displays the increase of total amino acids in wines after 3 months over lees.

Maturation on lees lead to an increase on amino acids concentration.

Antão Vaz was more influenced by the SO₂ doses applied.

Literature cited


