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Delle Units

Alcohol-sugar combination to achieve microbial stabilization in sweet wines

The combination of alcohol and sugar in sweet or semi sweet wines acts as a natural preservative against yeast fermentation. **Delle units (DU) is a measure of this inhibitory effect of the sugar/alcohol combination** and have special application in stabilization of desert and fortified wines. The calculation thereof is based on the following principles:

It is generally accepted that in the following conditions the wine medium will be microbially stable:

- Sugar (RS) = 780 g/L (78%)
- Alcohol = 17.5% (v/v)

A combination of alcohol and sugar at levels less than required separately (as defined above) might be used to inhibit growth and fermentation of yeast in sweet wine. The common multiplier between sugar and alcohol that brings them to the same inhibitory basis is 78:17.5 = 4.5. The speculated formula is therefore:

$$DU = RS/10 + 4.5 \times \% \text{ alcohol (v/v)}$$

It is thus assumed that any DU equal or greater than 78 will be considered as biologically stable. The above formula does not take into account other factors that can influence microbial stability such as pH, acidity, carbon dioxide pressure and more. The actual figure in real wine situations might actually be less than 78 depending on the specific case. In studies done it was determined that the DU range needed for stability varies between 75 and 85 at sugar concentration of 200 to 50 g/L. The Delle units can therefore be used as a guideline to achieve microbial stability in sweet and fortified wines.

References

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