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New technological approaches to obtain a liqueur red wine

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Abstract: This study presents practical aspects to obtain a red liqueur wine from Merlot grapes. In this work, Merlot red wine, partially fermented, with an alcoholic degree of 13.5% vol. alc., total acidity 2.5 g/L H_2SO_4 and residual sugar 27 g/L was stopped alcoholic fermentation by the addition of refined food grade ethanol. Next, sugar was added and a liqueur red wine was obtained with an alcoholic degree of 22% vol. alc., total dry extract of 81 g/L, reducing sugar content of 55 g/L and total acidity of 3.0 g/L H_2SO_4 . Liqueur wine has been obtained by a unique fortification method, which involves the addition of refined ethyl alcohol before fermentation is complete, under careful monitoring of residual sugar to assess the amount of sugar that needs to be added to supplement the existing one. This process both increases the alcoholic strength and significantly changes the quality profile of the wine, ensuring stability and longevity of the wine by preventing oxidation.

Introduction

Liqueur wine or *fortified wine* is defined as a special wine with a total alcoholic strength of at least 17.5% vol. The alcoholic strength will not be lower than 15% vol. or higher than 22% vol. and the residual sugar content will be between 50 and 120 g/L. These wines are produced in a wide range of styles with varying sugar content, from extra dry to sweet, usually more than 96 g/L.

Material and method

The production of liqueur wines involves the operation of stopping the alcoholic fermentation by adding food grade ethanol. This step is considered one of the basic links in the chain of operations for the production of sweet fortified wines. When the alcohol is added to wine before the fermentation process is finished, the yeasts are killed, leaving behind a residual amount of sugar. The result is a wine that is both sweet and higher in alcohol. The quantities of raw materials required for the preparation of 10 L of liqueur red wine calculated on the base of the material balance both total and partial in the main components alcohol and sugar, are given in Table 1.

Table 1. The materials needed for 10 L of liqueur wine

Materials	Values
Red wine Merlot (mL)	8744
Food grade ethanol 96% ABV (mL)	1062
Sugar (g)	314
Citric acid (g)	11.62



Results and discussions

Table 2. The quality indices of Merlot liqueur wine

Quality indices	Values
Total acidity (g/L H_2SO_4)	3.0
Alcoholic strength (% v/v)	22
Sugar (g/L)	55
Total dry extract (g/L)	81
Non-reducing dry extract (g/L)	26

The obtained red liqueur wine is distinguished as a special type of strong and sweet wine, also known as wine fortified by the addition of ethyl alcohol, which is added to stop the alcoholic fermentation. Additionally, sugar is added to a final content of 55 g/L. The qualities of the raw material wine decisively determine the quality of the liqueur wine. For the red liqueur wine, obtained from Merlot base wine, a long-term red vinification was practiced.

Conclusions

The range of liqueur wine has its own specific taste and aroma profile, adding a touch of exclusivity and personalisation. Fortification contributes to the stability and longevity of the wine, preventing oxidation. The techniques used to obtain red liqueur wine are relatively simple, which is recommended for the purpose of diversifying the range of liqueur wines obtained from local basic wines. Through this application direction, the typicality of the Merlot base wine obtained in the Miniș-Măderat vineyard is capitalized in order to adapt to the tastes of the contemporary consumer and the requirements of the current market.

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