The Studies on the Application of Food Gums in Millet Wine Brewing

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ABSTRACT

Millet wine is one of the offerings for the harvest festival of Taiwan aboriginals. It is made without filtration in a traditional way. The precipitation in the millet wine caused by cloudy materials during storage time could reduce its consumers' acceptance. The objective of this study is to improve this precipitation. by various millet pretreatment methods and by the addition of good gums. Reference the pretreatment effect, the millet wine produced from millet grinded with water followed by liquefaction, saccharification, and fermentation has a slower tendency of precipitation then those produced form whole-grain millet or dry-pulverized millet based on identical manufacturing process. Sensory analysis was proceeded with six commercial yeast strains. According to the average sensory score that the millet brewed with Fermicru VR5 was the most popular one. In the determination of the millet wine (40%, 50% and 80%) for fortification, the 50% spirit is the optimal choice because its aroma, taste or the overall preference sensory scores were higher than 40% and 50%. On the selection for the optimal ratios of sugar(4%, 6% and 8%), the scores of sensory analysis of 8% were visibly higher than 4% and 6%. The best choice on the ratio of sugar of millet wine was set at 8%. Results show that the single-addition and the multiple-addition of food gums was helpful to the suspension stabilization of millet wine . The effect will be visibly different if the total addition and the composition ratio were changed. The total addition of 2 g/L of food gum was better than 0.5 and 1 g/L. The millet wines with single-addition of food gum(1 and 2 g/L xanthan gum), the multiple-addition of food gum (1.2 g/L xanthan gum : 0.8 g/L locust bean gum, 0.8 g/L xanthan gum : 1.2g/L guar gum and 1.2 g/L xanthan gum : 0.8 g/L guar gum) and the non-addition of food gum were took to a further storage test at 4 °C and 25 °C. The turbidity and viscosity were analyzed for 3 month. The sensory results revealed that the optimal gum addition ratio for millet wine was 1.2 g/L xanthan gum to 0.8 g/L of locust bean gum. It was concluded that the turbidity and the viscosity stability of wine produced form millet grinded with water with multiple addition of food gum (1.2 g/L xanthan gum : 0.8 g/L locust bean gum)were significantly improved after 3 months of storage at 4 °C, resulting in a only slight reduction of OD660 from 1.958 to 1.853 and viscosity from 5.42 to 3.82.

Keywords : millet ; cloud stabilization ; xanthan gum ; guar gum ; locust bean gum

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