

Caatinga Passion Fruit: A Promising Raw Material for Sparkling fruit Wine

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COMO CITAR ESSE TRABALHO?

Resumo

Caatinga passion fruit (*Passiflora cincinnata* Mast.) is a native species from the Brazilian semi-arid region, well adapted to harsh environmental conditions due to its high drought tolerance, pest resistance, and extended post-harvest ripening capacity. In addition to its exotic aroma and significant nutraceutical potential, it represents to the family farming a strategic raw material for the development of innovative value-added products. The objective of this study was to develop a sparkling wine from Caatinga passion fruit and to evaluate its physicochemical properties, phenolic profile, antioxidant capacity, and consumer acceptability, aiming to assess its technological and market potential. The beverage was produced on a pilot scale using the adaptation of the traditional method for grape sparkling wines, which involves a primary alcoholic fermentation, after the pulp dilution with water and pH-adjusted, clarification and chaptalization, followed by an in-bottle secondary fermentation. Subsequently, four formulations were elaborated: dry and sweet Caatinga passion fruit sparkling wines (with 20g/L of sugar addition for the sweet version), with and without autolysis on the yeast lees after the second fermentation (0 and 9 months). Physicochemical analyses included pH, total soluble solids, titratable and volatile acidity, alcohol content, dry extract, sulfur dioxide, and color parameters (CIELab). Phenolic compounds were determined by HPLC-DAD and Folin-Ciocalteu method. Antioxidant activity was assessed using DPPH, ABTS, and FRAP assays. Consumer acceptance was evaluated with 90 sparkling wine consumers using a 9-point hybrid hedonic scale for appearance, aroma, flavor, and overall acceptance. The product complied with Brazilian legal standards for fruit wines, showing an alcohol content around 11% v/v and titratable acidity of 130 meq/L. Autolysis slightly decreased pH, increased total acidity, and significantly reduced free SO₂ levels. Total phenolic content decreased from 874 mg GAE/L to 404 mg GAE/L after autolysis, which was reflected in lower antioxidant activity. The phenolic profile included eighteen compounds such as gallic, caffeic, ferulic, and β -coumaric acids, (+)-catechin, (-)-epicatechin, procyanidins, quercetin derivatives, resveratrol isomers, among others. All formulations showed higher sensory acceptance, with overall scores around 7.0 ("liked moderately"). Autolysis did not enhance sensory acceptability and increased the beverage production time and costs. Sugar addition also had no significant impact on product acceptance. The production of Caatinga passion fruit sparkling wine represents a promising technological alternative, combining functional potential and consumer appeal. This innovation can enhance the added value of Caatinga biome biodiversity, support family farming, and promote circular bioeconomy strategies in the Brazilian semi-arid region.



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Programação

16:10 até 17:10 em 18/11/2025

Salão Real

(<https://eventos.galoo.com.br/slacan-2025/calendar/activity/21166>)

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