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Innovative Approaches to Berry Valorization through the Development of a Jam with Balsamic Vinegar and Basil

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Abstract

The diversification of fruit-based food products represents an important direction in the development of innovative formulations adapted to current consumer preferences. This study aimed to develop and characterize a mixed berry jam by combining berries with balsamic vinegar and basil. The product was evaluated through physicochemical analyses droisture, dry matter, ash) and sensory evaluation using a five-point scale. The jam cxhibited a low moisture content (14.83%) and high dry matter (85.17%), with favorable sensory scores for appearance, aroma, taste, consistency, and color. The combination of berries with balsamic vinegar and basil offers an innovative approach to diversifying traditional jam varieties, resulting in a product with a distinctive sensory profile and added value.

Keywords: *berry jam, balsamic vinegar, basil, food innovation, physicochemical analysis, sensory evaluation.*

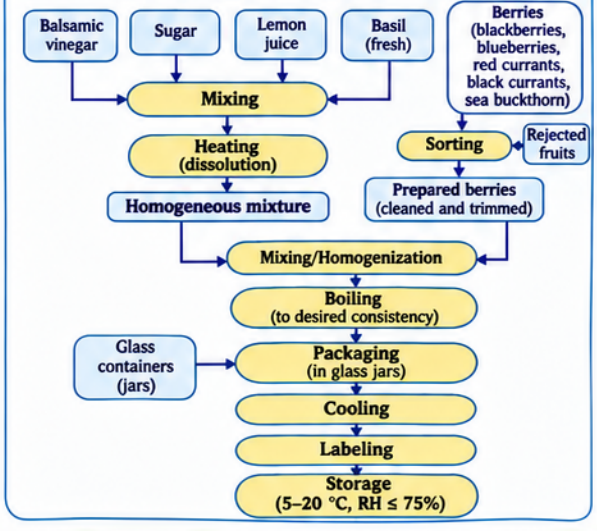
1. Introduction

- Berries are rich in vitamins, minerals and bioactive compounds, especially antioxidants.
- Balsamic vinegar and basil can enhance both the aroma and the functional value of fruit preserves.
- **Aim:** to develop a mixed berry jam with balsamic vinegar and basil and to evaluate its physicochemical and sensory characteristics.

2. Materials and Methods

- **Raw materials:** blackberries, blueberries, red currants, black currants, sea buckthorn berries, sugar, balsamic vinegar, lemon juice and fresh basil.
- **Analytical methods:** moisture (oven drying, 105 °C), dry matter (by difference) and ash content (muffle furnace, 550 °C).
- **Sensory evaluation:** 25 assessors, five-point hedonic scale (1 = very poor, 5 = excellent) for appearance, aroma, taste, consistency and color.

Technological process for berry jam with balsamic vinegar and basil



3. Results and Discussions

3.1. Physicochemical characterization

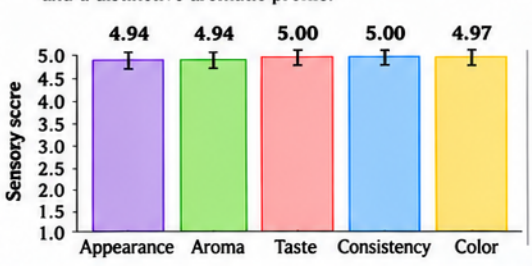
- The berry jam exhibited a moisture content of 14.83%, corresponding to a dry matter content of 85.17%, and an ash content of 0.59%. The lower moisture compared to the fresh berry mixture (58.42%) reflects water loss during thermal processing.

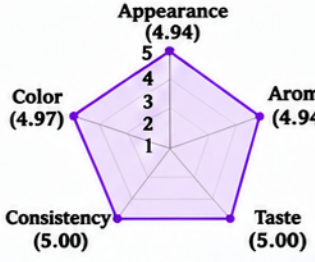


Sample	Moisture (%)	Dry matter (%)	Ash (%)
Berry jam (final product)	**14.83 ± 0.21**	**85.17 ± 0.21**	**0.59 ± 0.02**
Mixed berries (initial mixture)	58.42 ± 0.35	41.58 ± 0.35	0.32 ± 0.01
Blackberries	59.23 ± 0.47	40.77 ± 0.47	0.48 ± 0.02
Blueberries	79.48 ± 0.39	20.52 ± 0.39	0.24 ± 0.01
Red currants	73.32 ± 0.41	26.68 ± 0.41	0.23 ± 0.01
Sea buckthorn berries	75.43 ± 0.38	24.57 ± 0.38	0.70 ± 0.03

3.2. Sensory evaluation

- The jam received high scores for appearance (4.94), aroma (4.94), taste (5.00), consistency (5.00) and color (4.97), indicating a very good overall acceptability and a distinctive aromatic profile.





4. Conclusions

- The development of mixed berry jam with balsamic vinegar and basil is technologically feasible and results in a product with added value.
- The final product exhibited a high dry matter content (85.17%) and a mineral content of 0.59%.
- The combination of berries, balsamic vinegar and basil provided a distinctive sweet–sour and aromatic profile, with high sensory acceptance.
- This formulation represents a promising approach for diversifying artisanal fruit products and creating innovative, gourmet food options.

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