UNIVERSITY OF LIFE SCIENCES "KING MIHAI I" FROM TIMISOARA

"YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES"

05–06 November 2026



Influence of Elderflower Addition on the Quality of Raspberry Jam

Cristina Tabita Bejinaru[1], Bianca Biro [1], Constantin Liviu Stanus[1], Florina Radu[1], Sofia Popescu[1]*

[1]*Faculty of Food Engineering, University of Life Sciences "King Mihai I" from Timisoara, 300645, 119 Calea Aradului, Romania*

*Corresponding author: sofiapopescu@usvt.ro

Abstract

This study aims to investigate the influence of elderflower (*Sambucus nigra* L.) addition on the physicochemical and sensory characteristics of raspberry (*Rubus idaeus* L.) jam. Two formulations were developed: a control sample (DZT) and an experimental variant with elderflower syrup (DZS). Physicochemical analyses (moisture, dry matter, °Brix, pH, titratable acidity, ash) and instrumental color measurements (CIELAB: L*, a*, b°) were performed. Sensory evaluation (appearance, color, consistency, taste and aroma) was also carried out. The results showed that elderflower addition provided a pleasant floral note and a higher overall acceptability, highlighting its potential for obtaining innovative fruit-based products.

Keywords: *raspberry jam, elderflower, physicochemical characteristics, CIELAB color, sensory evaluation, product quality.*

1. Introduction

- **Raspberry** (*Rubus idaeus* L.) is a valuable fruit, rich in bioactive compounds, especially anthocyanins, with a vivid color and a pleasant sweet–acidic taste.
- **Elderflower** (*Sambucus nigra* L.) is traditionally used in food products for its intense floral aroma and antioxidant potential.
- **Aim:** to evaluate the influence of elderflower addition on the quality (physicochemical, color and sensory) of raspberry jam.



2. Materials and Methods

- **Raw materials:** ripe raspberries (*Rubus idaeus* L.), white sugar, lemon juice, elderflowers (*Sambucus nigra* L.).
- **Formulations:**
  - ✓ **DZT** – control jam (traditional recipe);
  - ✓ **DZS** – jam with elderflower syrup (200 ml/1000 g raspberries).
- **Analytical methods:** moisture (oven drying, 105 °C), °Brix (refractometry), pH (pH-meter), titratable acidity (as citric acid), ash (furnace, 550 °C), color (CIELAB: L*, a*, b*).
- **Sensory evaluation:** 15 assessors, hedonic scale (1 = very poor, 7 = excellent) for appearance, color, consistency, taste and aroma.

Technological process for raspberry jam with elderflower syrup

Reception of raw materials (raspberries, elderflowers)

↓

Sorting and washing

↓

Preparation of raspberries (crushing) | Preparation of elderflower syrup (infusion, filtration, sweetening)

↓

Mixing of ingredients (DZT / DZS)

↓

Boiling and concentration (to ~65°Brix)

↓

Hot filling and sealing (glass jars)

↓

Cooling, labeling and storage (5–20 °C)



3. Results and Discussions

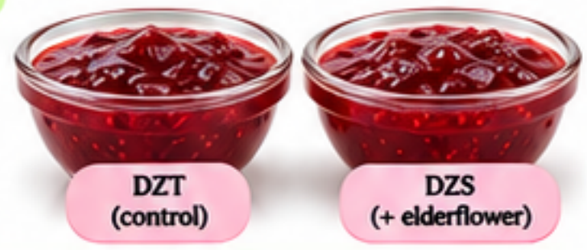
3.1. Physicochemical characterization

Parameter	DZT (Control)	DZS (+ Elderflower)
Moisture (%)	33.76 ± 0.42	32.98 ± 0.39
Dry matter (%)	66.24 ± 0.42	67.02 ± 0.39
°Brix (%)	64.9 ± 0.3	65.2 ± 0.3
pH	3.28 ± 0.02	3.26 ± 0.02
Titratable acidity (g citric acid/100 g)	0.82 ± 0.02	0.84 ± 0.02
Ash (%)	0.31 ± 0.01	0.31 ± 0.01

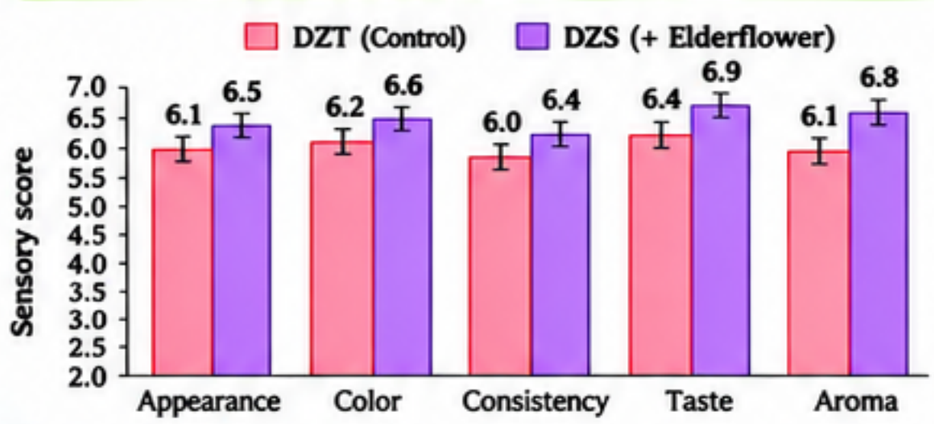


3.2. Color analysis (CIELAB)

Sample	L*	a*	b*
DZT	29.15 ± 0.38	41.62 ± 0.51	13.24 ± 0.27
DZS	30.72 ± 0.41	40.37 ± 0.49	14.11 ± 0.33



3.3. Sensory evaluation





4. Conclusions

- Both raspberry jam variants (DZT and DZS) presented suitable physicochemical characteristics for a high-quality product.
- The addition of elderflower slightly increased the dry matter, °Brix and ash content, with minimal influence on pH and acidity.
- The color parameters (CIELAB) showed a lighter and slightly more yellowish tone for DZS, in line with the addition of elderflower syrup.
- The sensory evaluation indicated higher scores for taste, aroma and overall acceptability in the DZS variant.
- Elderflower is a valuable ingredient for diversifying raspberry jam and enhancing its sensory profile.

Acknovledgements: *The authors gratefully acknowledge the Research Center of the Faculty of Food Engineering, University of Life Sciences "King Mihai I" from Timisoara, Romania, for its support and research infrastructure.*