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DEVELOPMENT AND CHARACTERIZATION OF DRINKING YOGURT FORTIFIED WITH BIRCH SAP

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Abstract: This study aimed to develop and characterize a drinking yogurt fortified with birch sap, a natural ingredient with bioactive compounds and valuable minerals. The product was obtained by fermenting cow's milk with lactic cultures and adding birch sap at different concentrations. Physicochemical properties (pH, titratable acidity, viscosity, total solids), nutritional composition and sensory acceptability were determined. The optimized formulation (10% birch sap) showed a pleasant taste, appropriate consistency and high sensory acceptability, with a mean score of 4.48 for overall acceptability. The product provided a valuable source of minerals and bioactive compounds, representing a promising functional dairy product for a healthy diet.

Introduction

Birch sap (*Betula pendula*) is a natural ingredient rich in minerals, polyphenols and bioactive compounds, known for its antioxidant and health-promoting properties. Combining birch sap with yogurt can result in an innovative functional dairy product with enhanced nutritional value and sensory properties.

- Natural source of minerals
- Antioxidant compounds
- Supports digestive health
- Innovative functional product



Material and method

1. Technological process



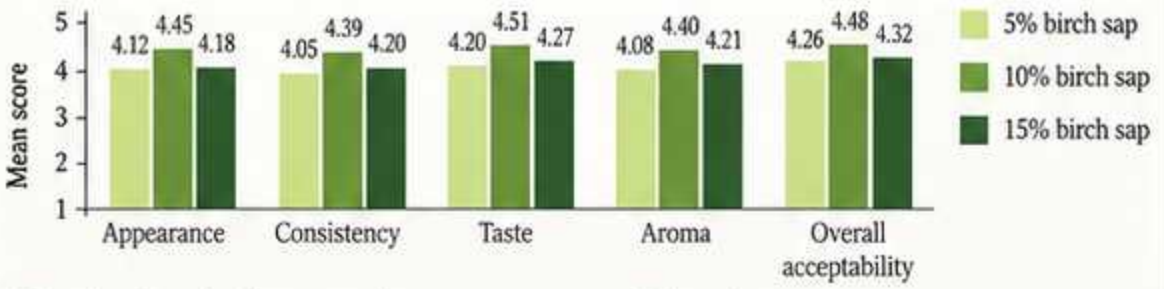
2. Analytical methods

- pH (pH-meter)
- Titratable acidity (direct titration)
- Viscosity (rotational viscometer)
- Total solids (drying method)
- Mineral content (AAS/ICP-OES)
- Total phenolic content (Folin-Ciocalteu method)



Results and discussions

Sensory evaluation



Physicochemical properties (optimized product – 10% birch sap)

Parameter	Value (mean ± SD)
pH	4.32 ± 0.03
Titratable acidity (°SH)	72.4 ± 1.2
Viscosity (mPa·s)	356 ± 18
Total solids (%)	14.8 ± 0.5
Ash content (%)	0.9 ± 0.1

Mineral content (optimized product – 10% birch sap)

Mineral	Value (mg/100 ml)
Potassium (K)	152.3
Calcium (Ca)	118.6
Magnesium (Mg)	12.4
Sodium (Na)	28.7
Zinc (Zn)	0.6

Conclusions

- A drinking yogurt fortified with birch sap was successfully developed and characterized.
- The optimized formulation (10% birch sap) showed high sensory acceptability, with a mean score of 4.48 for overall acceptability.
- The product is a valuable source of minerals and bioactive compounds, with suitable physicochemical properties and pleasant sensory characteristics.
- The developed drinking yogurt can be considered an innovative functional dairy product with potential benefits for consumer health.