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NUTRITIONAL AND SENSORY PROPERTIES OF RASPBERRY, ORANGE AND LEMON SORBETS

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Abstract:

Citrus fruits, such as oranges and lemons, are rich in nutrients such as vitamin C, flavonoids and fibre, which confer vascular protection, reduce inflammation, improve gastrointestinal function and health and play an important role in preventing conditions such as diabetes, cancer and neurological diseases. Red raspberry is low in sugar, is rich in fiber and phenolic compounds. Also has high content of vitamins C and E, alpha and beta carotene, lutein, zeaxanthin, choline and selenium. Oranges, lemons and raspberries are commonly consumed fresh and in juices, as canned products and dietary supplements. Given the high nutritional properties of these fruits, in this study, we aimed to develop 3 new concentrated sugar products – raspberry sorbet (RO), orange sorbet (OR) and lemon sorbet (LS) and evaluate their nutritional and sensory properties. The impact of products obtained on consumers was determined using the 9-point hedonic scale which followed the appearance, taste, aroma (flavor), consistency and overall acceptability.

• Introduction

Oranges and lemons are rich in vitamin C, flavonoids and fiber, improve gastrointestinal health and prevent diabetes, cancer and neurological diseases. Red raspberries have a low sugar content, they have a high content of vitamins C and E, alpha and beta carotene, etc. Oranges, lemons and raspberries are commonly consumed fresh and in juice, as canned products and dietary supplements. We developed three new concentrated sugar products in this study—lemon, orange, and raspberry sorbets—and assessed their quality and sensory qualities in light of the high nutritional value of these fruits. The 9-point hedonic scale was used to assess the effects of the products on the customers.

• Material and method

A mixture of juice (raspberry, orange, lemon) and sugar was made and boiled over low heat until the sugar melted. Then was removed from the heat and mixed very well, under constant stirring, until it binds and a very smooth paste was obtained.

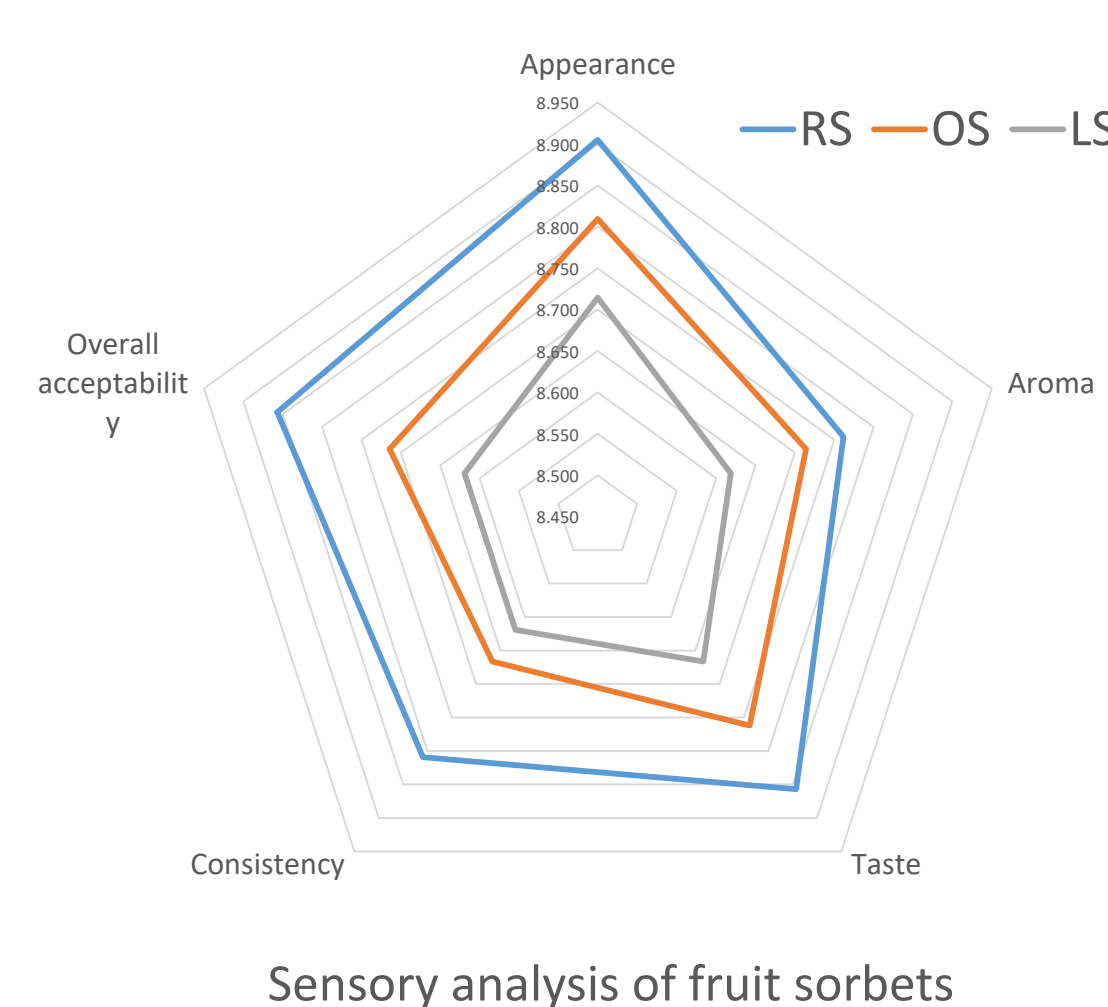
To evaluate the nutritional value of fruit sorbets, ISO methods (SR ISO 1442:2010 for moisture, SR ISO 936:2009 for minerals), were used. Vitamin C was determined according to STAS 75588-87 method and polyphenol content with Folin-Ciocalteu method. The total soluble solids (TSS) were determined by using DR201-95 refractometer at room temperature (AOAC 2005).

The determination were carried out in the Preservation Laboratory of Faculty of Food Engineering of ULS Timisoara.

• Results and discussions

Total soluble solids (TSS) is a fundamental characteristic measuring sugar content. Data in table 1 shown the mean values of TSS recorded in studied sorbets. The total soluble solids ranged from 73.53°Brix (OSJ) and 74.48°Brix (LOJ). Titratable acidity (TA) is expressed as a percentage of citric acid, ranging between 0.74 (g/100 g citric acid) (OS) to 0.92 (g/100 g citric acid) (RS).The vitamin C content determined in the sorbet samples ranged from 7.5 mg/100 g (OS), 7.7 mg/100 g (RS) and 8.4 mg/100 g (LS). The polyphenol content was higher in the LO (172.79 mg GAE/100 g) compared to the OL (158.67 mgGAE/100 g) and RS (151.32 mgGAE/100 g)

Samples	Nutritional Characteristics			
	Moisture	Mineral Content	Total Soluble solids (TSS)	Titrate acidity
	(%)	(%)	(°Brix)	(g/100g acid citric)
Sorbets				
RS	18.25±0.31	0.75±0.03	74.11±0.21	1.47±0.02
OS	19.28±0.13	0.71±0.02	73.53±1.26	0.74±0.03
LS	18.28±0.098	1.28±0.02	74.48±0.56	0.92±0.04



The 5 attributes analyzed in the sensory evaluation were appearance, aroma, taste, consistency and overall acceptability. Following the analysis of the scores, the most appreciated assortment was RS in all the ratings, obtaining higher scores compared to OS and LS. At the Taste criterion, RS obtained 8,857 points, followed by OS (8,762) and LS with 8,667 points.

Conclusions

As demonstrated by the present study, sorbets from raspberry, orange and lemon, are highly appreciated by consumers, have excellent nutritional properties, meet quality requirements and can be easily obtained by food industry producers.