EVALUATION OF SENSORY QUALITY OF GELIFIED PRODUCTS WITH A LOW SUCROSE CONTENT

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Abstract
This article presents the quality evaluation of strawberry jam with low sugar content, manufactured by a methodology that differs from the traditional, applied in the conservation industry in Republic of Moldova. In this context of interest process for obtaining comfiture jam and low-sucrose, developed at the Department of Conservation Technology U.T.M., the use of which would allow obtaining quality products with a high content of biologically active substances and sensory properties, remarkable fruit sweet taste and colour harmonized feature fruits used. The essence of the process is partial dehydration of fruits, fruit against the introduction of sucrose: sucrose 1: 0.4 ... 0.6, boiling gelling agent and concentration under vacuum up to 44 ... 46% soluble substances in finished products. Applying the proposed procedure allow the manufacture of biological products with a value relevant, with low sucrose content and high degree of structural stability of the rheological fruit, jam due to partial dehydration. The work include physical and chemical testing, sensory analysis of fruit and jams produced by traditional technology and technology developed and factors which were taken into account in obtaining experimental samples . The quality of products with low sucrose depends on many factors such as: fruit dry matter weight standardized and sucrose mass (report parts fruit: sucrose); fruit quality (titratable acidity, content of pectic substances); gelling agent (natural gelling agent); product consistency (water mobility, water activity).

Keywords: strawberry jam, low sugar content, partial dehydration of fruits, structural stability

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1. INTRODUCTION

It is regrettable that in recent years Moldova has considerably decreased volume gelificate fruit products (Fig.1).
This is due to both lower demand for these products to the consumer and offers a small selection of the entrepreneurs in the country. Businesses are not interested in expanding the volume of product type jam, sweetness, jam fruit because under existing technology is the increased consumption of sugar leading to getting a sweet taste and excessive cost of products is quite high. It also noted that industrial manufactured products are unstable in terms of the levels of biologically active substances are quickly browned and look unattractive. Solving these problems would be diversifying assortment pasteurized fruit products while developing new manufacturing technologies that would allow to obtain quality products and stable storage.
In this context of interest process for obtaining Comfiture jam and low-sucrose, developed at the Department of Conservation Technology UTM, the use of which would allow obtaining quality products with a high content of biologically active substances and sensory properties, remarkable taste fruit sweet taste and colour harmonized feature fruits used.
The paper considers the investigations conducted to assess the sensory quality of products developed under the aforementioned process.

2. MATERIALS AND METHODS

The research was estimated on different varieties of strawberries, raspberries, cherries, plums grown in Moldova. From these samples were obtained fruit jam, jam, comfiture after existing technologies and new technologies developed by us**.**
Both the fruit and the finished products were analyzed following physical and chemical indicators by standard methods: soluble substance content (GOST 28562-90); titratable

acidity (GOST 255550-82); active acidity pH (GOST 36188-84).

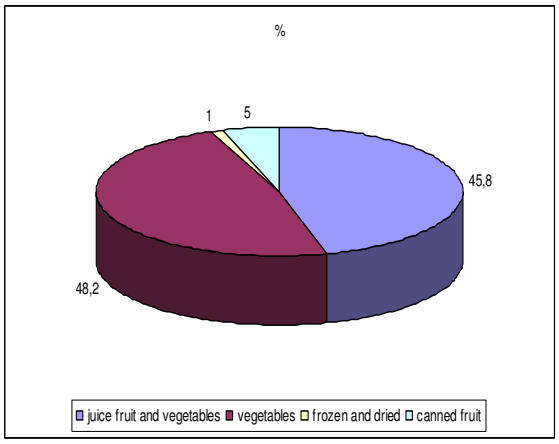


Fig.1. Assortment of fruit and vegetable products produced in Moldova in recent years

The appreciation of the sensory quality of products taste was done after 3 and 6 months storage at room temperature for 20 ± 2°C. The tasting took into account the following characteristics: appearance, colour, flavour and smell and consistency of product. Sensory characteristics were evaluated by a scoring system, the maximum being 5 points.

3. RESULTS AND DISCUSSION

Conservation Technology Department staff have developed a new process for obtaining jam, sweetness fruit, including supplementation of sucrose and gelling substances in raw materials; vacuum boiling of the mixture obtained, characterized by those that initially, to boiling, the raw material is dehydrated partially then add 30 ... 50 parts by weight of sucrose per 100 parts by mass of partially dried raw material containing 16 ... 22 parts by mass of soluble dry substances (Sandulachi et.al., 2008).

This article concerns the evaluation results of strawberry jam.

Applying the proposed procedure allowed the manufacture of biological products with a value relevant, with low sucrose content and high degree of structural stability of the rheological fruit, jam due to partial dehydration.

The essence of the process is partial dehydration of fruits, fruit against the introduction of sucrose: sucrose 1: 0.4 ... 0.6, boiling gelling agent and concentration under vacuum up to 44 ... 46% finished products. This procedure allows obtaining quality products with a high content of biologically active substances in the increase of fruit mass useful pleasant taste, smooth and moderately sweet with a pretty significant stability. In Table 1 shows the physico-chemical indicators of strawberry jam made by the method developed.

In considering the sensory properties studied were taken into account colour, taste, smell, flavour, texture and consistency of product. The main goal was to obtain quality products, with lovely sensory properties and shelf stable.

Table 2 shows the sensory characteristics of strawberry jam produced by traditional technology and that obtained by technology developed. Figure 2 shows the factors which were taken into account in obtaining experimental samples.

Table 1. Physico-chemical indicators of strawberry jam low-sucrose

Product analyzed	Fruits			Strawberry jam			
	Soluble dry substance, %	*p*H	Titratable acidity, %	Ratio Fruit Sucrose	Soluble dry substance, %	*p*H	Titratable acidity, %
Strawberry jam	6,5	3,36	1,2	100 :60	46	3,5	0,3

Table 2. Assessment of strawberry jam sensory characteristics obtained by different methods

Product analyzed	How to obtain	Organoleptic				
		aspect	color	taste	flavor and odor	consistency
Strawberry jam	Traditional technology	unattractive	brown, repulsive	caramelized sugar taste	barely smell and flavor of strawberries	strong gelling
	technology developed	nice	intense natural fruit typical	delicious, close to that of fresh strawberries	intense	gelling

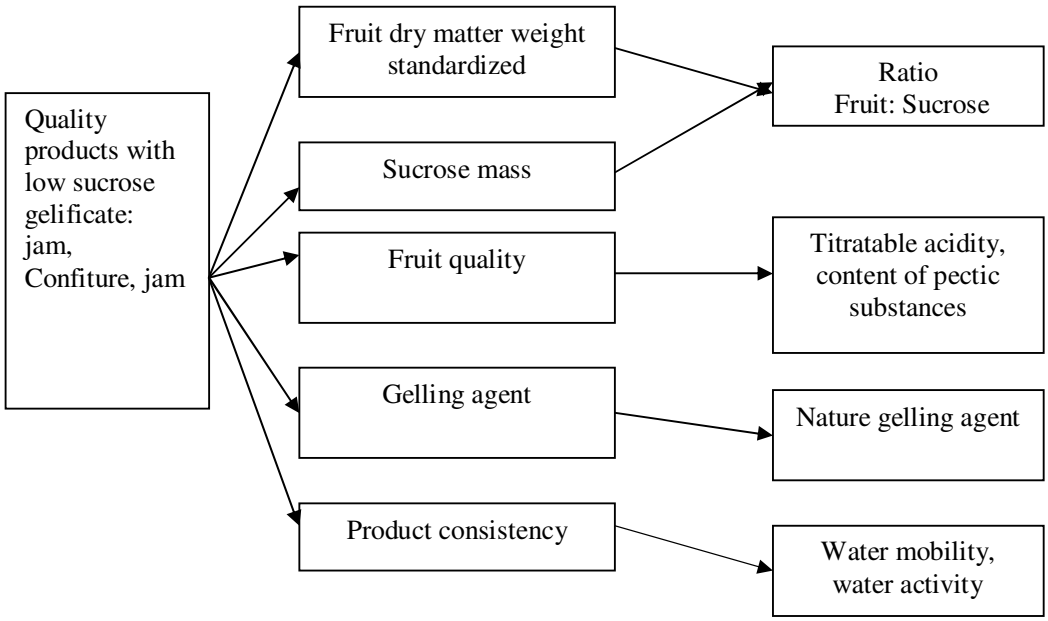
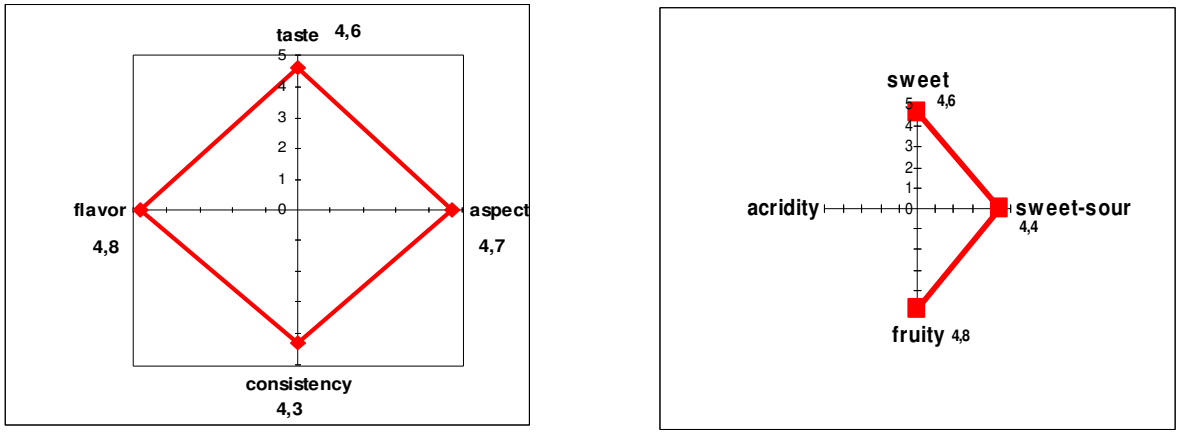


Fig. 1. Decisive factors in the production of low-sucrose gelified products

Sensory characteristics of the investigated products were carried out and score (maximum 5 points). The data were statistically processed. Fig. 3 shows the sensory properties (a) and taste properties (b) of the strawberry jam obtained through the technology developed.

Sensory analysis, based on 5 points of the experimental samples of strawberry jam II show that was appreciated by the best results: the taste was evaluated by 4.4 points, the most pleasant sweet taste sour; appearance (colour) - 4.7 points; smell - 4.8 points and consistency - 4.3 points. In this sample ratio strawberries composition: sugar was 1: 0.3. The content of soluble substances of the product was 46.0%.

In general, sensory properties of experimental samples were higher than the products obtained by traditional technology.



(a) (b)

Fig. 2. Diagram of sensory properties and taste sensations of strawberry jam

4. CONCLUSIONS

- Based on experimental data we can conclude that technology manufacturing gelified products type jam, Comfiture, jam low-sucrose allows obtaining quality products with nutritional value as a result of sea relevant content produced fruit.
- From the sensorial point of view these products are characterized by pronounced taste of fruit, sweet and pleasant aroma optimized.
- From economical point of view using new technology reduces product cost and increases manufacturing profitability.

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