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Sensory method for the analysis of milk dessert from curd whey

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Abstract. The introduction and development of functional products is an urgent topic in the context of a difficult economic, environmental and social situation in the world and in the Russian Federation. Organoleptic indicators are one of the important criteria for evaluating a food product in the formation of market demand. The aim of our research was to evaluate the organoleptic qualities of a dairy dessert made from curd whey. Curd whey is a type of milk whey. Studies have shown that prototype 3 has the highest organoleptic characteristics, in which an increased concentration of gelling components by 16% was used and apple-pear juice was contained. All samples have high score, which means that the use of these samples of the developed curd whey dessert meets the expectations of the consumer.

1. Introduction

Human nutrition and diet is the main condition for the life of the body [1-6]. The well-being, health and person's working efficiency depends on food. The introduction and development of functional products is a topical issue in a difficult economic, environmental and social situation in the world and in the Russian Federation [7-12]. Functional products are the basis of a healthy lifestyle and a promising area for the creation of food products with a wide range of applications and a narrow focus on a specific organ, system or disease.

An important role for rational nutrition is also assigned to periodic creation of modern, fundamentally new, balanced in its composition food products [13-20].

The main principle of the formation of modern functional products is to achieve the maximum possible degree of full value and safety of products that people use [21-25].

In the Russian Federation, the rate of production of functional products is growing now. It is becoming more and more popular with consumers. At the same time, an increasing number of products are being produced in the country, which are enriched with various vitamins and other substances useful for the human body. Such products are currently very important for the healthy nutrition of people.

Organoleptic indicators are one of the important criteria for evaluating a food product in the formation of demand in the market [26-29]. Nutritional value and chemical composition are considered



secondarily by most consumers. New recipe compositions of dairy products are being developed, and optimized technologies are proposed [30-32].

The aim of our research was to evaluate the organoleptic qualities of a dairy dessert made from curd whey.

2. Material and methods

The object of the research is a milk dessert made from curd whey. Curd whey is a type of milk whey. An important component of this raw material is lactose. It is a unique carbohydrate of animal origin. It contains lactic acid, low molecular weight protein substances that have biological activity.

This milk dessert made from curd whey contains the following components: curd whey; fruit or berry juice; gelatin; agar; pectin; sodium alginate; stabilizer "Hamulsion"; dry demineralized whey; purified concentrate of sweet substances of stevia; vitamin premix H33053; water.

The process of making a dessert is as follows: juice is squeezed out of sorted and washed berries, fruits or vegetables. The remaining pulp is poured with hot clarified whey and boiled for three minutes. The broth is filtered, cooled to a temperature of 50 ° C, pre-prepared gelatin, agar, pectin, sodium alginate, stabilizer "Hamulsion", vitamin premix H33053, dry demineralized whey, purified concentrate of sweet stevia substances is added. This mixture is kept for 5 minutes to swell, then stirred and whipped until the dry components are completely dissolved. The mixture is pasteurized at a temperature of 90 ° C for 3 minutes. The resulting mixture is cooled to a temperature of 35–40 ° C and combined with juice, stirred, whipped and packaged in cups.

For research, 3 samples were taken. The differences between the samples consisted in the use of different juice and concentration of gelling components: sample 1 contained apple juice, and the concentration of gelling components was higher by 9%; sample 2 contained cherry juice and the concentration of gelling components was 9% higher; sample 3 contained apple-pear juice (the ratio was 1: 1), and the concentration of the gelling components was 16% higher.

Organoleptic indicators were assessed on a five-score scale of the quality of dairy desserts made from curd whey, in accordance with GOST R 53161-2008.

When assessing the organoleptic characteristics of the product, various methods, qualitative and quantitative, were used in practice. As for the implementation of a qualitative assessment, it is a description. As for the quantitative assessment, it can be characterized primarily by the intensity of certain sensations. It turns out to be expressed in the form of numbers, which are counted in accordance with a certain scale.

The descriptive organoleptic properties of a dairy dessert, which is made from curd whey, include a number of important indicators that are characteristics of this product. This is the color of the product, its appearance, smell, taste, and consistency.

3. Results and discussion

When carrying out the organoleptic evaluation of the product, its appearance and color were determined after opening the package. The product was carefully examined without stirring. In this case, the presence of mold on the surface of the product was not allowed. The consistency of the product was dense.

When carrying out this type of product assessment, it was required to note in it all the flaws in smell and taste (bitter, sharp, with the presence of an off-taste, too sweet, etc.), as well as defects in the appearance of the product (with the presence of an atypical shade, etc.). In addition, the lack of the available consistency of the product (granular, slimy, loose, or extremely dense) was taken into account.

The organoleptic assessment of the quality of the prototypes of this product was carried out in accordance with a 10-score scale that was created by us. It is presented below in table 1.

To translate quality into quantity, experts can use special dimensionless scales when assessing a product. These are scales using score and sometimes fractions of one. It can also be percentage. As for the score scale, these are numbers and certain quality characteristics inherent in the product. The score scale is needed to quantify a product. It reflects the level of one or another quality attribute defined in

the product considered in the product. The use of this scale presupposes score, and it is customary to understand it as the number of quality levels that are included in this scale. In this case, the total number of assessment points in practice does not always fully coincide with the number of points, since the latter can be divided into fractions (1.1; etc.) Also, not all points (5, 10, etc.) may be applied in the assessment. In particular, the scale with the highest score of 5 points with the presence of a gradation of 0.5 has the same range as the scale in which 10 points, but the gradation is 1. If there is no 0 in the indicated scales, then their range has 10 different quality levels for the product being evaluated. Among the obvious disadvantages of the scales with a large number of points for assessing the presence of "dead zones" with unsatisfactory ratings.

Table 1. Ten-point scale for evaluating the organoleptic characteristics of the product.

Graduation	Score	Quality
5	10	excellent
4	8	good
3	6	satisfactory
2	4	bad (barely acceptable)
1	2	very bad (unacceptable)

In the presence of a 5-score system in the conditions of using a comparative assessment of different samples, experts can also carry out a differentiated assessment. In particular, they can use the value of half a point, or express an attitude towards the product in addition to the assessment in the form of points, also with plus and minus signs. The organoleptic assessment of the samples was carried out by the tasting committee. At the same time, special tasting cards were filled in. Information regarding the assessment of the organoleptic characteristics of products is presented in table 2.

Table 2. Organoleptic characteristics of a milk dessert made from curd whey.

Indicator	Research results
Taste and smell	Clean, typical for this type of dessert, without extraneous tastes and odors (with a weakly pronounced characteristic taste of filler)
Consistency	Dense
Structure	Uniform without noticeable lumps of stabilizer
Colour	Uniform throughout the mass of the product, corresponding to the type of dessert filler
Appearance	Dessert portions of various shapes due to the geometry of the forming or dispensing device or consumer packaging

It can be seen from the table that the appearance and consistency of the developed product have a homogeneous structure, taste and smell, with a pronounced characteristic taste of the filler, and the color is due to the presence of the ingredients introduced. Thus, the developed product fully meets the requirements of regulatory documents. The organoleptic assessment of the quality of the test samples of milk dessert made from curd whey was carried out according to a standard 5-score scale developed by us, the results of which are presented in table 3.

Table 3. Organoleptic characteristics of a milk dessert made from curd whey.

Indicator	Prototype 1	Prototype 2	Prototype 3
Taste and smell, average score	9.0	8.2	9.5
Structure, average score	8.9	7.9	9.5
Consistency, average score	8.9	9.5	9.8
Appearance, average score	9.5	9.0	9.4
Color, average score	8.0	8.2	8.3

Profilograms of organoleptic indicators of test samples of dairy dessert made from curd whey are shown in figures 1-3.

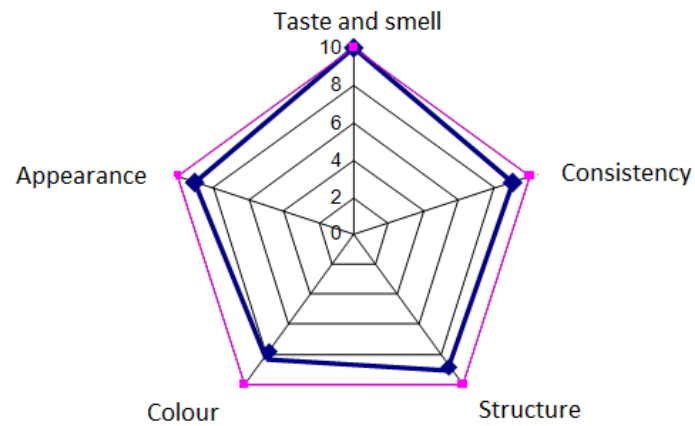


Figure 1. Profilogram of the organoleptic characteristics of the prototype 1.

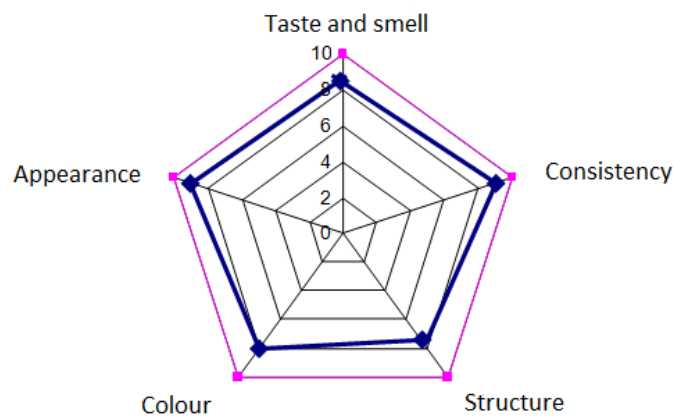


Figure 2. Profilogram of the organoleptic characteristics of the prototype 2.

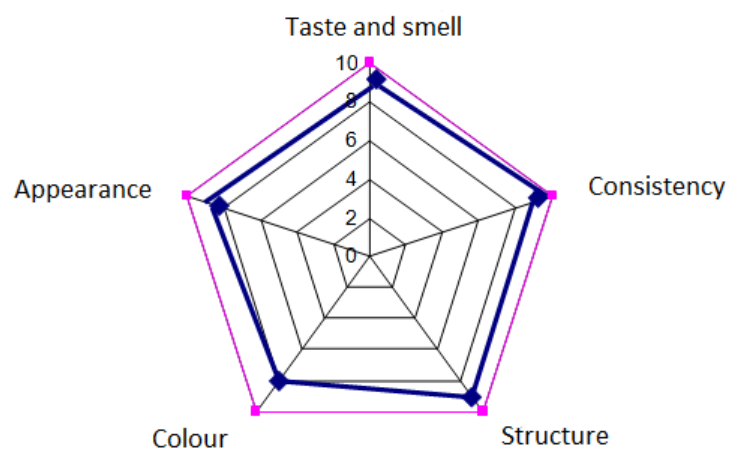


Figure 3. Profilogram of the organoleptic characteristics of the prototype 3.

4. Conclusion

From the results of the organoleptic assessment, it can be seen that the highest organoleptic characteristics are possessed by the prototype 3, in which an increased concentration of gelling components by 16% and contained apple-pear juice were used. All samples have high marks, which means that the use of these samples of the developed curd whey dessert meets consumer expectations.

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