UDC 663.8

DESCRIPTOR-PROFILE METHOD FOR DETERMINING THE QUALITY OF APPLE JUICE SAMPLES

A. Lilishentseva, Candidate of technical science
A. Smoliar, postgraduate student
The department of commodity science of food products
Belarus State Economic University
Sverdlova st., 7, Minsk, Republic of Belarus, 220030

DOI: https://doi.org/ 10.15673/fst.v13i4.1564

Article history

Received 24.06.2019
Reviewed 05.09.2019
Revised 28.09.2019
Approved 03.12.2019

Correspondence:

A. Smoliar
E-mail: ann-amber@yandex.ru

Cite as Vancouver style citation

Lilishentseva A, Smoliar A. Descriptor-profile method for determining the quality of apple juice samples. Food science and technology. 2019; 13(4):118-126. DOI: https://doi.org/ 10.15673/fst.v13i4.1564

Цитування згідно ДСТУ 8302:2015

Lilishentseva A., Smoliar A. Descriptor-profile method for determining the quality of apple juice samples // Food science and technology. 2019. Vol. 13, Issue 4. P. 118-126 DOI: https://doi.org/ 10.15673/fst.v13i4.1564

Abstract. To assess the competitiveness of products abroad, the method of descriptor-profile analysis is widely used, the essence of which is that the complex concept of one of the organoleptic properties (taste, smell, texture) is in the form of a set of simple components (descriptors) that are evaluated by tasters intensity on the appropriate scale. The method allows comparing the sensory characteristics of the products produced with competitors and developing the sensory profiles of the original standards (brands) of products. The article presents the results of scoring the quality of nine samples of apple juice. As a result of the work carried out by the commission of appraisers of taste, fruit juice descriptors were developed. Based on the marketing research, consumer preferences were studied and the coefficients of significance of fruit juice descriptors were determined. Further, a 50-point scale for evaluating the quality of fruit juices based on the received descriptors was developed. Using the developed point scale, the quality of nine samples of reconstituted apple juice was assessed, as a result of which a sample of apple juice was determined, which scored the maximum number of points and approached the profile of an ideal apple juice. Currently abroad profile method of tasting analysis is used: for a comprehensive assessment of the quality of the food; to regulate vinification processes in accordance with the desired flavor profile of wines (USA); assessment of the quality of complex products (chocolate, coffee, tea, sauces); when developing new products by companies such as Nestle, Pepsico, CocaCola, RC Cola, Sweppes, McDonalds, etc; when developing and evaluating the flavor profile of flavors by companies such as IFF (France), Quest (Netherlands), Dohler (Germany), Frutarom (Israel), Sargill (USA); in the preparation of defectological charts of food products; when training tasters; when monitoring the stability of the organoleptic characteristics of the food product. The proposed descriptor-profile method has great prospects in organoleptic analysis due to its flexibility and the ability to adapt it to solve various tasks of a production or research nature.

Keywords: apple juice, descriptor-profile analysis method, evaluators, descriptors, significance coefficients, quality rating scale.

Introduction. Formulation of the problem

Sensory assessment carried out using the human senses is the most ancient and widespread method for determining the quality of food products. Modern laboratory analysis methods are more complex and time-consuming in comparison with organoleptic assessment and allow characterizing particular quality features. Organoleptic methods quickly, objectively and reliably give an overall assessment of the quality of products. Touch control allows you to quickly and purposefully act on all stages of food production. The scientifically organized organoleptic sensitivity analysis surpasses many laboratory tests, especially indicators such as taste, smell and texture. Mistakes occur with an unprofessional approach to sensory methods for evaluating products [1].

Analysis of recent research and publications

Sensory analysis – analysis using sensory organs (highly specific receptor organs), which provide the body with information about the environment through vision, hearing, smell, taste, touch, vestibular reception and interception [2].

All methods of sensory assessment are divided into two large classes: analytical and consumer. Analytical methods include three types of methods: distinctive, descriptive, and methods using scales and categories. To conduct an analytical assessment, testers must meet the requirements for selected testers. For such a tasting commission, sensory evaluation by analytical methods usually does not cause difficulties, and the results obtained are, as a rule, quite reliable and reproducible [3].

If a distinction is required between test products,

distinctive sensory assessment methods are used. If you need to identify and evaluate the sensory characteristics of a product, a descriptive analysis is performed. The task of the testers, in this case, is to determine what sensory characteristics (attributes) are present in the product and what is their intensity. In analytical tests, tasters should leave personal addictions and hedonic reactions aside [4].

It should be noted that the creation of competitor product profiles is closely related to the possibility of identifying directions for adjusting sensory properties, improving products and positioning them in the consumer market.

Assessment of competitiveness by the profile method includes the development of a dictionary of sensory product characteristics, specialized questionnaires for testing and the implementation of a tasting project. After that, the analysis of the obtained data is carried out, including the verification of reliability by statistical methods, the construction of sensory profiles of product samples and the preparation of recommendations for adjusting sensory properties [5,6].

Another area of use of profile descriptor analysis is the development of profiles of the organoleptic properties of reference products, which may be interesting for enterprises in terms of assessing the stability of the organoleptic characteristics of the product, and therefore the high demand for it, as well as the prospects for reaching additional consumer segments of these products or entering new markets. In order to create the profile of the reference product, the company selects the most promising, original, highly sought-after sample, for which sensory characteristics are developed to describe its personality. Then carry out an assessment of the intensity of the selected characteristics. Based on the data obtained, a profile of the reference product is built. Subsequent actions in relation to the received standard are to trace its configuration (profile) for a certain time on the basis of monitoring data conducted by the tasting commission. At the same time, it is important to collect and analyze data regularly (online) [7].

The advantage of the profile method is that the complex concept of one of the organoleptic properties (taste, smell or texture) is represented as a combination of simple components (descriptors), which are evaluated by tasters in terms of quality, intensity and order of appearance [8].

To build a sensory profile, special selection and training of tasters is carried out. In this case, individuals are selected who are able to decompose the general impression of the quality of the studied product into its constituent features and quantify them. It is proved that 10% of tasters cannot carry out sensory assessment by the profile method. Profile analysis involves thorough knowledge by tasters of product properties and good sensory memory for its individual characteristics [9,10].

The quantitative descriptor-profile method allows you to solve many problems of the food manufacturer in the field of organoleptic analysis, and in the first place: a comprehensive assessment of the quality of food products, including products with a complex flavor profile; development of new customer-oriented products, as well as rebranding of existing products; control of production processes, storage and transportation; study of consumer preferences and acceptability; a comparative assessment of the advantages and disadvantages of organoleptic parameters in comparison with competing products; training participants in organoleptic tests [11].

The **purpose** of this work is to assess the quality of samples of reconstituted apple juice based on developed descriptors. To achieve this goal it is necessary to solve a number of problems:

- to study the assortment of fruit juices in the market of the Republic of Belarus;
- select selected fruit juice evaluators;
- compile a panel of descriptors of fruit juice;
- draw up a questionnaire for consumers;
- conduct a marketing research of consumer preferences when buying fruit juice;
- determine the significance coefficients of descriptors based on market research;
- make a taste-aromatic portrait of the perfect apple juice;
- develop a grading scale for evaluating apple juice based on compiled descriptors and certain significance factors;
- to assess the quality of samples of apple juice based on the developed point quality assessment.

With a detailed study of the descriptor-profile method of food research, both domestic and foreign special literature was studied. In scientific articles Lisitsina A.B. “An integrated approach to organoleptic evaluation as a tool to improve product quality”, N. Zavorokhina “The use of the descriptor-profile method of tasting analysis in a comparative assessment of the quality of cheese”, N. Merkulova “Determination of product taste”, Semenova EA. “Instrumental sensory methods for assessing the quality of canned fish”, A. Lilishentseva “Control of the quality characteristics of juice products”, “Food adequacy of vegetable juices”, L. Melnikova “Modern approaches to assessing the sensory quality of fermented vegetable and fruit products”, K. Nachay “Raise a Glass to Innovative Fruit and Vegetable Beverages”, “Taking a Fresh Look at Fruits and Vegetables”, “Fruits and Vegetables Move to the Forefront”, D. Despain “Fruit-Focused Formulating”, Neil H. Mermensteil “Preventing Juice Spoilage” reflects the main features of sensory analysis, organoleptic assessment of food quality, instrumental methods of food research are considered, attention is paid to the quality problems of raw materials, finished products, the processes that occur during food storage products affecting the quality of the goods, as well as existing domestic and foreign modern tasting methods for researching food products are analyzed.

Research materials and methods

During the research, organoleptic, measuring, calculated, descriptor-profile research methods were used.

To establish a number of descriptors, the head of the group of appraisers suggested that testers taste three samples of fruit juice recovered in a volume of 1 liter of different manufacturers. Data on manufacturers of fruit juices are presented in table 1 [12-14].

Initially, the task was to develop descriptors of fruit juices, on the basis of which the quality of samples of apple juice will be evaluated in the future.

Testers were selected to develop fruit juice descriptors. According to ISO 11035, taking into account individual discrepancies, the minimum number of testers in a group should be at least six [8].

As experts, 6 expert commodity experts in food products graduated from the Belarusian State University of Economics with a degree in Commodity Science and Expertise of Goods.

During the tasting, the testers formulated their perceptions of fruit juice samples using descriptors.

Further, 104 descriptors formulated by the testers were grouped into the following categories: appearance, smell, taste, texture. Descriptors developed during the tasting process are shown in Table 2.

Further, during the discussion, a group of testers reduced hedonic terms, quantitative terms, terms with the name of the product in their names, as well as irrelevant terms. The terms that are considered unsuitable for the description of products and the establishment of differences between them in terms of organoleptic analysis have also been reduced. The results of the descriptor reduction are shown in table 3.

To further reduce the list of terms (descriptors), you need to make sure that the testers have a good understanding of the meaning of each of the descriptors. Testers at this stage received three samples of fruit juice, and then they need to determine the perceived severity for each of the descriptors used, assigning it a rating on a scale from 0 to 5, stipulating that 0 is equivalent to the lack of perception of the property in question [8]. The severity scale for descriptor reduction is shown in table 4.

Table 1 – Objects of experimental research

Sample No	Name of fruit juice	Manufacturer
Sample No 1	Apple juice «ABC» reconstituted, clarified, pasteurized	ODO «ABC», Repablic of Belarus, Grodno, st. Pobedy, 27
Sample No 2	Orange juice «Dobryi» restored, clarified	UE «Vlanpak», Repablic of Belarus, Smolevichi, st. Vokzalnaya, 5B.
Sample No 3	Multifruit juice «Sochnyi» clarified, reconstituted, pasteurized and aseptically packaged	JLLC «Oazis Group», 213823, Repablic of Belarus, Bobryisk, st. Nahimova, 1

Table 2 – List of designed fruit juice handles

Appearance	Smell	Taste	Consistency
pale	appetizing	rich	homogeneity
familiar	fragrant	bitterness	astringent
qualitative	invigorating	burning	viscous
beautiful	taste of preservative	strong	thick
turbid	delicious	sourness	liquid
reliable	fragrant	the presence of sweets	changing
the presence of pulp	subtle	inexpressive	colloidal
non repellent	mysterious	incomprehensible	proper
unusual	easy	uneasy	the presence of suspensions
unusual for juice	alluring	refreshing	gentle
original	saturated	spicy	desaturated
right	natural aroma	fresh	heterogeneous
attractive	unforgettable	sugary	ordinary
habitual	neutrality	pleasant aftertaste	homogeneous
pleasant	acute	rancid	dense
transparency	distinct	spicy	uniform
plain	tangible	cutting	diluted
light coloured	heady	fresh	rare
pretty	strong	complicated	interspersed
average	mixed	juicy	typical for this type of juice
standard	specific	edible	weak
dark	persistent	tart	laminate
recognizable	thin	tonic	juice
bright color	perceptible	herbal	stable
	citrus	fruit	viscous
	pronounced	chemical	moderate
		exotic	
		richness of taste	

Table 3 – Abbreviated List of Descriptors

Appearance	Smell	Taste	Consistency
familiar	fragrant	bitterness	liquid
attractive	invigorating	sourness	tender
transparent	natural aroma	the presence of sweets	homogeneous
light coloured	distinct	refreshing	uniform
bright color		pleasant aftertaste	
		juicy	
		richness of taste	

Table 4 – Scale of expression

Descriptor	Not perceived	Weak	Pretty weak	Average	Pretty strong	Strong
	0	1	2	3	4	5

In order to reduce the number of descriptors at this stage, they are first classified in accordance with the geometric mean M, which is the square root of the product of frequency F, and the relative severity of I, each descriptor:

$$M = \sqrt{F \times I} \quad (1)$$

Where F – is the number of references to the descriptor in relation to the total number of possible references to this descriptor, expressed as a percentage;

1 – is the sum of the severity assigned by the entire group to the descriptor with respect to the maximum possible severity for the given descriptor, presented as a percentage.

The total number of times each descriptor is mentioned is 18 (three products x six evaluators).

Table 5 shows the frequency of reference for each descriptor.

The total possible degree of expression for each descriptor is 90 (a maximum of five on the scale of expression for three products with six evaluators = 5×3×3). Table 6 shows the relative severity of each descriptor. The next stage of the study was the classification of descriptors according to their importance. The results are shown in table 7.

Based on the classification of descriptors obtained, ten leading descriptors were finally selected.

The list of selected descriptors is shown in table 8.

Using marketing research, the significance for consumers of each descriptor for fruit juices developed by a group of evaluators was determined [16]. The results of the study are shown in table 9.

For the obtained 10 descriptors of fruit juice, a 50-point scale for assessing the quality of fruit juices was developed. For each descriptor, a quality gradation of 1 to 5 points was established. Thus, the best sample of fruit juice in its quality assessment can get a maximum number of points – 50.

The results of the developed point scale for assessing the quality of fruit juices based on the selected descriptors are shown in table 10.

The developed grading scale for evaluating fruit juices based on selected descriptors will make it possible to conduct an organoleptic assessment of the quality of apple juice samples in the future.

To conduct an organoleptic assessment of the quality of apple juices, nine samples of apple juice recovered in a volume of 1 liter of various manufacturers were selected. Data on the producers of apple juices are presented in table 11.

Table 5 – The frequency of mentioning each descriptor

Product	Descriptors																			
	Familiar	Attractive	Transparent	Light coloured	Bright color	Fragrant	Invigorating	Natural aroma	Distinct	Bitterness	Sourness	The presence of sweets	Refreshing	Pleasant aftertaste	Juicy	Richness of taste	Liquid	Tender	Hom-ogeneous	Uniform
№ 1	2	3	5	1	2	4	2	5	1	4	6	6	4	6	3	5	2	1	5	2
№ 2	1	3	6	2	2	3	3	6	2	5	5	4	5	4	2	4	3	3	4	3
№ 3	2	4	4	1	3	6	4	4	1	5	5	6	5	6	4	6	3	2	5	1
Number of references	5	10	15	4	7	13	9	15	4	14	16	16	14	16	9	15	8	6	14	6
F (%)	27.8	55.6	83.3	22.2	38.9	72.2	50.0	83.3	22.2	77.8	88.9	88.9	77.8	88.9	50.0	83.3	44.4	33.3	77.8	33.3

Table 6 – Relative severity of each descriptor

Product	Descriptors																			
	Familiar	Attractive	Transparent	Light coloured	Bright color	Fragrant	Invigorating	Natural aroma	Distinct	Bitterness	Sourness	The presence of sweets	Refreshing	Pleasant aftertaste	Juicy	Richness of taste	Liquid	Tender	Homogeneous	Uniform
No 1	17	24	28	11	10	28	15	30	10	20	25	30	25	29	10	28	9	8	15	12
No 2	18	22	27	10	12	25	14	25	8	18	26	28	23	25	13	22	12	9	17	8
No 3	16	25	28	9	9	26	17	26	6	19	28	27	21	26	14	26	15	11	19	10
PCED*	51	71	83	30	31	79	46	81	24	56	79	85	69	80	37	76	36	28	51	30
I (%)	56.7	78.9	92.2	33.3	34.4	86.7	51.1	90.0	26.7	62.2	86.7	94.4	76.7	88.9	41.1	84.4	40.0	17.1	56.7	33.3

* Perceived severity of each descriptor

Table 7 – Classification of descriptors by their importance

Parameter	Descriptors																			
	Familiar	Attractive	Transparent	Light coloured	Bright color	Fragrant	Invigorating	Natural aroma	Distinct	Bitterness	Sourness	The presence of sweets	Refreshing	Pleasant aftertaste	Juicy	Richness of taste	Liquid	Tender	Homogeneous	Uniform
I	0.567	0.789	0.922	0.333	0.344	0.867	0.511	0.9	0.267	0.622	0.867	0.944	0.767	0.889	0.411	0.844	0.4	0.171	0.567	0.333
F	0.278	0.556	0.833	0.222	0.389	0.722	0.5	0.833	0.222	0.778	0.889	0.889	0.778	0.889	0.5	0.833	0.444	0.333	0.778	0.333
M	0.397	0.662	0.876	0.272	0.366	0.791	0.505	0.866	0.243	0.696	0.878	0.916	0.772	0.889	0.453	0.838	0.421	0.239	0.664	0.333
As a per-centage	39.7	66.2	87.6	27.2	36.6	79.1	50,5	86.6	24.3	69.6	87.8	91.6	77.2	88.9	45.3	83.8	42.1	23.9	66.4	33.3
Descriptor classificati on	15	11	4	18	16	7	12	5	19	9	3	1	8	2	13	6	14	20	10	17

Table 8 – Designed fruit juice descriptors

Appearance	Smell	Taste	Consistency
transparent	fragrant	bitterness	homogeneous
	natural aroma	sourness	
		the presence of sweets	
		refreshing	
		pleasant aftertaste	
		richness of taste	

Table 9 – The coefficients of significance for each descriptor

Appearance	Relevance	Smell	Relevance	Taste	Relevance	Consistency	Relevance
transparent	0.05	fragrant	0.10	bitterness	0.05	homogeneous	0.10
		natural aroma	0.15	sourness	0.05		
				presence of sweets	0.10		
				refreshing	0.05		
				pleasant aftertaste	0.15		
				richness of taste	0.20		

Table 10 – Point scale for assessing the quality of fruit juices

Level of quality	Rating, points			
	Excellent	Good	Satisfactory	Unsatisfactory
Transparency	Corresponds to the fruit characteristic of the drink; glitter color (5)	The same, but without shine (4)	Weak opalescence (3)	Precipitation possible (2)
Fragrant smell	Full, pronounced (5)	Pleasant Aroma (4)	Mild flavor (3)	Unnatural Aroma (2)
Natural aroma	Peculiar to the fruits of which juice is made (5)	Recognizable fruit aroma from which juice is made (4)	The unrecognized aroma of fruit from which juice is made (3)	The presence of chemical notes in the aroma of juice (2)
Bitterness	Moderate, not expressed (5)	Expressed (4)	Strongly Expressed (3)	Highly expressed, interfering with the perception of the taste of the drink (2)
Sourness	Moderate, not expressed (5)	Expressed (4)	Strongly Expressed (3)	Highly expressed, interfering with the perception of the taste of the drink (2)
The presence of sweets	Moderate, severe (5)	Moderate, unexpressed (4)	Mild, almost not felt (3)	Lack of sweets (2)
Refreshing taste	Pronounced refreshing sensations (5)	Pronounced refreshing sensations (4)	Unexpressed refreshing sensations (3)	Not refreshing (2)
Pleasant aftertaste	Pleasant aftertaste (5)	Pronounced pleasant aftertaste (4)	Unexpressed pleasant aftertaste (3)	Lack of pleasant aftertaste (2)
Richness of taste	Brightly Flavored (5)	Saturated taste (4)	Taste poorly saturated (3)	Taste desaturated (2)
Homogeneous consistency	Without inclusions, suspensions, the same density of juice	Without inclusions, suspensions, but different density of juice in the whole product (4)	Weak consistency (3)	The presence of inclusions, suspensions, sediment (2)
Total point	41–50	31–40	21–30	20

Table 11 – Objects of experimental research

Sample No	Name of Apple Juice	Manufacturer
Sample No 1	Apple juice «Sochnyi» clarified, reconstituted, pasteurized and aseptically packaged	JLLC “Oasis Group”, 213823, Republic of Belarus, Mogilev region, Bobruisk, st. Nakhimova, 1
Sample No 2	Apple juice «Dobryi» clarified, restored, pasteurized	UE “Vlanpak”, Republic of Belarus, Minsk region, Smolevichi, st. Vokzalnaya, 5B
Sample No 3	Apple juice «ABC»clarified reconstituted sterilized, aseptically packed	ODO “ABC Firm”, 230026, Republic of Belarus, Grodno, st. Pobedy, 27
Sample No 4	Apple juice «JAFFA» clarified reconstituted pasteurized	JV “Vitmark-Ukraine”, 65007, Ukraine, Odessa, st. Vysokii, 22
Sample No 5	Apple juice «Sandora» clarified, reconstituted, sterilized and aseptically packaged	LLC “Lebedyansky”, 399610, Russian Federation, Lipetsk Region, Lebedyan, st. Matrosova, 7
Sample No 6	Apple juice «Sady Pridonia» clarified restored, pasteurized	OJSC “Sady Pridonia”, 403027, Russian Federation, Volgograd Region, Gorodishchensky District, Sady Pridonia
Sample No 7	Apple juice «Rich» clarified reconstituted pasteurized	JSC "Multon", 192236, St. Petersburg, st. Sofiyskaya, 14
Sample No 8	Apple juice «No. 1» reconstituted, clarified, sterilized and aseptically packaged	LLC "Leto Trade", 220028, Republic of Belarus, Minsk, st. Mayakovsky, 127, bldg. 2, room 104
Sample No 9	Apple juice «Soki Ukrainy» reconstituted, clarified, pasteurized	LLC "ECO-SPHERE", 22400, Ukraine, Vinnitsa region, Kalinovka, st. I. Mazepa, 45

To assess the quality, 9 samples of recovered apple juice were selected, of which 4 samples were produced in the Republic of Belarus and 5 imported samples from the Russian Federation and Ukraine. All types of apple juice are clarified. 6 samples of the presented products were pasteurized, and the remaining 3 samples ("No. 1", "Sandora", "ABC") were sterilized. Samples numbered 1, 3, 5, 8 (apple juices of the brands "Juicy", "ABC", "Sandora", "No 1") are aseptically packed.

Research results

This article presents the results of an organoleptic assessment of the quality of apple juice samples using the profile-descriptor method.

During the study, we evaluated the appearance, taste, aroma and consistency of 9 samples of apple juice, based on the developed ten descriptors. The evaluation results are shown in table 12.

Table 12 – Point scale for assessing the quality of 9 samples of apple juice

Name/ Descriptor	The perfect apple juice sample	Sochnyi	Dobryi	ABC	JAFFA	San-dora	Sady Pridonia	RICH	№1	Soki Ukrainy
Transparent appearance	5	5	5	5	4	4	3	5	4	4
Significance coefficient	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Fragrant smell	5	5	5	4	4	5	4	5	4	4
Significance coefficient	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Natural aroma	5	4	5	4	3	4	4	4	4	3
Significance coefficient	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Bitterness	5	3	4	3	4	3	4	4	3	3
Significance coefficient	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Sourness	5	5	4	4	4	4	4	5	4	4
Significance coefficient	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
The presence of sweets	5	5	5	5	5	4	4	5	5	5
Significance coefficient	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Refreshing taste	5	4	4	5	4	5	5	5	4	4
Significance coefficient	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Pleasant aftertaste	5	4	4	4	5	4	4	5	4	4
Significance coefficient	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Richness of taste	5	5	5	5	4	4	4	5	4	5
Significance coefficient	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.
Homogeneous consistency	5	5	5	5	4	4	5	5	5	4
Significance coefficient	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	5	4.55	4.7	4.45	4.1	4.1	4.1	4.8	4.15	4.1

Conclusions

As a result of the scoring of the quality of 9 samples of apple juice, it was established that the highest number of points was scored by apple juice "RICH" (4.8 points), and the lowest points (4.1 points) were scored by "JAFFA", "Sandora", "Sady Pridonia" and "Soki Ukrainy".

According to the "Transparent appearance" descriptor, the maximum number of points was gained by juices of the brands "Sochnyi", "Dobryi", "ABC" and "RICH".

The juices of "Sochnyi", "Sandora" and "RICH" brands have the most "Fragrant smell".

The maximum number of points on the handle "Natural aroma" scored juice brand "Dobryi".

5 points on the descriptor "Bitterness" did not score a single apple juice.

5 points for the "Sourness" descriptor scored apple juices of the brands "Sochnyi" and "RICH".

All samples of apple juice, except for juices of "Sandora" and "Sady Pridonia", scored 5 points for the "Presence of Sweets" descriptor.

The most "Refreshing taste" are apple juices of the brands "ABC", "Sandora", "Sady Pridonia", "RICH".

The maximum number of points on the handle "Pleasant aftertaste" scored juices of the brands "JAFFA" and "RICH".

All samples of apple juice have a rich taste and on the descriptor " Richness of taste" scored 5 and 4.

The most "Homogeneous consistency" of apple juices of the brands "Sochnyi", "Dobryi", "ABC", "Sady Pridonia", "RICH", "No. 1".

Thus, using the developed descriptors and weighting coefficients, an assessment was made of the quality of apple juice samples, as a result of which the best sample of apple juice was determined - apple juice "RICH" (4.8 points).

References:

1. Rodina TG. Sensornyy analiz prodovolstvennykh tovarov. M.: ACADBMA; 2004.
2. Nachay K. Raise a Glass to Innovative Fruit and Vegetable Beverages. Food technology. 2017;4:120.
3. Chugunova. OV. Nauchnyy obzor: sensornyy analiz i ego znacheniye v otsenke kachestva i bezopasnosti pishchevykh produktov. Tekhnicheskiye nauki. 2016; 3:18-129.
4. Chugunova. OV, Zavorokhina NV. Ispolzovaniye metodov degustatsionnogo analiza pri modelirovanii retseptur pishchevykh produktov s zadannymi potrebitelskimi svoystvami: monografiya. M-vo obrazovaniya i nauki RF. Ural. gos. ekon. un-t. Ekaterinburg: Izd-vo Ural. gos. ekon. un-ta; 2010.
5. Mermensteil Neil H. Preventing Juice Spoilage. Food technology. 2012;11: 127.
6. Lisitsyn AB, Lazarev AA. Kompleksnyy podkhod k organolepticheskoy otsenke kak instrument povysheniya kachestva produktsii. Zhurnal vse o myase. 2017;2:4-7.
7. Nachay K. Taking a Fresh Look at Fruits and Vegetables. Food technology. 2015;10:130.
8. Nachay K. Fruits and Vegetables Move to the Forefront. Food technology. 2018;10:120.
9. Milo Ohr L. Fruitful Yields. Foodtechnology. 2012;6:125.
10. Despain D. Fruit-Focused Formulating. Food technology. 2013; 8:130.
11. Matison. VA, Arutyunova NI,. Goryacheva ED. Primeneniye deskriptorno-profilnogo metoda dlya otsenki kachestva produktov pitaniya. Pishchevaya promyshlennost. 2015;6:52-54.
12. SOOO «Oazis Grup». Soki i nektary «Sochnyy» [Elektronnyy resurs]. Rezhim dostupa: http://oasisdrinks.by/products/. Data dostupa: 06.05.2019.
13. ODO «Firma ABC». Soki i nektary [Elektronnyy resurs]. Rezhim dostupa: http://www.abcfood.net/ru/product/juice. - Data dostupa: 06.05.2019.
14. Dobryy soki i nektary. Multon [Elektronnyy resurs]. –Rezhim dostupa: http://dobry.ru/. Data dostupa: 06.05.2019.
15. Milo Ohr L. A Toast to Healthy Beverages**.** Food technology. 2017;12:125.
16. Milo Ohr L. Ingredients foe Active Lifestyle. Food technology. 2017;3:130**.**

ДЕСКРИПТОРНО-ПРОФІЛЬНИЙ МЕТОД ВИЗНАЧЕННЯ ЯКОСТІ ЗРАЗКІВ ЯБЛУЧНОГО СОКУ

Г.М. Лілішенцева, кандидат технічних наук, доцент, *E-mail*: lilishenceva@yandex.by
Г.В. Смоляр, магістрант, *E-mail*: ann-amber@yandex.ru
Кафедра товарознавства продовольчих товарів
Білоруський державний економічний університет
вул. Свердлова, 7, м. Мінськ, Республіка Білорусь, 220030

Анотація. Для проведення оцінки конкурентоспроможності продукції за кордоном широко використовується метод дескрипторно-профільного аналізу, сутність якого полягає в тому, що складне поняття одного з органолептичних властивостей (смак, запах, консистенція) представляють у вигляді сукупності простих складових (дескрипторів), які оцінюються дегустаторами по інтенсивності за відповідною шкалою. Метод дозволяє проводити порівняння сенсорних характеристик вироблюваної продукції з конкурентами і розробляти сенсорні профілі оригінальних еталонів (брендів) продуктів. В даний час за кордоном профільний метод дегустаційного аналізу застосовується: для комплексної оцінки якості харчових продуктів; для регулювання процесів вініфікації відповідно до бажаного смако-ароматичного профілю вин (США); оцінці якості продуктів складного складу (шоколад, кава, чай, соуси); при розробці продуктів-новинок такими компаніями, як Nestle, Pepsico, CocaCola, RC Cola, Sweppes, McDonalds та ін.; при розробці та оцінці смако-ароматичних профілю ароматизаторів такими компаніями, як IFF

(Франція), Quest (Нідерланди), Dohler (Німеччина), Frutarom (Ізраїль), Cargill (США); при складанні дефектологіческіх карт харчового продукту; при навчанні дегустаторів; при контролі стабільності органолептичних характеристик харчового продукту. Пропонований дескрипторно-профільний метод має великі перспективи в органолептичному аналізі завдяки гнучкості і можливості пристосувати його для вирішення різних завдань виробничого або дослідного характеру. У статті представлено результати балової оцінки якості дев'яти зразків яблучного соку. У результаті проведеної роботи комісією дегустаторів-оцінювачів розроблено дескриптори фруктових соків. На підставі маркетингового дослідження вивчено споживчі переваги та визначено коефіцієнти значущості дескрипторів фруктового соку. Далі розроблено 50-ти балову шкалу оцінки якості фруктових соків на основі отриманих дескрипторів. За допомогою розробленої балової шкали проведено оцінку якості дев'яти зразків відновленого яблучного соку, в результаті якої визначено зразок яблучного соку, який набрав максимальну кількість балів і наблизився до профілю ідеального яблучного соку.

Ключові слова: яблучний сік, дескрипторно-профільний метод аналізу, дегустатори-оцінювачі, дескриптори, коефіцієнти значущості, балова шкала оцінки якості.

Список літератури:

1. Родина Т.Г. Сенсорный анализ продовольственных товаров. Т.Г. Родина. М.: ACADBMA, 2004. 204 с.
2. Nachay,K. Raise a Glass to Innovative Fruitand Vegetable Beverages // Foodtechnology. 2017. № 4. 120 p.
3. Чугунова О.В. Научный обзор: сенсорный анализ и его значение в оценке качества и безопасности пищевых продуктов. Технические науки. 2016. № 3. С. 118-129.
4. Чугунова О.В., Заворохина Н.В. Использование методов дегустационного анализа при моделировании рецептур пищевых продуктов с заданными потребительскими свойствами: монография. М-во образования и науки РФ, Урал. гос. экон. ун-т. Екатеринбург: Изд-во Урал. гос. экон. ун-та, 2010. 148 с.
5. Mermensteil,Neil H. Preventing Juice Spoilage // Food technology. 2012. № 11. 127 p.
6. Лисицын А.Б., Лазарев А.А. Комплексный подход к органолептической оценке как инструмент повышения качества продукции // Журнал все о мясе. 2017. № 2. С.4-7.
7. Nachay K. Taking a Fresh Look at Fruits and Vegetables // Food technology. 2015. № 10. 130 p.
8. Nachay K. Fruits and Vegetables Move to the Forefront // Food technology. 2018. № 10. 120 p.
9. Milo Ohr L. Fruitful Yields // Food technology. 2012. № 6. 125 p.
10. Despain D. Fruit-Focused Formulating // Food technology. 2013. № 8. 130 p.
11. Матисон В.А., Арутюнова Н.И., Горячева Е.Д. Применение дескрипторно-профильного метода для оценки качества продуктов питания // Пищевая промышленность. 2015. № 6. С. 52-54.
12. СООО «Оазис Груп». Соки и нектары «Сочный» [Электронный ресурс]. Режим доступа: http://oasisdrinks.by/products/ Дата доступа: 06.05.2019.
13. ОДО «Фирма АВС». Соки и нектары [Электронный ресурс]. Режим доступа: http://www.abcfood.net/ru/product/juice. Дата доступа: 06.05.2019.
14. Добрый соки и нектары. Мултон [Электронный ресурс]. Режим доступа: http://dobry.ru/ Дата доступа: 06.05.2019.
15. Milo Ohr L. A Toast to Healthy Beverages // Food technology. 2017. № 12. 125 p.
16. Milo Ohr L. Ingredients foe Active Lifestyle // Food technology. 2017. № 3. 130 p.