Study Regarding the Importance of Sensory Assessment Applied to Traditional Romanian Cheeses

Ionuț NEAGU ¹⁾, Constantin SAVU ²⁾, Ovidiu SAVU ²⁾, Cătălina Nicoleta BOIȚEANU ²⁾

¹⁾ The Veterinary Sanitary and Food Safety Department Brașov, Romania

²⁾ Faculty of Veterinary Medicine Bucharest, University of Agronomic Sciences and Veterinary Medicine Bucharest, Romania; ionut.neagu@regalina.ro

Abstract. The sensory analysis by point scale method had the total average result scores, as follows: “urda” cheese type 15.60 points, bellows cheese-type 17.33 points, “telemea” cheese 18.87 points and for “cas” smoked cheese -type 18.51 points. Both pair method and triangular method confirmed that the sample 1 gained the unanimity preferences of cheese tasters participating in the evaluation.

Aim: This study is very important especially because cheese quality assessment by sensory analysis enables the identification of normal and abnormal states of those goods in the moment of examination and also because the sensory characteristics of cheeses provides the first clues to the freshness, alteration or degradation of their quality; in addition, certain sensory characteristics can provide information on the counterfeiting of these cheese assortments.

Keywords: Traditional Romanian cheese, sensory assessment, sensory scores, scale method, pair method, triangular method

INTRODUCTION

The research theme was chosen applied to traditional Romanian cheeses assortments, from Bran Rucar Pass, given to the share of food sensory quality that is 60% of their total quality.

This is important for the following core activities of any food production units, regardless of branch: reception (qualitative, quantitative), storage/ warehouse (storage conditions: light, temperature, humidity, air ventilation, rules of vicinity), transportation (routes and means of transport) and commercial presentation (display rules, stand, cold stores, etc.).

MATERIALS AND METHODS

The paper tries to bring new elements on the methodology used in order to elucidate some aspects related to traditional products' quality, products obtained by private producers in the Brașov district (Rucăr – Bran pass), Covasna district and Bistrița Năsăud district. Were analyzed organoleptically (by point scale method - ISO 22935-3°IDF 99-3, the pair's method - ISO (1983a) and the triangular method - ISO (1983b)) samples of four important traditional cheese types called: “urda”, “telemea”, “burduf” or bellows cheese and “cas afumat” or smoked curd cheese taken within the strategic and self-control program from individuals in the rural areas of Fundata, Poiana Sibiului, Șirnea, Pârâu, Cristian, Cincșor, Bran, Sohodol, Râșnov, Brașov, Bod, Roadeș, Hărman, Prejmer, Șoarș, Rupea, Lunca Călnicului, Bățanii Mari, Buzaiel, Bărcuț, Hălchiu, Făgăraș, Moeciu de Sus, Purcăreni, Bran – Șimon, Veneția de Jos, Vama Buzăului, Întorsura Buzăului, Vărghiș and Sita Buzăului. Analysis were made by the tasting panel consisting of 11 people specially trained for this purpose.

RESULTS AND DISCUSSIONS

In order to assess the sensorial quality of traditional Romanian cheeses (ISO 707[°]IDF 50; ISO 8589) using point scale method the products were analyzed and classified by categories as following (Tab.1)

Tab 1.

Ratings and sensory scores given to evaluated samples

Item	Total points number	Qualifying to be granted
1	19.50 – 20.00	Excellent
2	18.00– 19.40	Very good
3	16.00 – 17.90	Good
4	13.00 – 15.90	Satisfactory
5	Under 13.00	Unsatisfactory

Minimum values for the product to be considered appropriate

It is considered that are appropriate all cheeses evaluated by at least 13 points. Another condition that the product is considered appropriate is that none of the features may not be shown as zero. In this case the product is removed from the delivery and the entire batch is analyzed to determine the measures to be taken in order to further use.

If a product sensory analysis lies a product below the minimum acceptable score of 13 points, a new sample is taken of the same item and is subject to review in order to confirm or establish the measures for product's reconditioning or for directing it to other purposes (Nicolaescu, 2008).

Tab.2

Quantity and form in which samples are presented for sensory analysis

Group of assortments	Amount, form
"Urda" (ricotta-type cheese)	one block
"Telemea" in brine	1-5 barrels
"Burduf" cheese	3-5 bellows
"Burduf" cheese in fir bark	3-7 cylinders
Smoked curd cheese	1-10 pieces

Tab.3

Sensory characteristics of "Telemea" Cheese

Sensory characteristics	Characterization
Shape and dimensions	Rectangular pieces
	Square base pieces
	11/7 cm
	There are pieces of prismatic shape
	Triangular base pieces
	Slightly rounded edges are acceptable
Mass	1 kg
	Triangular pieces, 2 kg

Tab.4

Sensory characteristics of smoked curd cheese

Sensorial indicator	Characterization
Column layout	Wheels of uniform size
	Bark covers only the lateral side
The appearance of the wheels on the outside	Whole crust
	Smooth
	Clean
	Unwrinkled
	No stains
	No cracks
	Copper color
	Golden-yellow color
	Allowed small patches of green mould
	The wheels are covered with a protective film
	Allowed small bumps
The appearance of the wheels on the section	Slight traces of scraping
	Slight traces of cracks on the surface (5%)
	Clean core
	Homogeneous core
	No evidence of mould
Core color	Without fermentation mesh
	Allowed small elongated holes
	Uniformly throughout the mass
Core consistency	From yellow to golden yellow color
	Hard
	Less elastic
Smell and taste	When broken burst into strips
	Nice
	Characteristic of sheep's milk cheese, no foreign smell or taste

Tab. 5

Sensory characteristics of “Burduf” cheese (Bellows -type cheese)

Sensory characteristics	Characterization
The appearance of the bellows on the outside	Clean
	Well closed
The appearance of the bellows on the section	Homogeneous core
	No holes admitted
Color	White to yellow, uniformly throughout the mass
Smell and taste	Nice
	Characteristic of sheep's milk cheese, slightly salted and spicy no foreign smell or taste

Tab. 6

Sensory characteristics of “Urda” cheese (ricotta-type cheese)

Sensory characteristics	Characterization
The appearance of the block on the outside	Homogeneous mass
The appearance of the block on the section	Smooth
	Slightly granulated
Color	White, white to grey, uniformly throughout the mass, no evidence of mould
Smell and taste	Nice, sweet, characteristic of fresh “urda”

Tab. 7

Individual form for sensory analysis of “Urda” (ricotta-type cheese)

Code number of analysed product	Evaluation by points	Examined characteristics					Total points
		The appearance of the wheels on the outside		The appearance of the wheels on the section	Consistency	Taste	Smell
	Full marks	3	5	3	5	4	20
U-Day-1	Average	2.00	2.50	3.50	4.50	2.00	19.00
U-Day-2	Rating	2.00	3.00	3.00	5.00	3.00	16.00
U-Day-3	Rating	3.00	3.00	3.00	5.00	3.00	17.00
U-Day-4	Average	2.57	2.85	2.71	3.85	3.00	14.98
General average		2.39	2.83	3.05	4.58	2.75	15.60

Note: The name, the profession and the assessors age: Tab. 10

The period of the survey: 08/06/2012 - 12/06/2012

Remarks (reasons for the downgrading) _____

In most cases, we applied downgrading due to uneven appearance sometimes alternating section of visible white areas with intense yellow zone: that is caused by the traditional mixing manual maneuvers of the two types of cheese (cow and sheep) while obtaining the product. In this case, although there is not a defect in itself, has been applied downgrading as described in the preliminary sensory evaluation. Other downgradings were specifically caused by the strong smell of sheep cheese, which was not appreciated by all examiners, but this was a purely subjective consideration.

The sensory assessment of “Urda’s” characteristics by points scale method resulted in an average of 15.60 points which fall within the product category "satisfactory sensory qualities." Examined characteristics were: appearance (external and section), consistency, smell and taste.

The average sample of curd coded U-Day-1 was denoted by the maximum score of 19.00 points which corresponds with "very good" category. The other average three samples were noted with 16.00, 17.00 and 14.90 points. The main reason of downgrading was the heterogeneous appearance of the section, faults in consistency, the specific smell and taste, when not well enough expressed.

Tab. 8

Results of sensory analysis of “Burduf” (Bellows -type cheese) and “Burduf” cheese in fir bark

Code number of analysed product	Evaluation by points	Examined characteristics						Total points
		The appearance of the wheels on the outside		The appearance of the wheels on the section	Consistency	Taste	Smell	
		Package	Product itself					
	Full marks	3	4	4	3	4	2	20
B-Day-1	Average	2.50	3.50	4.00	2.50	4.00	2.00	18.5
B-Day-2	Rating	2.00	3.00	3.00	3.00	4.00	2.00	17.00
B-Day-3	Rating	2.00	4.00	4.00	3.00	3.00	2.00	18.00
B-Day-4	Average	2.00	2.71	3.57	2.14	3.71	1.71	15.84
General average		2.12	3.30	3.64	2.66	3.67	1.92	17.33

The sensory assessing (ISO 707°IDF 50; ISO 8589) by points scale method (ISO 22935-3°IDF 99-3) revealed that the bellows cheese (the traditional “burduf” cheese) registered results as following: sample denoted B-Day-1 obtained the mean score of 18.50 which makes it suitable for the category "very good sensory qualities"; that is also the case of the average sample denoted as B-Day-3, which received an average score of 18.00 points, the two samples being the most popular. The other two samples obtained in average 15.80 points (B-Day-4) and 17.00 points (B-Day-2) being rated as "satisfactory" and "good".

Tab. 9

Sensory individual analysis form for the “Telemea” (Feta –type) cheese (T) and smoked curd cheese (C)

Code number of analysed product	Evaluation by points	Examined characteristics										Total points	
		The appearance of the wheels on the outside		The appearance of the wheels on the section		Consistency		Taste		Smell			
		T	C	T	C	T	C	T	C	T	C	T	C
	Full marks	4.00	4.00	5.00	5.00	4.00	4.00	5.00	5.00	2.00	2.00	20.00	20.00
TC-Day-1	Number of downgrading points	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	3.00
	The amount of penalty points	0.50	0.00	0.00	1.50	0.00	0.50	0.00	0.50	0.00	0.00	0.50	2.50
	Rating points	3.50	4.00	5.00	3.50	4.00	3.50	5.00	4.50	2.00	2.00	19.50	17.50
TC-Day-2	Number of downgrading points	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	2.00
	The amount of penalty points	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	2.00
	Rating points	4.00	4.00	5.00	4.00	3.00	4.00	5.00	4.00	2.00	2.00	19.00	18.00
TC-Day-3	Number of downgrading points	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00
	The amount of penalty points	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00
	Rating points	3.00	4.00	5.00	5.00	4.00	3.00	5.00	5.00	2.00	2.00	19.00	19.00
TC-Day-4	Number of downgrading points	11.00	2.00	2.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	14.00	3.00
	The amount of penalty points	1.57	0.28	0.28	0.14	0.14	0.00	0.00	0.00	0.00	0.00	1.99	0.42
	Rating points	2.42	3.71	4.71	4.85	3.85	4.00	5.00	5.00	2.00	2.00	17.98	19.56
General average		3.23	3.92	4.92	4.33	3.71	3.62	5.00	4.62	2.00	2.00	18.87	18.51

Tab. 10

Centralized form for sensory analysis results obtained using points scale method

Item	Product's name	Code number of analysed product	Examined characteristics					General average points	Remarks
			The appearance of the wheels on the outside	The appearance of the wheels on the section	Consistency	Taste	Smell		
1	“Urda” cheese	U-Days:1-4	2.39	2.83	3.05	4.58	2.75	15.60	-
2	“Telemea” cheese	T-Days:1-4	3.23	4.92	3.71	5.00	2.00	18.87	The maximum rating points
3	“Burduf” cheese and “Burduf” in fir bark cheese	B-Days:1-4	2.71	3.64	2.66	3.67	1.92	17.33	Third place in the order of marks
4	Smoked curd cheese	C-Days:1-4	3.92	4.33	3.62	4.62	2.00	18.51	Second scoring after “telemea” cheese

Note: The period of the survey: 08.06.2012 – 12.06.2012

Leader of the tasting panel,

Tasters: 1. Letiția, age 39, mechanic
 3. Alexandru, age 23, student
 5. Ovidiu, age 28, driver
 7. Ioan, age 57, chief IDPs
 9. Andrada, age 27, inspector
 11. Maria, age 50, retired

2. Maria, age 53, line operator
 4. Rodica, age 50, engineer
 6. Maria, age 54, nurse
 8. Silviu, age 30, cantor
 10. Daniela, age 53, saleswoman

Average score for bellows cheese assessment by points scale method was 17.33 result that ranges it in "good sensory qualities" category. The characteristics considered in the case of cheese bellows were respectively the appearance of the packaging and the product itself, the layout of the section, consistency, smell and taste.

The sensory assessment (ISO 707°IDF 50; ISO 8589) of feta-type traditional cheese called "Telemea" by using the points scale method (ISO 22935-3°IDF 99-3) and coded T-Day-1 (as average sample) was denoted by the maximum score of 19.50 points (belonging in "excellent sensory qualities" category), the following two evaluated average samples of cheese were noted with 19.00 points (they were classified as "very good sensory qualities" products) and respectively 17.98 points ("good sensory qualities"). Average score given to "Telemea" samples was 18.87 points and the corresponding qualifier "very good sensory qualities".

In the sensory assessment (ISO 707°IDF 50; ISO 8589) the smoked curd cheese evaluated using points scale method (ISO 22935-3°IDF 99-3) was noted on the first day of testing with the average score of 17.50 points ("good sensory qualities"), next day with 18.00 points ("very good sensory qualities"), the third day with 19.00 points ("very good sensory qualities") and the fourth day with 19.56 points ("excellent sensory qualities"). The average score of 18.51 points, for the smoked curd cheese within the 4 days of testing corresponds with "very good sensory qualities".

Tab.11

Cheese sensory analysis by pair's method (ISO 22935-3°IDF 99-3)

Code numbers of the pair of samples	Surveyed characteristics (eg salty taste)	There is a difference or not	Code number of the sample with the most intense feature	Code number of the preferred sample	Remarks
1/08.06.2012	Creamy, yellow, flavoured and ripened product	YES	1	1 st Set of samples, Sample no.1	Sample no. 1 of "Telemea" cheese has recorded the unanimous participants preferences
2/09.06.2012	Creamy, yellow, flavoured and ripened product	YES	1	1 st Set of samples, Sample no.1	Sample no. 1 of "Telemea" cheese has recorded the unanimous participants preferences
3/10.06.2012	Creamy, yellow, flavoured and ripened product	YES	1	1 st Set of samples, Sample no.1	Sample no. 1 of "Telemea" cheese has recorded the unanimous participants preferences
4/12.06.2012	Creamy, yellow, flavoured and ripened product	YES	1	1 st Set of samples, Sample no.1	Sample no. 1 of "Telemea" cheese has recorded the unanimous participants preferences

Note: The period of the survey: 08.06.2012 – 12.06.2012. Tasters: 11 participants (Tab.10).

Analysed products: "Telemea" cheese, "Burduf" cheese, smoked curd cheese.

The purpose of the analysis: determining the acceptance of traditional Romanian cheeses by ordinary consumers.

Tab.12

Assessment of answers obtained by pair's method (ISO (1983a))

Total number of answers	Minimum number of answers for a significant difference	Minimum number of answers for a significant preference *)	Total number of preferences received for the same sample in the current testing
7	7	7	
.....			
10	9	9	
11	9	10	11
12	10	10	
.....			
50	32	33	

*) for a probability level of P = 95%

Results of assessment (ISO 707°IDF 50; ISO 8589) using the pair method (ISO (1983a)) were unanimously in favor of cheese sample denoted T-Day-1, the one subsample that met 11 of 11 possible votes. Examiners agreed unanimously (11 votes) that cheese samples in set 1 are different, result which correlated with statistical calculations showed a significant difference between sample 1 from set 1 – that was the favorite of all participants –, and sample 2 from set 1, the other two sets being each composed of two identical samples.

Tab.13

Sensory analysis results obtained by triangular method (ISO (1983b))

Code number of samples group	Surveyed characteristics	Code number of different samples	Code number of identical samples	Code number of the sample with the most intense feature	Remarks
1/08.06.2012	Best expressed taste	1 st Set, YES/ 2 nd and 3 rd , NO	3,4,5,6	1	Sample no. 1 of “Telemea” cheese has recorded the unanimous participants preferences
2/09.06.2012	Best expressed taste	1 st Set, YES/ 2 nd and 3 rd , NO	3,4,5,6	1	Sample no. 1 of “Telemea” cheese has recorded the unanimous participants preferences
3/10.06.2012	Best expressed taste	1 st Set, YES/ 2 nd and 3 rd , NO	3,4,5,6	1	Sample no. 1 of “Telemea” cheese has recorded the unanimous participants preferences
4/12.06.2012	Best expressed taste	1 st Set, YES/ 2 nd and 3 rd , NO	3,4,5,6	1	Sample no. 1 of “Telemea” cheese has recorded the unanimous participants preferences

Note: The period of the survey: 08.06.2012 – 12.06.2012

Tasters: 11 participants (Tab.10).

Analysed products: “Urda” cheese, “Telemea” cheese, “Burduf” cheese, smoked curd cheese.

The purpose of the analysis: determining the acceptance of traditional Romanian cheeses by ordinary consumers.

Tab.14

Evaluation of responses using the triangular method

Total number of answers	Minimum number of answers for a significant difference *)	Total number of preferences received for the same sample in the current testing
...	...	11
10	7	
11	7	
12	8	
...	...	
30	15	

*) for a probability level of $P = 95\%$

Sensory evaluation by triangular method (ISO (1983b)) resulted in a significant difference between samples 1 and 2 of “Telemea” cheese, sample 1 being regarded as having the best taste expressed intensity, and therefore also the unanimity of the participants preferences, with the 11 votes obtained.

CONCLUSION

The present research work tried to demonstrate that quality assessment methods focusing on sensory characteristics could be improved by adapting the evaluation methods to traditional products like cheeses from Bran-Rucar Pass, in order to develop a strategy for increasing the acceptability of traditional Romanian products also on the European market.

Although some have designations of origin, traditional Romanian cheeses have a limited distribution both domestically and in Europe, plus the fact that they are little known in other countries with tradition for industrialization of milk and cheese.

To benefit from the protection afforded by this recognition of the quality, manufacturers must meet numerous requirements that ensure consistent quality satisfactory to consumers. These requirements are difficult to meet due to the traditional, seasonal features and relatively low quantities of cheese marketed by individuals, almost exclusively in the restricted geographical area represented by Rucăr-Bran Pass.

However qualitative analysis demonstrated once again, if needed, the high level of hygiene and food safety preserved during the manufacture of these traditional products using old processing methods.

REFERENCES

1. Nicolaescu Mara (2008). Research concerning the hygienic – sanitary quality of some traditional Romanian cheeses and the food safety – public health implications, PhD Thesis, University of Agronomic Sciences and Veterinary Medicine Bucharest.
2. ISO 707°IDF 50, Milk and milk products. Guidance on sampling
3. ISO 8589, Sensory analysis. General guidance for the design of test rooms
4. ISO 22935-3°IDF 99-3, Milk and milk products. Sensory analysis. Part 3: Guidance on a method for evaluation of compliance with product specifications for sensory properties by scoring
5. ISO (1983a), Cheese, The Paired Comparison
6. ISO (1983b), The Triangle Test