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QUALITY PARAMETERS OF SELECTED SCALDED-CURD CHEESE VARIETIES MARKETED IN SUPERMARKETS

Alexandru USTUROI1, Cătălin - Emilian NISTOR1, Marius DOLIȘ1, Claudia PANZARU1, Cristina SIMEANU1, Mădălina Alexandra DAVIDESCU1*, Marius Giorgi USTUROI1 1"Ion Ionescu de la Brad" Iasi University of Life Sciences (IULS), 700490, Mihail Sadoveanu Alley, no.8, Romania



Although recent years have seen an increase in demand for dairy-derived products, this trend has also brought about additional requirements concerning quality assurance. The quality of scalded-curd cheeses sold in supermarkets can be influenced by a wide range of factors, both along the production chain and during transportation and retail distribution. Under these circumstances, we aimed to analyze selected products from this category through a series of physicochemical tests, in order to obtain specific information regarding their quality. We analyzed two types of semi-hard cheese — Dalia and Rucăr — produced by three well-established dairy processors. The overall conclusion of the study was that both processors and distributors complied with the necessary hygiene and quality standards, as evidenced by the final properties of the examined products.



The food industry is characterized by the impressive complexity of products available on the market, and cheeses are part of this category—foods that are widely appreciated and consumed around the world. In this context, consumers place great importance on the quality of the products they purchase. Among the wide variety of cheeses, scalded (heat-treated) cheeses stand out due to their unique characteristics. In Romania, these products hold a special place on supermarket shelves and are chosen by consumers for their flavor, texture, and versatility in use. In this paper, we aimed to analyze the qualities of several types of caşcaval (Romanian semi-hard cheese) sold in supermarkets, with the main goal of providing an overview of the quality of these products. In this way, the study contributes to the development of a safer food industry sector, supporting producers in their efforts to maintain product quality.

Material and method

The study material consisted of two types of caşcaval cheese, namely Dalia and Rucăr, produced by three well-established manufacturers from the eastern region of Romania. The samples used for analysis were purchased from supermarket stores located within the city of Iași, and the actual determinations were carried out in the laboratories of USV Iași. Standard analytical methods were employed, including oven drying, the Mohr method, the acidobutyrometric method, and the Kjeldahl method. The obtained results were interpreted by calculating mean values and standard deviations, highlighting minimum and maximum values, and determining the coefficients of variation.

Results and discussions

<u>Results Regarding the Dalia Variety</u>

From a chemical composition perspective, there were differences among the studied varieties, although these were not significant. The water content ranged from 41.56% in the Solomonescu product to 43.21% in the one produced by Sabin, with Five Continents falling in between at 42.68%. The fat content slightly exceeded the minimum levels set by the producers: 46.22% for Sabin, 45.52% for Five Continents, and 43.36% for Solomonescu. The sodium chloride levels fell within the product standard limits, with the cheese from Solomonescu being slightly saltier (2.89%), while the Five Continents cheese had the lowest salt content (2.06% NaCl).

Results regarding the Dalia assortment

Tab. 1 Results obtained for the Dalia-Sabin assortment

Parameters studied	n	X±sx	Min.	Max.	V%	Standard
Water %	5	43,21±1,21	42,15	44,92	4,27	-
Dry matter %	5	56,79±0,97	55,78	57,93	4,13	-
Fat/Dry matter %	5	46,22±1,11	45,11	47,35	2,78	Min 45
Protein %	5	24,16±1,36	22,84	25,55	4,32	20
NaCl %	5	2,42±0,12	2,29	2,55	1,19	2,5

Tab. 3 Results obtained for the Dalia-Solomonescu assortment

Parameters studied	n	X±sx	Min.	Max.	V%	Standard
Water %	5	41,56±1,33	40,23	42,96	3,19	
Dry matter %	5	58,44±1,28	57,19	59,64	3,59	
Fat/Dry matter %	5	43,36±1,24	42,12	44,61	3,76	Min 40%
Protein %	5	23,85±1,02	22,81	24,92	3,78	20
NaCl %	5	2,89±0,31	2,52	3,16	1,48	3% max

Tab. 2 Results obtained for the Dalia-Five-Continents assortment

Parameters studied	n	X±sx	Min.	Max.	V%	Standard
Water %	5	43,21±1,21	42,15	44,92	4,27	-
Dry matter %	5	56,79±0,97	55,78	57,93	4,13	-
Fat/Dry matter %	5	46,22±1,11	45,11	47,35	2,78	Min 45
Protein %	5	24,16±1,36	22,84	25,55	4,32	20
NaCl %	5	2,42±0,12	2,29	2,55	1,19	2,5

Tab. 4 Results obtained for the "Dalia" assortment

Product	Water %	Dry	Fat/Dry	Protein %	NaCl %
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				matter %	matter %		
	Sabin	analytical	43,21	56,79	46,22	24,16	2,42%
		standard	-	-	45%min	20	2,5% max
I	Five- Continents	analytical	42,68	57,32	45,52	25,28	2,06
		standard	-	-	45%min	23	2% max
	Solomonescu	analytical	41,56	58,44	43,36	23,85	2,89
		standard	-	-	40%min	20	3%max

Results regarding the Rucăr assortment

Tab. 5 Results obtained for the RUCĂR-Sabin assortment

Parameters studied	n	X±sx	Min.	Max.	V%	Standard
Water %	5	42,37±0,89	41,51	43,29	3,67	
Dry matter %	5	57,63±0,45	57,19	58,14	1,98	
Fat/Dry matter %	5	47,15±1,07	46,05	48,26	3,11	45% min
Protein %	5	23,36±0,96	22,43	24,49	3,17	20
NaCl %	5	1,68±0,19	1,47	1,88	1,12	1,8% max

Tab. 7 Results obtained for the RUCĂR-Solomonescu assortment

Parameters studied	n	X±sx	Min.	Max.	V%	Standard
Water %	5	41,78±0,56	41,08	42,27	2,57	
Dry matter %	5	58,22±1,12	57,07	59,38	2,65	
Fat/Dry matter %	5	45,96±1,08	44,78	47,06	4,32	40%min
Protein %	5	24,12±1,11	23,16	25,19	3,21	20
NaCl %	5	2,94±0,42	2,51	3,45	1,06	3%max

ab. 6 Results obtained for the Rucar-Five Continents assortment							
Parameters studied	Ν	X±sx	Min.	Max.	V%	Standard	
Water %	5	42,55±1,28	41,22	43,85	3,25		
Dry matter %	5	57,45±0,98	56,51	58,46	2,47		
Fat/Dry matter %	5	46,31±1,21	45,02	47,59	3,24	45% min	
Protein %	5	25,06±0,59	24,41	25,98	2,53	23	
NaCl %	5	2,22±0,34	1,83	2,62	0,98	2,5% max	

Tab. 8 Results obtained for the "Rucăr" assortment

Produc	t	Apă %	Dry matter %	Fat/Dry matter %	Protein %	NaCl %
Sabin	analytical	42,37%	57,63%	47,15%	23,36%	1,68%
	declarat	-	-	45% min	20	1,8% max
Five- Continents	analytical	42,55%	57,45%	46,31%	25,06%	2,22%
	declarat	-	-	45% min	23	2,5% max
Solomonescu	analytical	41,78%	58,22%	45,96%	24,12%	2,94
	standard	-	-	40% min	20	3% max

Results Regarding the Rucăr Variety

For the Rucăr variety, there were also similarities in the results obtained by the three producers. The water content showed minimal differences between the three companies (41.78% for Solomonescu, 42.37% for Sabin, and 42.55% for Five Continents). The fat content ranged from a minimum of 45.96% for Solomonescu to a maximum of 47.15% for Sabin; these values were in line with the standards set by the producers. Regarding the NaCl content, it is important to note that there were differences between producers, including differences in the standards (1.8% vs. 3%); as a result, the highest value was recorded for the Solomonescu product (2.94%), while the lowest was observed for the Sabin product (1.68%).

Conclusions

