RESEARCH CONCERNING THE PHYSICAL AND CHEMICAL RESULTS AT THE SIBIU SALAMI

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Abstract

Microorganisms present in meat act on all components of meat, but especially on substances under the action of enzymes secreted by saprophytic microflora (of pollution) decompose to simple products with toxic effect produced on human health.

INTRODUCTION

The limit of acceptability for meat, meat and fish preparations can be assessed by organoleptic methods, physicochemical, biochemical and microbiological methods.

Physical-chemical methods refer to water retention by meat and its hydration, to pH, redox potential, changes in carbohydrate, protein and fat.

MATERIAL AND METHODS

In the experiments conducted on Sibiu salami there were pursued specific quality indicators, pH, amino nitrogen, ammonia nitrogen, the ratio of amino nitrogen - total nitrogen, the ratio of ammonia nitrogen - total nitrogen and hydrogen sulfide as an indication of degradation of nutrients.
These determinations will be evaluated:

P1 At obtaining
P2 After 24 h
P3 After 15 days
P4 After 30 days
P5 At alteration

The effected quality determinations, ph, amine nitrogen, ammonia nitrogen, the ratio of amine nitrogen – total nitrogen, the ration of ammonia nitrogen – total nitrogen and sulfide hydrogen have been conducted in the laboratory of food control of the faculty for Environmental Protection Oradea through acknowledged methods with the latest apparatus.

RESULTS AND DISCUSSIONS

Table 1

The ph

No.	Variant	Repetition			Average
		R1	R2	R3	
1	At obtaining	7.28	7.34	7.33	7.31
2	After 24 h	7.19	7.18	7.16	7.17
3	After 30 days	6.34	6.37	6.40	6.37
4	After 90 days	6.13	6.15	6.17	6.15
5	At alteration	5.60	5.63	5.57	5.60

Table 2

Table of comparisons Influence of factor 5

Symbol	Variant	%	Difference	Signification
51	7.32	100.0	0.00	Mt.
52	7.18	98.1	-0.14	000
53	6.37	87.1	-0.95	000
54	6.15	84.1	-1.17	000
55	5.60	76.5	-1.72	000

DL (p 5%) 0.05
DL (p 1%) 0.07
DL (p 0.1%) 0.10

The pH of the Sibiu salami is of 7,31 at obtaining , it decreases to 6,15 after 90 days and it decreases continuously to 5,60 when there appear the altering modifications. This decrease can be caused by the concentration on the product unit of acid compounds in smoke as a result of dehydration of the product during storage.

Table 3

Total nitrogen

No.	Variant	Repetition			Average
		R1	R2	R3	
1	At obtaining	4.41	4.44	4.42	4.42
2	After 24 h	4.27	4.26	4.19	4.24
3	After 30 days	3.90	4.03	3.99	3.97
4	After 90 days	2.89	2.93	2.87	2.89
5	At alteration	2.55	2.43	2.48	2.48

Table 4

Table of comparisons Influence of factor 5

Symbol	Variant	%	Difference	Signification
51	4.42	100.0	0.00	Mt.
52	4.24	95.9	-0.18	00
53	3.97	89.8	-0.45	000
54	2.90	65.5	-1.53	000
55	2.49	56.2	-1.94	000

DL (p 5%) 0.10
DL (p 1%) 0.14
DL (p 0.1%) 0.21

Table 5

Amine nitrogen

No.	Variant	Repetition			Average
		R1	R2	R3	
1	At obtaining	64.34	64.28	64.32	64.31
2	After 24 h	70.61	70.54	70.59	70.58
3	After 30 days	180.13	178.87	179.32	179.44
4	After 90 days	357.16	356.00	357.04	356.73
5	At alteration	392.37	392.12	392.42	392.33

Table 6

Table of comparisons Influence of factor 5

Symbol	Variant	%	Difference	Signification
51	64.31	100.0	0.00	Mt.
52	70.58	109.7	6.27	***
53	179.44	279.0	115.13	***
54	356.73	554.7	292.42	***
55	392.30	610.0	327.99	***

DL (p 5%) 0.62
DL (p 1%) 0.91
DL (p 0.1%) 1.36

Table 7

Ammonia nitrogen

No.	Variant	Repetition			Average
		R1	R2	R3	
1	At obtaining	45.29	45.18	44.97	45.14
2	After 24 h	48.32	48.38	48.35	48.35
3	After 30 days	120.21	120.34	119.86	120.13
4	After 90 days	198.18	197.79	198.06	198.01
5	At alteration	321.43	322.03	320.67	321.13

Table 8

Table of comparisons Influence of factor 5

Symbol	Variant	%	Difference	Signification
56	200.00	100.0	0.00	Mt.
51	45.15	22.6	-154.85	000
52	48.35	24.2	-151.65	000
53	120.14	60.1	-79.86	000
54	198.01	99.0	-1.99	000
55	321.38	160.7	121.38	***

DL (p 5%) 0.54
DL (p 1%) 0.76
DL (p 0.1%) 1.11

The ratio of ammonia nitrogen-total nitrogen at obtaining the product is of 1,01 and increases to 6,83 after 90 days . At alteration its value is of 12,92.

Table 9

The ratio of amine nitrogen – total nitrogen

No.	Variant	Repetition			Average
		R1	R2	R3	
1	At obtaining	1.45	1.44	1.45	1.44
2	After 24 h	1.65	1.65	1.68	1.66
3	After 30 days	4.61	4.43	4.49	4.51
4	After 90 days	12.35	12.15	12.44	12.31
5	At alteration	15.38	16.13	15.82	15.77

Table 10

Table of comparisons Influence of factor 5

Symbol	Variant	%	Difference	Signification
51	1.45	100.0	0.00	Mt.
52	1.66	114.7	0.21	-
53	4.51	311.8	3.06	***
54	12.31	851.2	10.87	***
55	15.78	1090.6	14.33	***

DL (p 5%) 0.38
DL (p 1%) 0.55
DL (p 0.1%) 0.83

The ratio of amine nitrogen – total nitrogen is of 1,44 at obtaining the product, the it increases to 12,31 after 90 days . At alteration its value is of 15, 77.

Table 11

The ratio of ammonia nitrogen – total nitrogen

No.	Variant	Repetition			Average
		R1	R2	R3	
1	At obtaining	1.02	1.01	1.01	1.01
2	After 24 h	1.13	1.13	1.15	1.13
3	After 30 days	3.08	2.98	3.00	3.02
4	After 90 days	6.85	6.75	6.90	6.83
5	At alteration	12.60	13.25	12.93	12.92

Table 12

Table of comparisons Influence of factor 5

Symbol	Variant	%	Difference	Signification
51	1.01	100.0	0.00	Mt.
52	1.14	112.2	0.12	-
53	3.02	298.0	2.01	***
54	6.83	674.3	5.82	***
55	12.93	1275.7	11.91	***

DL (p 5%) 0.30
DL (p 1%) 0.44
DL (p 0.1%) 0.66

The total nitrogen decreases during storage from 4,42 g% at obtaining to 2,89 g% after 90 days . At alteration its value is of 2,48 g%.

Table 13

Sulfide hydrogen

No.	Variant	Repetition			Average
		R1	R2	R3	
1	At obtaining	absent	absent	absent	absent
2	After 24 h	absent	absent	absent	absent
3	After 30 days	absent	absent	absent	absent
4	After 90 days	absent	absent	absent	absent
5	At alteration	positive	positive	positive	positive

CONCLUSIONS

1. At the Sibiu salami, the dynamics of physical-chemical changes follows the same evolution as with the Parisian and the Italian salami.

2. The amine nitrogen records during storage an increase from 64,31 mg% at obtaining to 356,73 mg % after 90 days . At alteration its value is of 392,33 mg %.
3. The ammonia nitrogen is of 45,14 at obtaining and it increases during storage to 198,01 after 90 days of storage. At alteration its value reaches 321,13 mg %.
4. The sulfide hydrogen is present only at the alteration of the product.
5. The proteolytic-type modifications are more intense at the Sibiu salami compared to the Italian Salami and Parisian, due to an advanced maturing process of the product.
6. The lipolytic-type modifications at the products that have been studied show at obtaining an acidity comprised between 0,20-0,26 g% oleic acid, the peroxide index values of 0,014- 0,018 g iodine and negative Kreis reaction.
7. During the storage of the products the physical and chemical indices of fat freshness extracted from the examined products, records a growth of acidity up to 0,45-0,59% oleic acid; 0,040-0,045 g iodine % for the peroxide modifications and a weakly positive Kreis reaction.

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