RESEARCH UPON THE PHYSICAL-CHEMICAL RESULTS OBTAINED IN THE CASE OFTHE BOLOGNA SAUSAGE

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Abstract

A series of chemical or bio-chemical reactions may alter the quality and safety of food, with influence upon properties such as texture, flavor, color and the nutritive value.

The main changes that lipids contained in food products suffer are the oxidative degradations, which result in toxic compounds, with unpleasant smell and taste.

Key words: problem of food, technological possibilities, quality indicators

INTRODUCTION

The problem of food is one of the most important one contemporary world is being confronted with, which aims both the quality of food products (ensured during the entire technological flux) and their proportion in food ratios.

Meat products, given their increased energetic value, occupy a special place with regards to the energetic requisite in food ratios. Solving the food problem has always represented a crucial action in agriculture and industry, everywhere in the world. The development of meat industrialization has witnessed a tremendous extent, both through the diversification of technological possibilities of processing the meat of different animal sources, and through the technical process achieved in building devices and equipments that contribute to the quality of food products offered for consumption.

MATERIAL AND METHOD

In the experiments carried out on the Bologna sausage, we have observed the specific quality indicators, pH, amide nitrogen, ammoniate nitrogen, the amide nitrogen-total nitrogen ratio, the ammoniate nitrogen-total nitrogen ratio and sulphuretted hydrogen as indicators of nutrient degradation.

These determinations will be evaluated at:

P1 – At the moment of production

P2 – After 24 h.

P3 – After 15 days.
P4 – After 30 days.
P5 – At the alteration moment.

The quality determinations achieved, pH, amide nitrogen, ammoniate nitrogen, the amide nitrogen-total nitrogen ratio, the ammoniate nitrogen-total nitrogen ratio and sulphuretted hydrogen, have been obtained in the Laboratory for Food Control, at the Faculty of Environment Protection Oradea, using consecrated methods and the latest technological devices.

RESULTS AND DISCUSSIONS

The results of the physical-chemical examination indicate the fact that, during storage time, an increase in the pH, amide nitrogen, ammoniate nitrogen, and the index of protein splitting amide nitrogen-total nitrogen and ammoniate nitrogen-total nitrogen, as well as a value of the total nitrogen content may be observed.

Table 1

pH

No..	Variant	Repetition			Media
		R1	R2	R3	
1	At the moment of production	6.28	6.34	6.33	6.31
2	After 24 h	6.89	6.93	6.90	6.89
3	After 15 days	7.31	7.34	7.29	7.31
4	After 30 days	6.10	6.15	6.08	6.11
5	At the alteration moment	5.60	5.63	5.57	5.60

Table 2

Comparative chart The influence of factor 5

Symbol	Variant	%	Difference	Significance
51	6.32	100.0	0.00	Mt.
52	6.94	109.8	0.62	***
53	7.31	115.8	1.00	***
54	6.11	96.7	-0.21	000
55	5.60	88.7	-0.72	000

DL (p 5%) 0.05
DL (p 1%) 0.08
DL (p 0.1%) 0.11

Table3

Total nitrogen

No.	Variant	Repetition			Average
.		R1	R2	R3	
1	At the moment of production	3.53	3.50	3.49	3.50
2	After 24 h	3.22	3.26	3.20	3.22
3	After 15 days	2.98	3.01	3.00	2.99
4	After 30 days	2.88	2.92	2.90	2.90
5	At the alteration moment	2.22	2.18	2.17	2.19

Table 4

Comparative chart The influence of factor 5

Symbol	Variant	%	Difference	Significance
51	3.45	100.0	0.00	Mt.
52	3.23	93.6	-0.22	000
53	3.00	86.9	-0.45	000
54	2.90	84.1	-0.55	000
55	2.19	63.5	-1.26	000

DL (p 5%) 0.08
DL (p 1%) 0.11
DL (p 0.1%) 0.17

Table 5

Amide nitrogen

No	Variant	Repetition			Average
		R1	R2	R3	
1	At the moment of production	70.12	71.44	70.23	70.59
2	After 24 h	85.23	88.51	86.83	86.85
3	After 15 days	100.12	102.02	100.34	100.49
4	After 30 days	195.39	197.26	194.15	195.60
5	At the alteration moment	280.27	283.21	281.49	281.65

Table 6

Comparative chart The influence of factor 5

Symbol	Variant	%	Difference	Significance
51	70.60	100.0	0.00	Mt.
52	86.86	123.0	16.26	***
53	100.83	142.8	30.23	***
54	195.60	277.1	125.00	***
55	281.66	399.0	211.06	***

DL (p 5%) 1.20
DL (p 1%) 1.74
DL (p 0.1%) 2.61

Table 7

Ammoniate nitrogen

No.	Variant	Repetition			Average
		R1	R2	R3	
1	At the moment of production	16.23	17.12	17.09	16.81
2	After 24 h	20.12	20.23	20.16	20.17
3	After 15 days	38.69	38.76	38.71	38.72
4	After 30 days	43.32	43.45	43.38	43.38
5	At the alteration moment	68.23	68.34	68.30	68.29

Table 8

Comparative chart The influence of factor 5

Symbol	Variant	%	Difference	Significance
56	30.00	100.0	0.00	Mt.
51	16.81	56.0	-13.19	000
52	20.17	67.2	-9.83	000
53	38.72	129.1	8.72	***
54	43.38	144.6	13.38	***

DL (p 5%) 0.35
DL (p 1%) 0.50
DL (p 0.1%) 0.72

Table 9

The amide nitrogen –total nitrogen ratio

No.	Variant	Repetition			Average
		R1	R2	R3	
1	At the moment of production	1.98	2.04	2.01	2.01
2	After 24 h	2.64	2.71	2.71	2.68
3	After 15 days	3.35	3.38	3.34	3.35
4	After 30 days	6.78	6.75	6.69	6.74
5	At the alteration moment	12.62	12.99	12.97	12.86

Table 10

Comparative chart The influence of factor 5

Symbol	Variant	%	Difference	Significance
51	2.01	100.0	0.00	Mt.
52	2.69	133.7	0.68	***
53	3.36	167.0	1.35	***
54	6.74	335.3	4.73	***
55	12.86	639.8	10.85	***

DL (p 5%) 0.18
DL (p 1%) 0.26
DL (p 0.1%) 0.39

Table 11

The ammonia nitrogen – total nitrogen ratio

No.	Variant	Repetition			Average
.		R1	R2	R3	
1	At the moment of production	0.45	0.48	0.48	0.47
2	After 24 h	0.62	0.62	0.63	0.62
3	After 15 days	1.29	1.28	1.29	1.28
4	After 30 days	1.50	1.48	1.49	1.49
5	At the alteration moment	3.07	3.13	3.14	3.11

Table 12

Comparative chart The influence of factor 5

Symbol	Variant	%	Difference	Significance
51	0.47	100.0	0.00	Mt.
52	0.62	132.6	0.15	***
53	1.29	273.8	0.82	***
54	1.49	317.0	1.02	***
55	3.11	662.4	2.64	***

DL (p 5%) 0.04
DL (p 1%) 0.05
DL (p 0.1%) 0.08

Table 13

Sulphuretted hydrogen

No..	Variant	Repetition			Average
		R1	R2	R3	
1	At the production moment	absent	absent	absent	Absent
2	After 24 h	absent	absent	absent	Absent
3	After 15 days	absent	absent	absent	Absent
4	After 30 days	Slightly positive	Slightly positive	Slightly positive	Slightly positive
5	At the alteration moment	Positive	Positive	Positive	Positive

CONCLUSIONS

1. The physical-chemical examination has evaluated the pH, the amide nitrogen, the ammoniate nitrogen, the amide nitrogen-total nitrogen ratio, the ammoniate nitrogen-total nitrogen ratio and the presence of sulphuretted hydrogen.
2. In the case of the Bologna sausage, the pH at the production moment is of 6,31, reaching the value of 7,31 after 15 days of storage, after which it decreases up to 5,60, when the first signs of alteration are present.

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