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ORGANOLEPTICAL EVALUATION OF COOKED SAUSAGES USING THE COEFFICIENTS OF SINGLE CHARACTERISTICS PONDERABILITY

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SUMMARY

Meat products quality is characterized by a set of properties among which the organoleptical play major role in total evaluation of product consumer acceptance. Organoleptical evaluation of products quality is made by a set of single parameters; determination of their ponderability in total score will allow to increase significance of organoleptical analysis results. To determine coefficients of ponderability three methods have been chosen - ranking, direct evaluation and correlation analysis. It is shown that single organoleptical parameters of cooked sausage, taking into account their ponderability, are distributed in the following order: 1 - taste; 2,3,4 - odour, colour on the cut surface and consistency; 5 - appearance; 6 - juiciness. It is found that the ranking method greatly corresponds to the correlation method of ponderability degree evaluation as compared to the method of direct evaluation.

INTRODUCTION

Meat products quality characteristics include their physico-chemical and organoleptical properties, the latter being the most important criterion of total product consumer acceptance evaluation. Quality is evaluated by a set of single parameters; determination of their ponderability in total organoleptical score allows to increase significance and reliability of results.

MATERIALS and METHODS

Coefficients of ponderability can be determined using assessors evaluation and statistical methods. Comparative analysis of these methods was made on the example of cooked sausages quality evaluation by a set of organoleptical parameters: appearance, colour on the cut surface, odour, taste, consistency and juiciness. To determine organoleptical properties ponderability for cooked sausages quality evaluation three methods were chosen, two of which were assessors evaluation:
- ranking based on determination of a rank (place) of each parameter by assessors at relative comparison of their role in total quality evaluation;
- direct evaluation of ponderability coefficients that quantitatively characterize contribution of each parameter to total quality evaluation.
While using the method of ranking assessors were proposed to distribute quality parameters in a successive order according to their role in total score. The most important parameter was given the rank 1,

the next - 2 and so on. Sometimes assessor considered two parameters to be equal by their ponderability and gave at once two places for them, e.g. the 2nd and the 3rd. In the table of results (Table 1) for each of them he recorded: "2;3" or "3;4" or "5;6" (tied ranks).

Table 1. Answer form

Assessor, №	Quality characteristics					
	appearance	colour on the cut surface	odour	taste	consistency	juiciness
1	5	2;3	2;3	1	4	6

It is seen from the table which parameter assessor gives the 1st, 2nd, 3rd place and so on.

A group of 16 assessors was proposed to evaluate ponderability of the abovementioned characteristics; the assessors were selected after checking their sensitivity to sensory perception; besides they had experience in organoleptical evaluation of cooked sausages.

RESULTS and DISCUSSION

Analysis of assessor's evaluation results showed that the studied characteristics had various degree of preference. For example, for taste all assessors gave the same rank 1; agreeability by "colour" and "odour" was lower. Moreover the results of evaluation by assessors were characterized by a sufficiently high number of tied ranks. Only 2 of 16 rankings did not have tied ranks. Agreeability of assessor's evaluation was tested using the criterion j, having the following form

$$j = \frac{1}{2} x^2 + (n-1)F$$

where n₂ - number of characteristics;
x² - Pearson criterion calculated taking into account number and volume of ties within rankings;
F - Fischer criterion.

If $j > j_{\alpha}$ where $j_{\alpha} = \frac{n-1(m-1)(n-1)}{m}$
where j_{α} - level of significance;
m - number of assessors

than a hypothesis of agreeability is assumed. Statistical analysis of results showed a high agreeability in characteristics ponderability evaluation. Ranking method used for determination of tested characteristics ponderability in total score can be presented in the following way: (4), (3), (2), (5), (1), (6). The method of weight coefficients direct evaluation was used to determine reliability of judgement obtained by the method of ranking and results agreeability for two groups of assessors. Besides one more group of 12 assessors was formed; it was proposed to evaluate ponderability coefficients di-

rectly. That group included assessors who had already evaluated ponderability of tested parameters and new ones who had the same level of experience and training. Analysis of results obtained by those groups of assessors showed that single organoleptical quality characteristics of cooked sausages, by their ponderability on total score, could be presented in the following sequence:

- 1- taste; 2 - odour; 3 - colour on the cut surface; 4 - consistency; 5 - appearance; 6 - juiciness.

At the same time the obtained ranks order may show the difference in ponderability of characteristics that slightly differ from each other in preference. That is why while evaluating ponderability of quality characteristics it is advisable to introduce tied ranks into the abovementioned ranks order. Use of correlation analysis while calculating coefficients of correlation between single organoleptical parameters and total score allowed to obtain ranks order partially inverted relative to the abovegiven ranks orders. There were inverted the ranks for the groups of the following characteristics: odour, colour on the cut surface and consistency. These group of characteristics was given the tied ranks in total score (Table 2) Let point out that ranking has a higher degree of agreeability with the correlation method of characteristics ponderability evaluation as compared to the of direct evaluation.

It is advisable, for practical evaluation, to use coefficients of ponderability approximated to the nearest 0.1; the sum of approximated weight coefficients should be equal to 1.

CONCLUSIONS

Studies, using the methods of ranking, direct evaluation and correlation analysis, into determination of ponderability of cooked sausages single organoleptical characteristics (appearance, colour on the cut surface, odour, taste, consistency, juiciness) and coefficients of their ponderability in total score were made.

It was found that single organoleptical characteristics of cooked sausages quality, according to their ponderability in total score, are distributed in the following sequence: 1 - taste; 2,3,4 - odour, colour on the cut surface, consistency; 5 - appearance; 6 - juiciness.

The following total values of single organoleptical parameters ponderability were obtained: appearance - 0.1; colour on the cut surface - 0.18; odour - 0.18; taste - 0.3; consistency - 0.18; juiciness - 0.06.

Table 2. Evaluation of characteristics ponderability

N°	Single parameter	Ranking	Direct evaluation	Correlation method	Total score
1	Taste	0.286	0.296	0.87	0.30
2	Odour	0.199	0.217	0.80	0.18
3	Colour on the cut surface	0.197	0.200	0.82	0.18
4	Consistency	0.162	0.113	0.82	0.18
5	Appearance	0.101	0.104	0.75	0.10
6	Juiciness	0.064	0.071	0.63	0.06