

RESEARCHES CONCERNING THE INFLUENCE OF VEGETAL PROTEIN SUPPLEMENTS PROPORTION ON FINISHED PRODUCT QUALITY IN THE MANUFACTURE OF ONE SEMI-SMOKED SAUSAGE

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Abstract

The purpose of this performed research was to establish the influence of vegetal protein supplements (functional soy protein concentrates) used in different proportions on the finished products quality indicators in the manufacture of one semi-smoked sausage assortment. Organoleptic and physical-chemical analyses were performed on the finished products manufactured in three technological variants (for each case was used one processing recipe): using the manufacture technology without protein supplements (recipe A); using the manufacture technology with 3% (recipe B) and 5% (recipe C) vegetal protein supplements (reported to total composition), where one part of animal raw material (meat, bacon) had been replaced with vegetal protein supplements (recipe B and C).

Keywords: *finished product, vegetal protein supplements, usage proportion, manufacture recipe, quality indicators, semi-smoked sausage.*

Introduction

Soy proteins are no longer "filling" substances or auxiliary. Present soy protein derivatives become raw materials for meat products, which really improve the aspect, texture and freshness of these products and reducing in the same time fat and cholesterol (Mahmond, 1994; Godon, 1996).

Experimental

Organoleptic and physical-chemical analyses were performed on fifteen samples (five samples from each recipe) of finished products manufactured through those three studied technological variants (five samples from the recipe A, five samples from the recipe B and five samples from the recipe C) according to table 1. The organoleptic exam consisted in the appraisal of some characteristics like the exterior and slices aspect, the taste and smell, color and consistence.

Table 1. Finished product samples used for examination

Analysed product	No. of samples
Finished product without vegetal protein supplements	5
Finished product with 3% vegetal protein supplements	5
Finished product with 5% vegetal protein supplements	5

The physical-chemical exam consisted of indicators determination presented in table 2.

Table 2. The induced physical-chemical quality indicators

Indicator	Method of examination
Water	Drying-over at 105 °C
Protein substances	Kjeldahl method ($N_{total} \times 6.25$)
Fat substances	Soxhlet extraction
Salt	Mohr method
Nitrite	Griess method
Collagen	Hidroxiprolin dosing

Results and Discussions

The results of organoleptic and physical-chemical exam for finished products of the three manufacture recipes are presented in tables 3 and 4.

The physical-chemical analysis of finished products of the three manufacture recipes highlighted the following aspects (Salagean, 2003):

Water content (g%) registers an increase from recipe A to recipe C, due to hydration water for the vegetal protein supplements which are used. *Fat* content (g%) registers a decrease from recipe A (23.98) to recipe C (20.23), due to the substitution of raw material (with higher content in fat) by vegetal protein supplements (with lower content in fat).

Protein substances content (g%) registers an increase from recipe A (14.63) to recipe C (15.01), due to protein contribution of the vegetal protein supplements which is higher than protein content of the replaced meat. *NaCl* content (g%) registers a decrease from recipe A (2.48) to recipe C (2.17), due to hydration water for the vegetal protein supplements. *NaNO₂* content (mg /100 g) registers a decrease from recipe A (2.02) to C (1.73), being directly proportional correlated with

the meat quantity from the recipe and inversely proportional with the vegetal protein supplement and its hydration water.

Table 3. Organoleptic properties of finished product samples

Sample/ recipe	Exterior aspect and color	Section aspect	Taste and smell	Color	Consistence
Finished products	Recipe A	Mosaic mass consisted of pork and beef color rosy-red, with pieces of eight mm bacon uniform prevalent.	Specific for compounds and spices used		Semi-hard-elastic
	Recipe B		Specific for compounds and spices used, very slightly taste of protein derivatives		Semi-soft to semi-hard, elastic
	Recipe C		Specific for compounds and spices used, slightly taste of protein derivatives		Semi-soft

Table 4. Physical-chemical quality indicators for finished products (n=5)

Physical-chemical indicators	Standard values	Finished product		
		A	B	C
		Obtained values		
Water g %	Maximum 63	57.52	58.92	60.19
Fat, g %	Maximum 32	23.98	22.10	20.23
Protein substances, g %	Minimum 12	14.63	14.87	15.01
NaCl, g %	Maximum 3	2.48	2.34	2.17
NaNO ₂ , mg /100 g	Maximum 7	2.02	1.85	1.73
Dry substance, g %	-	42.48	41.08	39.81
Collagen, g %	-	2.15	2.35	2.47
Collagen / dry substance, %	-	5.06	5.72	6.20
Collagen / protein, %	Maximum 30	14.69	15.80	16.46

Dry substances quantity (g%) of finished products registers a decrease from recipe A (42.48) to recipe C (39.81), sequel of contribution of hydration water for the vegetal protein derivatives which are used.

Collagen content (g%) registers an increase from recipe A (2.15) to recipe C (2.47) in direct accordance with the increase of protein

quantity. The *collagen / dry substance* ratio (g%) has increased from recipe A to recipe C due to the decrease of dry substance content correlated with the increase of hydration water content for the vegetal protein supplements. The *collagen / protein* ratio (g%) of the finished products registers an increase from recipe A (14.69) to recipe C (16.46) sequel of collagen quantity increase correlated with a small increase of the protein quantity

Conclusions

The *exterior aspect, color* and *section aspect* of the finished products doesn't differ from a technological recipe to another (the protein supplements are without influence) being in accordance with the standards (SP-C-401-95). The *taste and smell* of the protein supplements becomes perceptible with the increase of protein supplements quantity and the *consistence* is reduced by exceeding the protein supplements usage. At the elaboration of the technological recipes for meat foodstuffs manufacture it is necessary to take into account that some organoleptic characteristics of the finished products (taste, smell and consistence) are affected by the proportion of protein supplements which are used

Water content is directly proportional correlated with proportion of vegetal protein supplements by their hydration water. The obtained products have a lower content in cholesterol, calories, *fats*, therefore being recommended as dietetic food. *Protein substance* content is directly proportional correlated with proportion of the vegetal supplements, which assure an increase in *nutritional value* by addition of protein substances (reached in essential amino acids). From a qualitative point of view one can recommend the recipe with 3% vegetal protein supplements because of the chemical-physical advantages, the organoleptic characteristics being insignificantly affected.

References

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