

INFLUENCE OF CASE DIAMETER ON CHEMICAL AND SENSORY CHARACTERISTICS OF "SALCHICHON", A TRADICIONAL SPANISH SAUSAGE

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BACGROUND

Quality is becoming a increasingly important marketing factor both for producers and consumer and interest for establishing quality characteristics defining each specific product is an interesting topic (Barreto et al., 1994). The interest has also an additional point that relates to maintaining the specific characteristics of traditional products as an important part of the whole world culture. The evaluation of normal characteristics of traditional products is a required previous study to be done before introducing any intended improvement in technology, as may be to obtain the best drying conditions for traditional sausages produced by Mediterranean countries, the main objective of DRIP project.

"Salchichon" is one of the most important traditional meat products in Spain. This specific raw dried type of raw sausage, made with pork meat with added salt and a small amount of spices including whole pepper as a distinctive characteristic. It has been object of some interesting studies (Astiasaran et al., 1990; Beriain et al., 1994). This sausage can usually be elaborated in different casing diameter and there are not clear references to differences in specific characteristics due to this factor.

OBJECTIVES

This study aims to present the chemical and sensory characteristics of commercial traditional salchichon in both small and large diameter elaborated from the same basic mix.

METHODS

Three pieces of each one of three different lots of salchichon, produced in a local industry, of small (3 cm) case diameter and large (11 cm) case diameter, both produced from the same initial meat mix, have been analyzed for chemical characteristics. Analyses were performed on freshly prepared sausages, at the middle of the aging process and once ready for consumption (after 14 days in small sausages and after 24 days in large diameter sausages). Chemical analysis included raw chemical composition, proteolysis index (NPN %) and rancidity index (TBA values) following the Ockerman (1987) methods, D- and L-lactic and Acetic acids using Boehringer enzymatic procedures. Both types of product were sensory evaluated using a hedonic scale and a consumer preference panel.

RESULTS AND DISCUSSION

Table 1 includes chemical characteristics of the two types of salchichon at the three times of the aging process. Table 2 includes the sensory results in final products.

Results of moisture content were quite consistent and similar in both types of fresh sausages. Moisture content was reduced significantly in both types of sausages during the first half of aging. There was a higher reduction in small diameter sausages. In the second half of the aging period there was a further significant reduction in moisture content in small diameter sausages but the reduction was not significant in large diameter sausages. As a result, although large sausages had a larger period of aging, their moisture content was higher than in small sausages.

Consequently with moisture reduction there was an increase in salt, protein and fat content in both type of sausages during aging. The final salt amount was higher in small diameter sausages.

Rancidity index presented a high variability among samples and consequently, there was not a significant effect of aging in the TBA values on both types of sausage.

Proteolysis index (%NPN) increased significantly during the first half of aging in both types of sausages. The proteolysis was slightly higher in small diameter sausages. It seems that proteases would find a better environment in this type of product, probably due to its higher salt content.

The observed results in general agree with the chemical characteristics reported for similar products (Astiasaran et al., 1990; Beriain et al., 1994)

The sensory analysis performed in both types of product did not present any significant difference between the two types of product in any of the evaluated characteristics.

CONCLUSIONS

Case diameter influences significantly final chemical composition of Salchichón, the most important traditional meat sausage in Spain. Final moisture content was higher in large diameter casing products, having a larger period of aging. Sodium chloride content was higher in small diameter sausages. Fat and protein content were also higher on small diameter sausages. NPN was significantly higher in small diameter sausages. Production of short acids was similar in both types of products. In despite of the chemical differences, both types of sausages received similar rating in the sensory evaluation.

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Table 1: Chemical characteristics of SALCHICHON during aging

		SMALL DIAMETER			LARGE DIAMETER		
		FRESH	7 DAYS	14 DAYS	FRESH	12 DAYS	24 DAYS
MOISTURE %	MEAN	52.26 ^a	43.43 ^b	35.49 ^c	52.58 ^a	45.81 ^b	41.17 ^b
	SD	0.51	0.74	3.35	2.44	2.77	1.76
NaCl %	MEAN	2.27 ^a	2.80 ^b	3.14 ^c	2.20 ^a	2.54 ^b	2.58 ^b
	SD	0.15	0.34	0.29	0.23	0.07	0.18
FAT %	MEAN	27.90 ^a	33.39 ^b	37.67 ^c	25.92 ^a	30.67 ^b	32.43 ^b
	SD	0.82	0.88	1.82	3.64	2.52	1.70
TBA Value	MEAN	3.52 ^a	15.39 ^a	9.48 ^a	4.59 ^a	5.67 ^a	7.69 ^a
	SD	0.85	15.68	3.92	4.72	1.75	2.15
PROTEIN %	MEAN	16.82 ^a	18.97 ^{ab}	22.53 ^b	18.20 ^a	20.42 ^a	22.24 ^a
	SD	0.27	1.12	2.26	1.38	2.48	3.27
NPN %	MEAN	5.48 ^a	8.09 ^b	8.65 ^b	5.54 ^a	7.75 ^b	7.17 ^b
	SD	0.54	2.28	0.52	0.64	1.07	1.13
D-LACTIC %	MEAN	0.0028 ^a	0.1704 ^b	0.2268 ^c	0.0063 ^a	0.2029 ^b	0.2530 ^b
	SD	0.0029	0.0702	0.0208	0.0083	0.0899	0.0162
L-LACTIC %	MEAN	0.1691 ^a	0.1134 ^b	0.1185 ^b	0.1666 ^a	0.1139 ^b	0.1044 ^b
	SD	0.0266	0.0038	0.0164	0.0115	0.0207	0.0241
ACETIC %	MEAN	0.0062 ^a	0.0252 ^b	0.0287 ^b	0.0064 ^a	0.0154 ^b	0.0193 ^b
	SD	0.0007	0.0144	0.0220	0.0016	0.0004	0.0035

Data in the same line with different superscript are significantly different ($P < 0,05$)

Table 2: Sensory characteristics of Salchichon, depending of diameter.

	DIAMETER		
	SMALL	LARGE	Sign
Easiness of casing removal	4,73	4,05	NS
Fat amount	3,76	4,07	NS
Fat cut	3,36	2,98	NS
Fat color	3,37	3,28	NS
Greasiness	3,23	2,94	NS
Lean meat color	3,42	3,12	NS
Fat/lean distribution	3,31	3,33	NS
Cohesiveness	3,26	2,89	NS
Incrustation	3,07	3,13	NS
Odor intensity	3,31	2,83	NS
Acid odor	2,64	3,06	NS
Salty	2,66	2,75	NS
Peppery	2,75	3,16	NS
Acid	2,57	2,37	NS
Piquant	3,21	3,27	NS
Rancid	2,52	2,15	NS
Taste intensity	3,53	3,20	NS
Hardness	3,12	2,60	NS
Connective tissue	2,69	2,55	NS
All inclusive grading/10	3,57	3,68	NS