

Influence of processing time on sensory characteristics of cooked “lacón”

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Abstract- The influence of processing time about sensory properties of cooked “lacón” was studied. For this research, two batches of “lacón” were manufactured and after 56 and 84 days of drying-ripening were sensorial analysis for eight panellists selected from Meat Technology Centre of Galicia. Only four attributes (red colour, cured odour, rancid odour and flavour intensity) were significantly different respect to time of processing. However, all textural traits studied were not influence of processing time.

Keywords: Dry-cured “lacón”, Sensory evaluation, Processing time

I. INTRODUCTION

The acceptance of dry-cured products by consumers is mainly determinated by their sensory quality. The aroma is perhaps the most important quality parameter and it is markedly affected by raw material, processing techniques, and aging time (Sánchez-Peña, Luna, García-Gonzalez, & Aparicio, 2005).

Dry-cured “lacón” is a traditional cured meat product made in the North-west of Spain from the fore pig’s for leg which it is cut at the shoulder blade-humerus joint, following very similar manufacturing processes to those used in the production of dry-cured ham. In the Galicia region this product has been awarded as Geographically Protected Identity (G.P.I.) (Official Journal of the European Communities, 2001).

Several studies have been done so far in which microbiology and some physicochemical (pH, moisture, protein, fat, amino acids, fatty acids, biogenic amines) characteristics of “lacón” (Lorenzo, Martínez, Franco, & Carballo, 2007b; Lorenzo, García Fontán, Franco, & Carballo, 2008a, 2008b; 2007a) have been evaluated. However, there are no references about the sensory properties of this product.

Thus, the objective this study was to determine the influence of salt content on sensory characteristics of dry-cured “lacón”.

II. MATERIAL AND METHODS

II.1. Samples

In order to carry out this study, two batches of “lacón” were manufactured. Each batch consisted of four “lacón” pieces that in the green stage (fresh pieces) weighed 4 kg each. Raw pieces were salted with coarse salt, forming piles alternating between pieces and salt. Two batches were salted during 4 days (1 day/kg), being the temperature of the salting room between 2 and 5 °C and the relative humidity between

80 and 90%. After the salting stage, the pieces were taken from the pile, brushed, washed, and transferred to a post-salting room where they stayed for 14 days at a 2-5 °C and around 85-90% relative humidity. After the post-salting stage, the pieces were transferred to a room at 12 °C and 74- 78% relative humidity where a drying-ripening process took place for 84 days. One piece of each batch was used for sensorial analysis and the other one for physicochemical determinations, for every sampling point.

In each batch, samples were taken from 56, and 84 days of drying-ripening. Each sample consisted of one whole “lacón” piece. Previous to the sensorial analysis, the samples were desalted during 48 h, removing water every 16 h. After this period, samples were cooked at boiling during 2 h.

II.2. Sensorial Analysis

The taste panel evaluation was conducted with eight panellists selected from Meat Technology Centre of Galicia. Panellists were trained according to methodology proposed by UNE regulations (UNE 87-024-95) during one year with the attributes and the scale to be used. Eighteen sensory traits of dry-cured “lacón”, grouped in appearance (fat yellowness, redness and marbling), odour (intensity, rancidity and cured), texture of the lean (fibrousness, hardness, juiciness and chewiness), taste (saltiness, sweetness and bitterness), and flavour (intensity, cured, rancid and mould).

The intensity of every attribute was expressed on a structured scale from 0 (very low) to 9 (very high) in two sessions, a specific session for this samples and the evaluation session. During sensory evaluation, the panellists were situated in private cabinet illuminated with red light. Water to clean the palates and remove residual flavours was given the panel at the beginning of the session and in between samples.

II.3. Statistical analysis

For the statistical analysis of the results of sensory and physicochemical traits an analysis of variance (ANOVA) of two ways using SPSS package (SPSS 15.0, Chicago, IL, USA) was performed for all variables considered in the study. The least squares mean (LSM) were separated using Duncan's t-test. All statistical test of LSM were performed for a significance level $\alpha < 0.05$.

III. RESULTS AND DISCUSSION

Table 1 shows the scores from two different processing times. Only four attributes (red colour, cured odour, rancid odour and flavour intensity) were significantly different respect to time of processing.

The redness of the lean showed changes produced by processing time (Table 1). Modifications in the redness lean, agree with what is generally admitted in dry-cured “lacón” industry and with the increase in pigment concentration during the whole process.

With regards, yellowness of fat it is considered a defect in fresh meat (Barton-Gade, 1984) and some meat products (Arvanitoyannis, Bloukas, Pappa, & Psomiadou, 2000). In this work, we observed lower scores for this attribute in both samples studied.

Respect to odour attributes, we only observed significant differences ($P < 0.001$) in cured odour traits, showed higher scores in “lacón” samples with the longer processing time (3.50 vs. 6.42). These results about this sensory characteristic could be expected due to “lacón” samples with higher time process had higher cured odour values and agree with reported in other dry-cured meat products made from whole pieces, such as ham (Ruiz, Ventanas, Cava, Timón, & García, 1998).

The rest of the sensory attributes evaluated did not show significant different ($P>0.05$) with respect to time process, except for flavour intensity where higher scores were observed in samples after 56 days of process. The hardness trait decreased with time process. This result is not in agreement with those reported by other author in dry cured ham (Ruiz et al., 1998; Buscailhon et al., 1994) whom detected an increase in hardness with time of process.

Table 1. Mean values and standard deviation of sensory properties of cooked “lacón” samples.
Effect of process time

Sensory attributes	Salt levels (days/weight)		
	1		
	Drying-ripening (days)		
	56	84	Sig
Appearance			
Fat yellowness	0.87±0.90	1.00±1.06	n.s.
Red colour	5.16±1.20	6.12±0.94	**
Marbling	1.52±0.92	1.04±0.91	n.s.
Odour			
Odour intensity	4.37±1.61	4.58±1.97	n.s.
Cured odour	3.50±1.10	6.42±0.77	***
Rancid odour	0.25±0.60	1.37±2.42	*
Taste			
Taste intensity	5.04±1.39	4.25±2.00	n.s.
Sweetness	0.62±1.43	0.16±0.56	n.s.
Saltiness	5.62±1.01	5.91±0.77	n.s.
Bitterness	0.16±0.81	0.37±1.01	n.s.
Flavour			
Flavour intensity	3.50±2.90	1.83±2.38	*
Cured	2.54±2.87	1.79±2.57	n.s.
Rancid	0.45±1.28	0.54±1.10	n.s.
Mould	0.79±1.84	0.41±1.17	n.s.
Texture			
Fibrousness	3.20±0.83	3.45±1.28	n.s.
Hardness	3.16±1.37	2.83±1.43	n.s.
Juiciness	6.66±0.91	6.45±1.10	n.s.
Chewiness	6.33±0.70	6.29±0.91	n.s.

Significance levels: *** $P<0.001$, ** $P<0.01$, * $P<0.05$, n.s.= not significant

IV. CONCLUSIONS

Processing time affected only significant four sensory properties: red colour, cured odour, rancid odour and flavour intensity. All textural traits studied were not influence of processing time.

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