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Consumers attitudes to Iberian pork meat

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Abstract. In the last years, Iberian pork consumption has been limited as a result of relations established between fat consumption and cardiovascular diseases. However, recent researches have allowed establishing healthy properties to the intake of these kind of meat, and as a consequence its sale has increased, competing successfully with other meats. The objective of this study was to determine the attitudes of consumers to Iberian pork meat. To assess consumers' behaviour to breed (Iberian and white pig) and anatomical origin of the pieces commercial ("*pluma*", "*presa*", "*secreto*") of Iberian pork meat, discriminate tests were used in order to detect differences. Besides, an affective test was carried out in order to know the consumers preference to feeding of the Iberian pigs ("*bellota*", "*cebo*"). The results obtained in the triangle tests showed that consumers were able to differentiate between Iberian and white pork loin. Also differences were found between different commercial cuts of Iberian pig. However, consumers didn't show preferences regarding feeding of the Iberian pigs.

Keywords. Sensory analysis – Meat – Iberian and white pig – Feeding system.

Attitudes des consommateurs vis-à-vis de la viande de porc Ibérique

Résumé. *Lors des dernières années, la consommation de porc Ibérique a été limitée en raison des relations établies entre la consommation de matières grasses et les maladies cardiovasculaires. Cependant, les récentes recherches ont permis d'attribuer des propriétés santé à la consommation de ces types de viande, ce qui a déterminé un développement de leur vente, concurrençant avantageusement d'autres viandes, grâce à leur qualité nutritive et leurs caractéristiques sensorielles. L'objectif de l´étude était de déterminer les attitudes des consommateurs vis-à-vis de la viande de porc Ibérique. Pour évaluer ce comportement, des tests discriminants ont été réalisés pour détecter des différences dues à la race (porc Ibérique et porc blanc) ou à l'origine anatomique de la pièce (*"pluma", "presa", "secreto"*) et des tests pour déterminer la préférence en ce qui concerne l'alimentation du porc Ibérique (*"bellota", "cebo"*). Les résultats obtenus dans le test triangulaire réalisé ont montré que les consommateurs étaient capables de différencier entre échine de porc Ibérique et de porc blanc. Ils ont aussi différencié entre différentes pièces de porc Ibérique. Cependant, ils n'ont montré aucune préférence en fonction de l'alimentation.*

Mots-clés. *Analyse sensorielle – Viande – Porc ibérique et porc blanc – Alimentation.*

I – Introduction

In the last years, Iberian pork consumption has been limited as a result of relations established between fat consumption and cardiovascular diseases. However, recent researches (García-Rebollo ***et al***., 1998) have allowed establishing healthy properties to the intake of this kind of meat.

Iberian pork comes from genuinely bred Southwest Iberian Peninsula pigs traditionally fattened with acorns and pasture in an extensive production system. Most of Iberian pork is consumed as highly priced cured products. However, the importance of the consumption of fresh meat has recently increased, since consumers have become more concerned about questions such as ethical forms of animal production, animal welfare, traditional production or nutritional and sensory characteristics of the meat.

It is well know that breed, productive system and muscle type influence the fatty acids profiles

and the sensory characteristic of fresh pork meat and meat products. However, the influence of these factors on eating quality of Iberian meat has not been evaluated.

The aim of this study was to determine if the sensory quality of culinary pork meat was affected by breed (Iberian and white pig), retail cuts ("*pluma*", "*presa*", "*secreto*"), and rearing system ("*bellota*", "*cebo*") using different tests with consumers.

II – Material and methods

1. Meat samples

Samples from heavy white pig (loin) were obtained from a regional abattoir (Segovia, Spain) the day after slaughter and samples from Iberian pig (loin, sirloin, "pluma", "presa", "secreto") were obtained from a local abattoir (Guijuelo, Spain) the day of slaughter. All the samples were transferred to Estación Tecnológica de la Carne, where they were vacuum-packed and frozen at -20ºC until further analyses.

2. Consumers

Consumers tests were performed during the "VI Jornadas del cerdo Ibérico y sus productos" (Salamanca-Spain, 2008). The tasters (n= 85) were mainly farmers, manufacturers and technicians associated with pig meat industry. Before tasting the samples, subjects were asked to specify their age, their gender and their frequency pork meat consumption on the evaluation sheet.

3. Analysis

Consumers were only informed that they would evaluate different pork samples.

A triangle test (ISO 4120:2004) was performed on loin (*longissimus lumborum* and *thoracis* muscle), to determine whether there was a difference between samples from Iberian and heavy white pig reared in confinement with a concentrate feed. The triangle test was carried out by the forced-choice option, in which the tasters must choose the sample that, in their opinion, is different. Besides, to complement the triangle test, tasters were asked to indicate their reasons for selecting one particular sample of the three used in the analysis.

A rank order test was carried out between "pluma" (rhomboid muscle chest), "presa" (serratus, ventral, cervical and thoracic muscles) and "secreto" (*latissimus dorsi* muscle) from Iberian pig in order to test the effect of retail cut on the juiciness of the Iberian pork meat.

Finally, a preference analysis between sirloin (*iliopsoas* and *psoas minor* muscle) from Iberian pigs feeding with acorn and grass ("bellota") or with concentrates ("cebo") was performed by consumers.

4. Cooking and serving

Sensory analyses were carried out on samples after about 10 month frozen storage. Vacuum-packed samples were thawed for 24 to 36 h at 4ºC. After thawing, the muscles were cut in steaks (1 cm thick) and cooked to a final internal temperature of 72ºC using a two-sided electric grill (GV2PSG, Clajosa, Barcelona, Spain).

The samples were immediately served to consumers for their evaluation. For rinsing the mouth between samples, mineral water at room temperature and unsalted toasted bread were served to them.

III – Results and discussion

Characteristics of the consumer panel are summarized in Table 1. The tasters were mainly men over 30 years, regular consumers of pork meat.

Results of triangle tests indicated that there was a detectable difference ($p<0.01$) between the loin from Iberian pigs and heavy white pigs reared under similar conditions.

Table 1. Demographic characteristics and pork meat consumption frequency (n=85, %).

Age			Gender		Frequency of consumption			
20-30	**31-60**	**>60**	**Male**	**Female**	**>1/week**	**1/week**	**1-3/month**	**<1/month**
19.6	71.4	8.9	82.2	17.8	41.1	21.5	16.0	21.5

According to the tasters, texture characteristics were the main parameter that allowed differentiates the samples (Fig. 1). The tasters pointed out that the Iberian loin was more juicy and tender and showed higher flavour intensity than loin from white pig. These characteristics may be due to variations in intramuscular fat content of meat. Intramuscular fat influence on eating quality of meat resulted in higher saliva excretion during chewing which increase the juiciness of meat (Daszkiewicz *et al.,* 2003). Moreover, intramuscular fat facilitates separation of muscular filament and reduces the cutter force (Wood *et al.,* 1994). As has been pointed out by López-Bote (1998), Iberian breed pig has a high tendency to accumulate fat, whereas the other commercial breeds increases the lean content of the carcass and concomitantly decreases the intramuscular fat content (Ventanas *et al*., 2007).

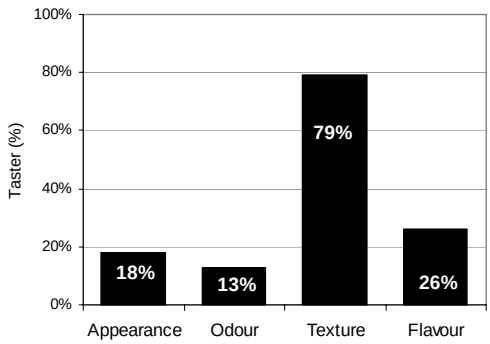

Fig. 1. Sensory differences indicated by the tasters (%) in the triangle test.

Concerning the results of the rank order test, differences ($p<0.05$) among the three retail cuts evaluated were detected. Results revealed that subjects considered "*pluma*" as the juiciest. However, there were not significant differences in the juiciness between "*presa*" and "*secreto*". A positive impression of juiciness of meat is related to high fat content (Jaworska et al., 2009). Results from the ranking test may be explained taking into account the inter and intramuscular fat content of the retails cuts evaluated. However, as far as we know, no papers have been devoted to the characterization of this kind of meat.

Regarding the preference tests, differences were not detected ($p>0.05$). The feeding of Iberian pig with acorn ("*bellota*") or concentrates ("*cebo*") did not suppose any preference of the

consumers. This result would be due to that, today, Iberian pigs reared indoors are fed on monounsaturated fatty acid enriched concentrates (with high oleic acid sunflower oil) for obtaining a similar muscle fatty acid profile to that to pigs fed on acorns.

IV – Conclusions

On the basis of the results obtained it is possible to confirm that breed and muscle type affect sensory quality of pork meat after heat treatment. However, in this study the feeding on acorns did not contribute to increase consumers' preference of cooked Iberian meat.

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