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Consumers perception of iberian cooked meat products

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Abstract. Today, many consumers demand and have available a wide assortment of high quality foods. The quality of meat products is influenced by intrinsic factors such as breed, genotype, reared system, and feeding regime. Thus, cooked products manufactured from raw material from Iberian and white pigs should show different sensory quality. The aim of this study was to evaluate different cooked products made from Iberian and white pigs, in order to establish differences. Samples of different cooked meat products were purchased from local supermarkets (cooked ham, pâté and cooked sausages). In order to know if consumers could distinguish between Iberian and white cooked meat products, different tests (triangle test, duo-trio test and ranking test) were carried out with consumers. The results showed that consumers were able to distinguish between cooked meat products manufactured from Iberian and white raw meat. According to consumers, flavour and juiciness were the attributes that allowed distinguish these products.

Keywords. Sensory analysis – Cooked meat product – Iberian and white pig.

Perception qu'ont les consommateurs des produits cuits à base de viande de porc Ibérique

Résumé. Les attributs qui sont propres aux produits de la viande et qui les rendent très appréciés par les consommateurs, sont étroitement liés aux caractéristiques des matières premières, notamment la génétique et le système d'exploitation des animaux. Pour cette raison, les produits cuits élaborés avec des matières premières de porc Ibérique devraient présenter des différences par rapport à ceux élaborés avec des matières premières de porc blanc. L'objectif de l'étude a été l'évaluation sensorielle de différents produits cuits élaborés avec du porc Ibérique ou du porc blanc, afin de pouvoir établir des différences. Les résultats obtenus ont montré que les consommateurs ont été capables de distinguer entre les produits élaborés avec une matière première de porc Ibérique et ceux à base de porc blanc. Les attributs qui ont permis d'établir des différences ont été le goût et la teneur en jus.

Mots-clés. Analyse sensorielle – Viande de porc Ibérique et de porc blanc – Produits cuits.

I – Introduction

Cooked pork meats like pâté, sausages or cooked ham are very consumed in Spain. Even though there is a large variety of cooked products on the Spanish market, most of them are made using meat and back fat from white pigs. From a nutritional point of view, fat from white pigs has a considerable level of saturated fatty acids and cholesterol, with an undesirable n-6/n-3 polyunsaturated fatty acids ratio. Consumer concerns about the relationship between health and nutrition, challenge food technologists to develop new meat and fat-based products with improved characteristics.

In this sense, using meat and adipose tissue from Iberian pigs for the manufacture of cooked products results in a high quality product. Intramuscular fat of these pigs is characterized by large percentages of monounsaturated fatty acids, a small proportion of hypercholesterolemic fatty acids and present lower values of the ratio n-6/n-3 than fat from white pigs (Estevez *et al.*, 2006). The products traditionally obtained from these animals such as dry cured hams and dry-cured loins are highly appreciated by Spanish consumers. However, to date, the iberian cooked meat products are not well known by consumers.

The aim of this study was to evaluate if the consumers are able to establish differences between diverse cooked products made from Iberian and white pigs, in order to increase the knowledge about the consumers' perception to these new products.

II – Material and methods

To achieve this objective pâté, cooked ham and sausages manufactured from white or Iberian pigs were used. All samples were purchased from local markets and were subject to consumer sensory evaluation.

The tasters (n=84) were mainly farmers, manufacturers and technicians associated with pig meat industries, habitual consumers of meat products. Characteristics of the untrained panel are summarized in Table 1.

Table 1. Characteristics of the tasters based on age and gender

Tasters	Age (years)				
	20-30	31-40	41-50	51-60	>60
N [†]	21.4%	27.4%	29.8%	13.1%	8.3%
Male	11.9%	17.9%	22.6%	11.9%	8.3%
Female	9.5%	9.5%	7.2%	1.2%	—

[†]All consumers.

In order to know if consumers could establish differences between cooked meat products manufactured from white or Iberian pork meat, consumers carried out different discrimination tests. First, a triangle test was carried out according to the ISO 4120:2004. Samples, consisting of Iberian pâté and pâté were served on plastic plates to participants. Three coded samples were presented to each panellist and each panellist was asked to pick out which sample they feel different from the other two. Besides, to complement the triangle test, tasters were asked to indicate the reason for selecting one particular sample of the three used in the analysis. Then, consumers carried out a duo- trio test (ISO 10399:2004). Three samples of cooked ham (manufactured from white or Iberian pork meat) were presented to tasters: one sample was labeled "R" (reference) and the other two were coded. One of the coded samples was identical to "R" and panellists were asked to identify the correct sample. Besides, tasters were asked to indicate the reason for selecting one particular sample of the three used in the analysis. Finally, a ranking test (ISO 8587:2006) was carried out with three cooked sausages kind: Frankfurt, Bratwurst and iberian sausages. Panellists received three coded samples and were requested to rank samples for intensity of some specific characteristic. Besides, the subjects were asked to specify the characteristic that determined their preference.

Mineral water at room temperature and unsalted toasted bread were available and tasters were required to consume them before tasting each sample in order to rinse their mouths between samples. Consumer's tests were conducted in a room with white fluorescent lighting and kept at constant temperature of 21±2°C at Salamanca (Spain).

III – Results and discussion

The results of the triangle test are shown in Table 2 and revealed that tasters perfectly discriminated among the tasted samples.

The age and the gender of consumers did not establish differences in the significance level. In general, all tasters chosen the flavour, principally, for selecting the iberian pâté as different sample (Fig. 1).

Table 2. Results obtained in the triangle test carried out with pâté

Age	Tasters	No. judgements corrects	Significance level
20-30	N†	18/18	***
	Male	10/10	***
	Female	8/8	***
31-40	N	21/23	***
	Male	13/15	***
	Female	8/8	***
41-50	N	21/25	***
	Male	16/19	***
	Female	5/6	**
51-60	N	11/11	***
	Male	10/10	***
	Female	1/1	—
>60	N	7/7	***
	Male	7/7	***
	Female	—	—

†All consumers.

*** $p < 0.001$.

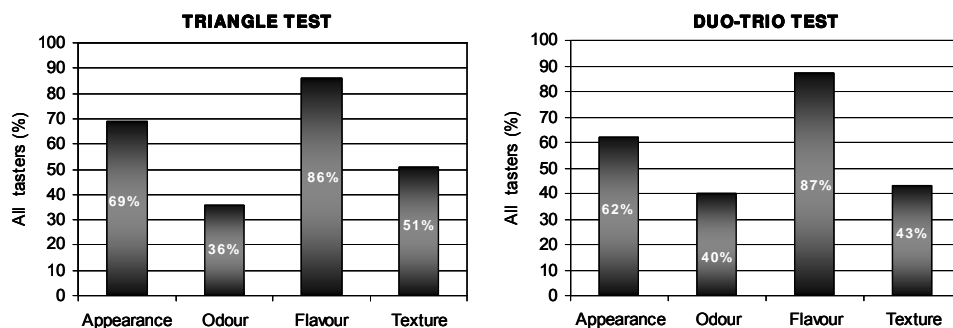


Fig. 1. Attributes indicated by the tasters in the triangle and duo-trio tests for selecting the preferred sample.

Results from the duo-trio test (Table 3) with all consumers pointed out that the consumers ranging 20-60 years significantly differentiated the cooked ham manufactured from white or Iberian pork meat. Taking the gender into account, the number of assessors who correctly identified the different sample was lower for male and higher for female. Similarly to triangle test, all tasters chosen the flavour as attribute for differentiating the iberian cooked ham (Fig. 1).

These results may be due to variations in fatty acids content of meat. Different studies have been focused on the role of fatty acids in meat flavour formation. In this sense, Mottram (1998)

pointed out that the characteristic flavour of cooked meat derives from thermally induced reactions occurring during heating, principally the Maillard reaction and the degradation of lipids. During the oxidation of the fatty acid components of lipids, the reactions occur quickly and provide a profile of volatiles which contribute to desirable flavours. Besides, unsaturated fatty acids undergo autoxidation much more readily than those which are saturated.

Table 3. Results obtained in the duo-trio test carried out with cooked ham

Age	Tasters	No. of correct answers	Significance level
20-30	N†	17/18	***
	Male	9/10	*
	Female	8/8	**
31-40	N	21/23	***
	Male	13/15	**
	Female	8/8	**
41-50	N	25/25	***
	Male	19/19	***
	Female	6/6	*
51-60	N	11/11	***
	Male	10/10	***
	Female	1/1	—
>60	N	5/7	N.s
	Male	5/7	N.s
	Female	—	—

†All consumers.

n.s: $p > 0.05$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Finally, the results obtained in the ranking test, showed differences ($p < 0.05$) among the three cooked sausages evaluated. The juiciness was the parameter what allowed establish differences. These results revealed that tasters considered Bratwurst sausages as the juiciest and the Iberian sausages as the least juiciness. The fat content of the sausage may explain this result. Matulis *et al.* (1994, 1995) reported that in the manufacture of frankfurters the juiciness differed with the fat content.

IV – Conclusions

In summary, the Iberian cooked meat products evaluated in this study were differentiated by the consumers. These results show that, probably, these types of products can be accepted by the consumer, although studies with a larger number of subjects should be carried out.

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