

# LOW PROTEIN AND “ALPERUJO” DIET DO NOT AFFECT CONSUMERS’ ACCEPTABILITY OF IBERIAN CROSSBREED DRY-CURED LOINS

Maria Font-i-Furnols<sup>1\*</sup>, Javier García-Gudiño<sup>1</sup>, Albert Brun<sup>1</sup>, Marina Gispert<sup>1</sup>, José Perea-Muñoz<sup>2</sup>, Juan García-Casco<sup>3</sup>, Elena González<sup>4</sup>, Isabel Blanco-Penedo<sup>1,5</sup>

<sup>1</sup>IRTA, Finca Camps i Armet, 17121 Monells, Girona, Spain;

<sup>2</sup>UCO, Campus Universitario de Rabanales, Ctra.N-IV, km 396, 14014 Córdoba, Spain;

<sup>3</sup>INIA, Centro de I+D en Cerdo Ibérico – INIA. Ctra. Ex101, km 4,7 06300 Zafra, Spain;

<sup>4</sup>UEX, Ctra. de Cáceres s/n, 06071 Badajoz, Spain;

<sup>5</sup>SLU, Department of Clinical Sciences. Box 7054. 750 07 Uppsala, Sweden.

\*Corresponding author email: maria.font@irta.cat

**Abstract** – The aim of the present work was to evaluate the inclusion of low protein and “alperujo” in the diet of crossbreed Iberian pigs in the sensory acceptability of dry-cured loin by consumers. For this purpose, loins from 28 pigs fed 3 diets (control, low protein diet and diet with “alperujo”) were dry-cured. Their appearance, color, marbling, odor, taste, raw meat sensation, salty and overall acceptability were evaluated in Barcelona and Córdoba by 201 consumers. Results show no significant ( $P>0.05$ ) effect of the diet on the scores given by consumers on any of the attributes. It can be concluded that low protein and “alperujo” diet do not affect the consumers’ sensory acceptability of dry-cured loin.

**Key Words** – sensory analysis, sustainable diet, pork

## I. INTRODUCTION

Iberian crossbreeds fattened under intensive management systems need to be fed diets that reduce the growth rate in order to reach the desired weight (minimum carcass weight of 115 kg) in 10 months minimum [1]. However, it is crucial that these diets do not affect meat/fat quality of Iberian crossbred’s pigs. Moving towards sustainable animal diets, some optimal possibilities to achieve productivity objectives are the use of low protein diets and by the use of sub-products from olive agro-industry like for instance “alperujo” which in addition integrates ecological aspects and as well as it maximizes the profit for all stakeholders in the pork chain [2]. It was reported an effect of “alperujo” in the diet in the fresh loin acceptability by consumers [3] but it is not known if this sub-product would affect at the acceptability of dry cured products, which are very common in Iberian pig production.

The aim of the present work is to determine the effect on consumer sensory acceptability of dry-cured loin from Iberian crossbred fed different diets.

## II. MATERIALS AND METHODS

Twenty-eight crossbreed Iberian castrated male pigs were distributed in three feeding regimens: control (n=8), diet with low protein (n=10) and a sustainable diet using a sub-product from olive called “alperujo” (n=10). Pigs were slaughtered at commercial conditions at 152.5± 12.65 kg live weight. Loin was dry-cured during 70 days minimum [1] by a processor of the south of Spain.

For the consumer study, dry-cured loins were cut in 2 mm slices prior to the session. Each consumer evaluated three slices of loin, one of each feeding treatment. Loins were served at the same time and consumers were asked to evaluate them in a designed order to avoid first sample and carry-over effect.

A total of 201 consumers participated in the study, 100 in Barcelona and 101 in Córdoba, selected following the Spanish National population by gender and age (Table 1). The evaluation was performed in controlled conditions in sessions of 20 consumers. For each loin consumer evaluated in a 9-point scale (from 1: ‘I dislike extremely’ to 9: ‘I like extremely’ without the intermediate level 5: ‘neither like nor dislike’) the general appearance, color, marbling, odor, taste, raw meat sensation, salty and overall acceptability.

Mixed procedure was performed considering place and feeding strategy as fixed effects, consumer as random and session as blocking variable.

Table 1 Distribution (%) of the consumers participants in the study by sex and age group.

	Sex		Age			
	Male	Female	<25	25-40	41-60	>60
Barcelona (n=100)	47	53	9.1	27.3	41.4	22.2
Córdoba (n=101)	53.47	46.53	31.7	34.7	26.7	6.9
TOTAL	50.25	49.75	20.5	31.0	34.0	14.5

### III. RESULTS AND DISCUSSION

Place of assessment was only significant ( $P=0.049$ ) for taste scores, being those slightly higher in Barcelona than in Córdoba (7.18 vs. 6.9). Regarding the attributes evaluate by consumers, no significant difference ( $P>0.05$ ) between diet was found in any of them (Table 2). Thus, although in fresh loin “alperujo” diet produce lower acceptability by consumers [2], this cannot be seen in dry cured loin, allowing the suitability of this sub-product to obtain this type of product.

Table 2. Least squared means of the consumers' scores of the dry cured loin attributes (SE: standard error).

	Diets			SE	P-value
	Control	Low Protein	"Alperujo"		
Appearance	7.2	7.2	7.2	0.09	0.828
Color	7.1	7.3	7.1	0.09	0.166
Marbling	6.9	7.0	6.8	0.11	0.620
Odor	7.1	7.1	7.2	0.10	0.918
Taste	7.0	7.1	7.1	0.10	0.954
Raw meat	6.7	6.9	6.9	0.11	0.139
Salty	6.8	6.9	6.9	0.11	0.481
Overall acceptability	7.0	7.1	7.1	0.09	0.925

### IV. CONCLUSION

In the conditions of the present experiment, sensory acceptability of dry-cured loins is not affected by the feeding regimen received by the pigs. Thus, a more sustainable diet using a co-product of the olive “alperujo” and a low protein diet do not affect negatively at the sensory acceptability of dry-cured loins by consumers.

### ACKNOWLEDGEMENTS

This work has been financed by INIA trough the project INIA RTA2013-063-C03-01. INIA is also thanked for the scholarship to Javier García-Gudiño. The authors also would like to thank the technician Albert Rossell.

### REFERENCES

- [1] Real Decreto 4/2014, de 10 de enero, por el que se aprueba la norma de calidad para carne, el jamón, la paleta y la caña de lomo ibérico. Boletín Oficial del Estado 11 enero 2014, Núm. 10, Sec. I (pp 1569-1585).
- [2] den Hartog, L.A., Sijtsma S. R. (2011). The future of animal feeding: towards sustainable precision livestock farming. *Advances in pork production*, 22, 1-16.
- [3] Gispert, M., García-Gudiño, J., Blanco-Penedo, I., Perea-Muñoz, J., García-Casco, J., González, E., Brun, A., Font-i-Furnols, M. (2016). Effect of the diet on the consumer acceptability of fresh loin from Iberian pigs. 67th EAAP Annual Meeting (p. 653), 29th August- 2nd September, Belfast, United Kingdom.