

VALIDATION OF A SENSORY PANEL FOR “JAMÓN DE GUIJUELO” PDO CURED- HAM QUALIFICATION

Revilla I., Martínez-Martin, I., Vivar-Quintana A.M., González-Martín, M.I., Hernández Ramos, P.A.

Food Technology Area. Higher Polytechnic School of Zamora Avenida Requejo 33, 49022 Zamora, Spain University of Salamanca

Pangborn 2019

INTRODUCTION

“Jamón de Guijuelo” is an Spanish Iberico dry-cured ham that is hosted under a Protected Designation of Origin (PDO). Previous works revealed that there is a generalized lack of specific methods in the quality control of sensory characteristics of Protected Designation of Origin (PDO). In this sense reported experiences about how to develop procedures for sensory quality control of PDO products includes not only the definition of the product, the selection and training of panelists but also the qualification process for expert panelist and the validation of the method for the selected product. This validation is compulsory according with the European Directive EN7450001 for certification entities.

The aim of this work was to validate the sensory panel of Food Technology Area, that is formed by experienced panelists in QDA analysis according with the method proposed by Elortondo et al., (2006) after they were trained to evaluate Iberian cured-ham



SAMPLES



The samples were obtained by cutting with a knife along a line passing through the thickest part of dry cured hams as described by González-Casado et al. (2019).

SENSORY PANEL

Six assessors (range in age of 20-50 years) with previous experience in sensory evaluation of dry-cured hams, participated in the study. All assessor were staff at the University of Salamanca and were experienced in using descriptive techniques. Figure 1 shows the sensory card used for tasting sessions that includes the sensory parameters proposed by Regulatory Board of PDO “Jamón de Guijuelo” (blue) and those generated by the panel.

Figure 1 Sensory card used for tasting sessions

		Sample	Sample	Sample	Sample
		1 - 9	1 - 9	1 - 9	1 - 9
Visual	Veined	Low-High			
	Colour fat	Yellow-White			
	Colour homogeneity	Low-High			
	Colour intensity	Low-High			
	Exudate	Low-High			
White dots	Low-High				
Odour	Odour intensity	Low-High			
	Cured aroma	Low-High			
	Pig aroma	Low-High			
	Rancity aroma	Low-High			
	Atypical aroma	Low-High			
Flavour	Flavour intensity	Low-High			
	Fat flavour intensity	Low-High			
	Cured flavour	Low-High			
	Saltiness	Low-High			
	Sweetness	Low-High			
	Sourness	Low-High			
	Rancity	Low-High			
	Aftertaste	Low-High			
Atypical flavour	Low-High				
Texture	Hardness	Low-High			
	Juiciness	Low-High			
	Fatness	Low-High			
	Fibrousness	Low-High			
	Chewiness	Low-High			
	Gumminess	Low-High			
	Heterogeneity	Low-High			
	Chewing residue	Low-High			

QUALIFICATION OF ASSESSORS

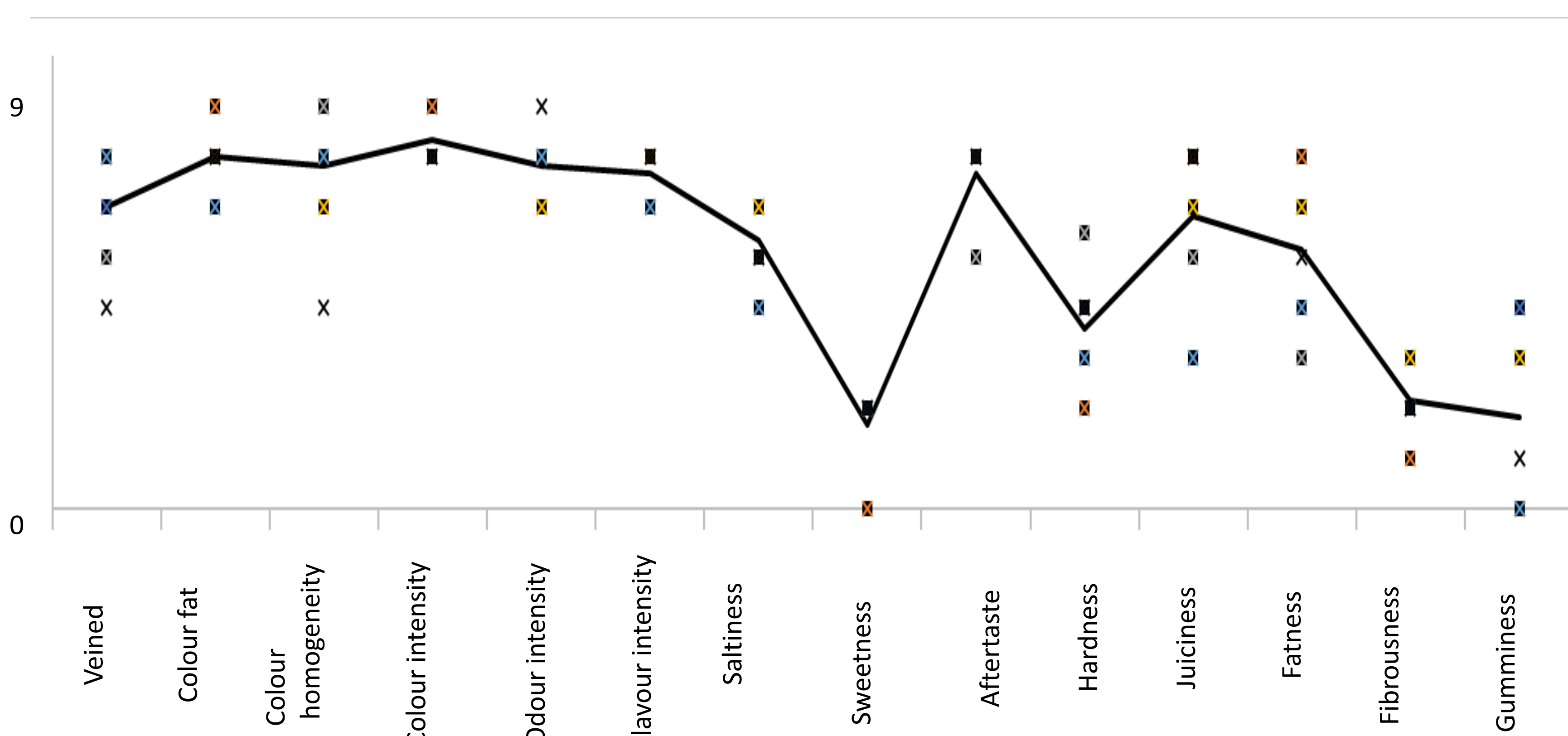
To validate the method, a sample was tasted three times in a session and in three different sessions and this procedure was carried out for three different samples. The data of these tasting sessions were used to calculate the repeatability and reproducibility. The standard repeatability deviation is calculated as the average of the standard deviations in the sesión with each ham sample. The standard reproducibility deviation is calculated as the square root of the sum of the variances between sessions plus the variance due to repeatability as described by Pérez Elortondo et al., (2007). The value of 0.5 for repeatability and 0.8 for reproducibility were the maximum uncertainties accepted. The table 1 show the results of those parameters included in the sensory card of Regulatory Board of PDO “Jamon de Guijuelo”. All of them, excepting exudate, showed values for repeatability and reproducibility under the maximum accepted.

Table 1. Results of validation for some of the parameters analyzed (mean of assessors as a whole).

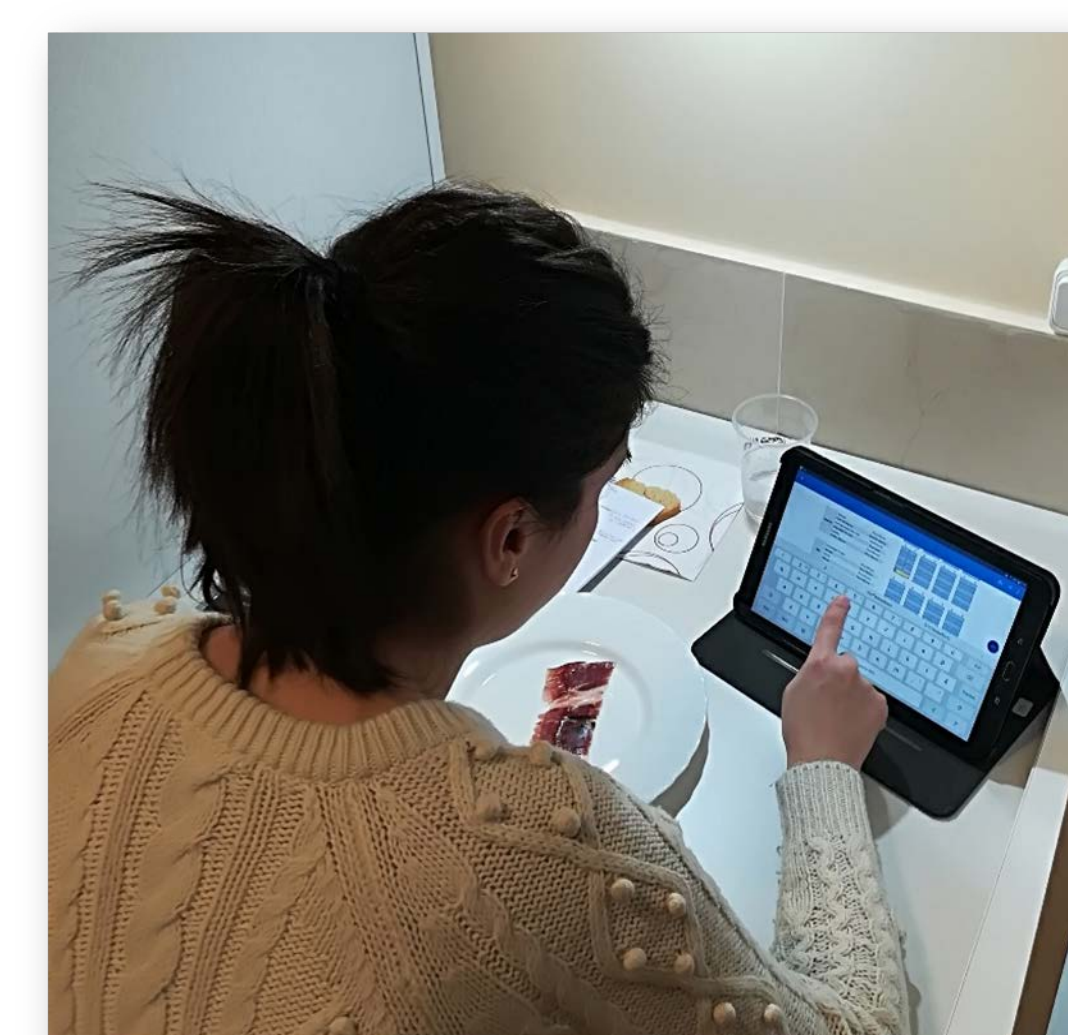
	Veined				Colour fat				Colour homogeneity				Colour intensity				Odour intensity				Flavour intensity				Saltiness			
	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss
Sesion 1	6.67	6.50	6.00	0.38	7.67	7.33	7.00	0.34	7.33	6.67	6.83	0.34	7.58	7.00	7.33	0.29	7.17	6.83	6.83	0.20	7.17	7.00	6.67	0.25	5.50	5.50	5.33	0.10
Sesion 2	6.67	6.50	6.00	0.35	7.50	7.17	6.50	0.51	6.83	7.00	6.67	0.17	7.33	7.17	7.33	0.09	7.17	6.83	6.92	0.18	7.17	7.17	6.83	0.20	5.50	5.33	5.83	0.25
Sesion 3	7.33	7.75	6.83	0.46	7.67	7.08	6.83	0.43	6.42	7.00	7.17	0.39	7.58	6.83	7.50	0.41	7.33	7.00	6.92	0.22	7.00	7.17	7.33	0.17	4.67	5.17	5.42	0.38
S repeatability	0.39				0.42				0.30				0.27				0.20				0.21				0.24			
Sbs	0.06				0.09				0.12				0.16				0.02				0.05				0.14			
S reproducibility	0.68				0.75				0.56				0.54				0.34				0.36				0.49			

	Sweetness				Aftertaste				Hardness				Juiciness				Fatness				Fibrousness				Gumminess			
	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss	1	2	3	Ss
Sesion 1	2.00	2.50	1.67	0.42	6.17	6.83	6.67	0.34	3.67	3.33	3.58	0.18	6.17	5.67	5.83	0.26	4.50	4.50	5.17	0.38	2.17	2.33	2.17	0.09	2.67	2.33	1.83	0.42
Sesion 2	1.83	1.50	2.00	0.25	6.50	6.83	6.67	0.17	4.00	3.33	3.33	0.39	6.17	5.83	5.50	0.34	4.67	5.00	4.50	0.25	2.17	2.33	2.00	0.17	2.67	2.00	1.83	0.44
Sesion 3	2.50	2.00	2.50	0.29	5.67	5.80	6.33	0.35	4.17	3.50	3.33	0.44	5.67	5.17	5.67	0.29	5.83	5.08	5.67	0.39	2.50	3.00	3.17	0.35	3.17	2.67	2.33	0.42
S repeatability	0.32				0.29				0.34				0.29				0.34				0.20				0.43			
Sbs	0.09				0.11				0.14				0.04				0.08				0.13				0.01			
S reproducibility	0.57				0.53				0.63				0.51				0.61				0.42				0.74			

Figure 2. Individual scores given by each assessor and medium value (--) of each sensory parameters for one sample



An individual report (Figure 2) is drawn up comparing the results given by each the judges in each session for each sample with the average results from the panel as a whole. In those cases where the standard deviation of the panel is ≥ 1 , an analysis of the data from panelists responsible of this dispersion is conducted. This report is to be shown to the judges so that they can see where there were deviations.



Acknowledgment

This study was made possible by funds from Reserch Projects from Junta de Castilla y León (Spain) Ref. SA039P17).

REFERENCES

- González Casado, A., Jiménez Carvelo, A.M. & Cuadros-Rodriguez, L. (2019). Sensory quality control of dry-cured ham: A comprehensive methodology for sensory panel qualification and method validation. *Meat Science*, 149, 149-155. <https://doi.org/10.1016/j.meatsci.2018.11.021>
- Pérez-Elortondo, F.J., Ojeda, M., Albu, M., Salmerón, J., Etayo, I & Molina, M. (2007). Food quality certification: An approach for the development of accredited sensory evaluation methods. *Food Quality and Preference*, 18, 425-439. <https://doi.org/10.1016/j.foodqual.2006.05.002>