

STUDY OF THE CORRELATIONS BETWEEN DIFFERENT SAMPLING POINTS IN SPANISH DRY-CURED HAMS USING SENSORY PARAMETERS AND NIRS

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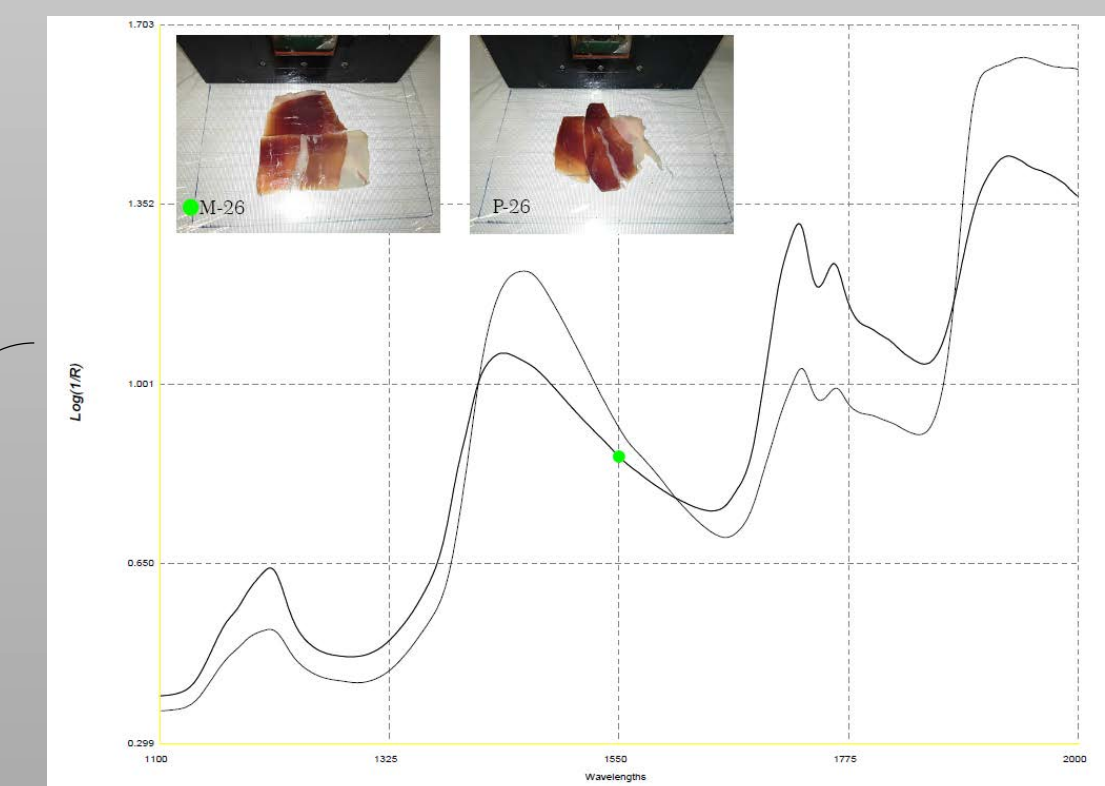
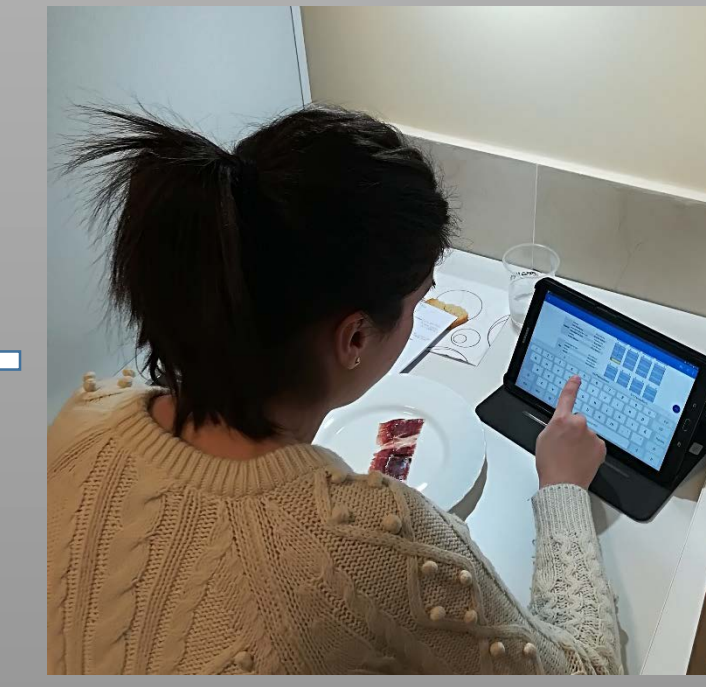
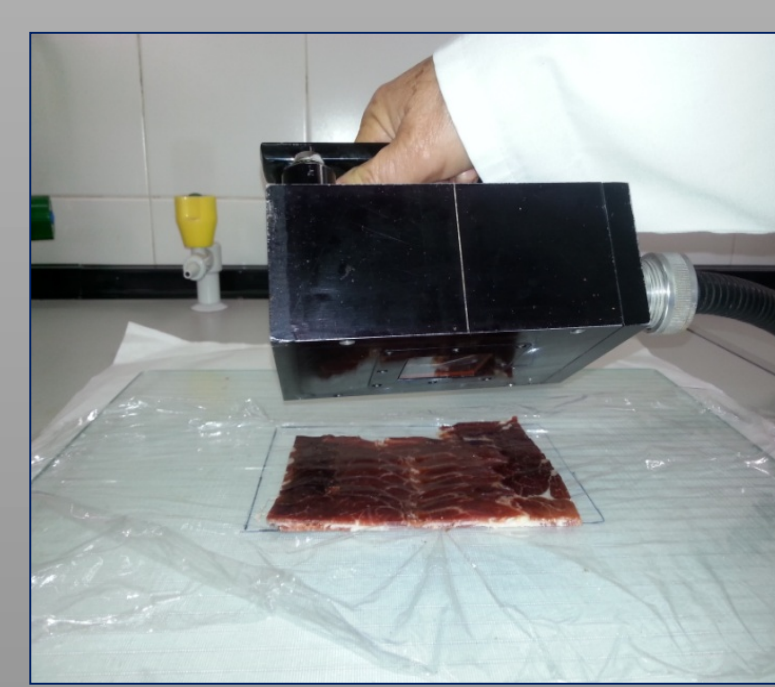
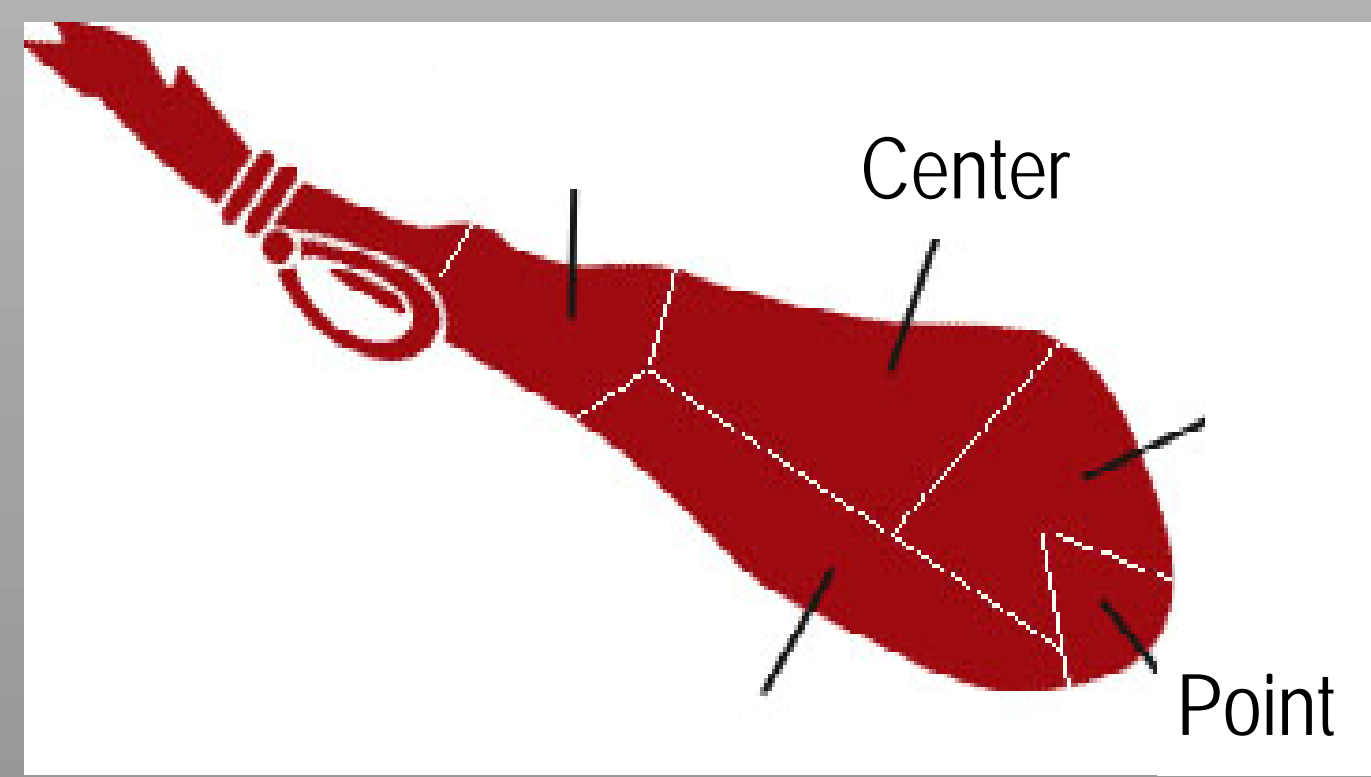
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Introduction and Aims

Spanish dry-cured ham is a very popular meat product partly owing to its flavor but also to its nutritional quality and long shelf life. As a result of this the physicochemical and sensory analysis of this product is very important. In sample preparation for analysis the ham must be boned, cut at the head of the femur, and sliced perpendicularly to the femur axis in the direction of the distal part. This kind of sampling procedure uses the most expensive part of the ham for analysis. However, the distal part near the hip joint (which is known as the point) is more accessible and cheaper. The aim of this study is to determine whether the characteristics of the point and the center of dry-cured ham could be correlated

Materials and methods

50 Iberian Spanish dry-cured hams



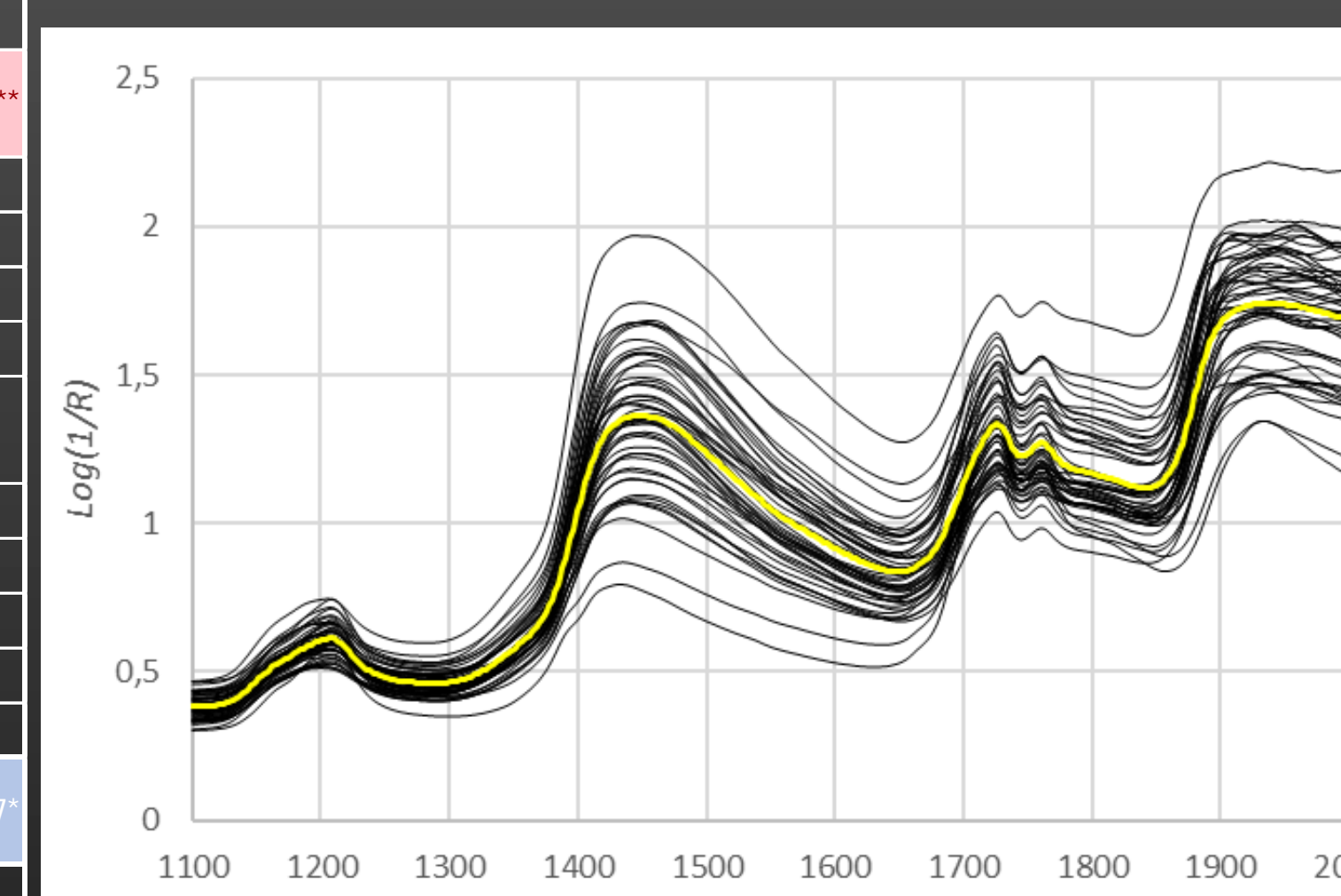
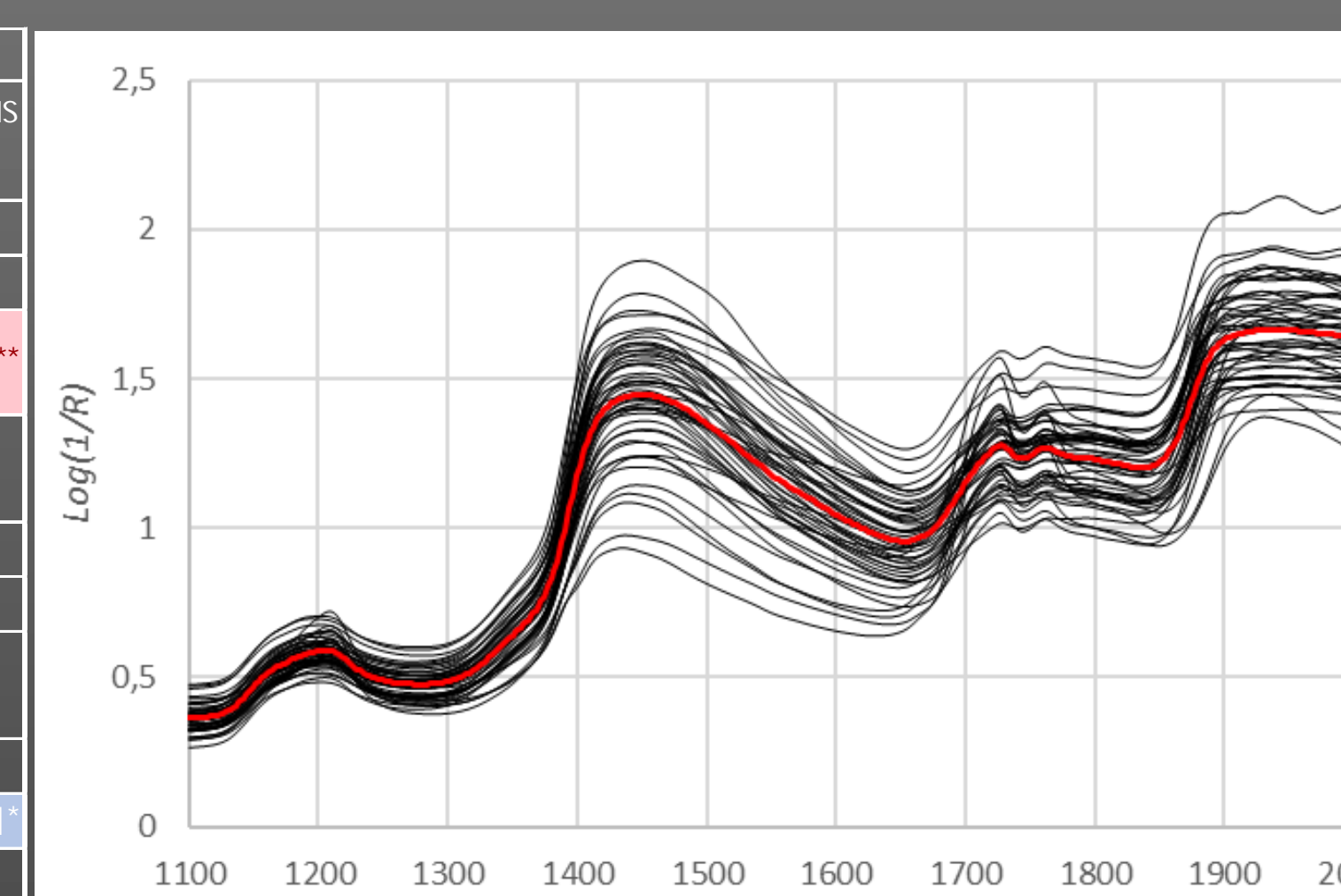
Fecha:	Catastor:				
	Muestra	Muestra	Muestra	Muestra	
Intensidad	Poco Mucho	0	1	2	3
Color de la grasa	Amarillo-Blanco				
Aspecto	Homogeneidad del Color	Poco Mucho			
	Intensidad del color	Poco Mucho			
	Sudado	Poco Mucho			
	Puntos Blancos	Poco Mucho			
	Intensidad de olor	Poco Mucho			
	Curado	Poco Mucho			
	Rancio	Poco Mucho			
	Olor extraño	Poco Mucho			
	Intensidad de sabor	Poco Mucho			
	Intensidad de la grasa	Poco Mucho			
	Curado	Poco Mucho			
	Sudado	Poco Mucho			
	Dulce	Poco Mucho			
	Ácido	Poco Mucho			
	Rancio-Atípico	Poco Mucho			
	Heterogéneo	Poco Mucho			
	Sabor extraño	Poco Mucho			
	Dureza	Poco Mucho			
	Apagada	Poco Mucho			
	Grasada	Poco Mucho			
	Fibrosa	Poco Mucho			
	Masticabilidad	Poco Mucho			
	Chicoridad (fibra)	Poco Mucho			
	Homogeneidad	Poco Mucho			
	Residuo	Poco Mucho			

Results

The table shows the Pearson correlation coefficients between center and point sensory parameters-

- Some characteristics of the point such as rancid odour, taste intensity, cured intensity, sour, hardness or pastiness did not show any significant correlation with sensory parameters of the center.
- Cured taste or fatness sensation from the center did not show any significant correlation
- Only some parameters of the center were correlated with their correspondent of the point such as salty and those related with appearance (marbling, fat colour, colour intensity, sweating) and texture (juiciness or fibrousness).
- Fat colour shows the highest number of significant correlations revealing an important role of the fat in the final sensory characteristics of the dry-cured ham

		Point appearance					Point Odour					Point taste					Point texture					
		Marbling	Fat colour	Colour homogeneity	Colour intensity	Sweating	White spots	Odour intensity	Cured odour	Pork odour	Abnormal odour	Fat taste intensity	Salty	Sweet	Rancid taste	Abnormal taste	Juiciness	Fatness sensation	Fibrousness	Chewiness	Heterogeneous texture	
Center Appearance	Marbling	0.462**												0.310*		-0.317*						
	Fat colour		0.321*																			
	Colour homogeneity					0.321*															-0.376**	
	Colour intensity			0.295*	0.292*			0.371**	0.433**													
	Sweating					0.370**	-0.327*								-0.298*						-0.286*	
Center Odour	White spots			0.433**	0.313*			0.288*						0.284*								
	Odour intensity	0.319*	0.311*																			
	Cured odour							0.410**													0.291*	
	Pork odour																					
	Rancid odour																				0.417**	
Center Taste	Abnormal odour																				0.346*	
	Taste intensity				0.321*																	
	Fat taste intensity	0.352*	0.333*												-0.281*		0.449**				-0.378**	
	Salty	-0.284*													-0.332*							
	Sweet																				0.280*	
Center Texture	Sour	-0.301*																				
	Rancid taste														0.318*							
	Abnormal taste																					
	Hardness	-0.347*	-0.350*																			
	Juiciness																					
Point Appearance	Fibrousness																					
	Chewiness																					
	Pastiness																					
	Heterogeneous texture																					
	Residue																					



NIR Spectra from the point

The figures show the NIR spectra from the center part and from the point. Although the spectra are different it is possible to observe some similarities between them.

The correlation between sensory parameters of each zone and their NIR spectra were studied. The following results are observed in both center and point zones of the dry-cured ham

- Cured odour is correlated with $\lambda=1950$ that corresponds with the protein and amine absorbance zone of the spectrum
- Salty is correlated with $\lambda=1860$ that corresponds with C-Cl
- Rancid flavor is correlated with $\lambda=1390, 1454, 1506, 152, 1682$ that corresponds mainly with protein, amine and CH_2 absorbance zone
- Rancid taste is correlated with $\lambda=1924$ that corresponds with C=O bond
- Chewiness is correlated with $\lambda=1504, 1526, 1736$ that also corresponds with protein, amines and SH- absorbance zone

Conclusions: There are some significant correlations among sensory parameters and also between NIR spectra of the center and the point part of dry-cured ham. These results suggest that it could be possible to determine the sensory characteristics of the center part using the sensory analysis of the point. On the other hand, sensory and NIR analysis show that fat and proteins are the main responsible of the sensory characteristics of this product.

