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

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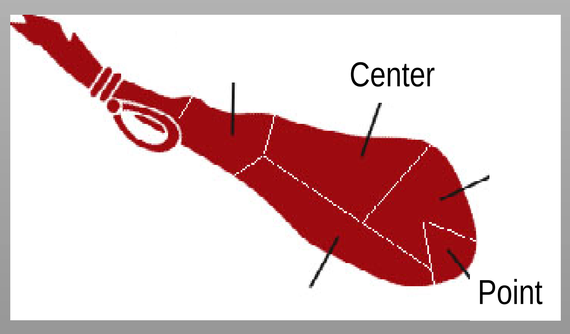
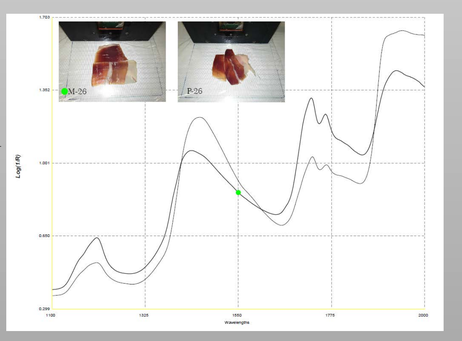
Introduction and Aims

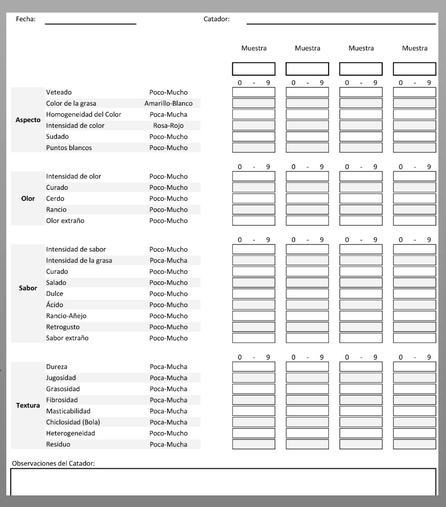
Spanish dry-cured ham is a very popular meat product partly owing to its flavor but also to its nutritional quality and long shelf life. As a result of this the physicochemical and sensory analysis of this product is very important. In sample preparation for analysis the ham must be boned, cut at the 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





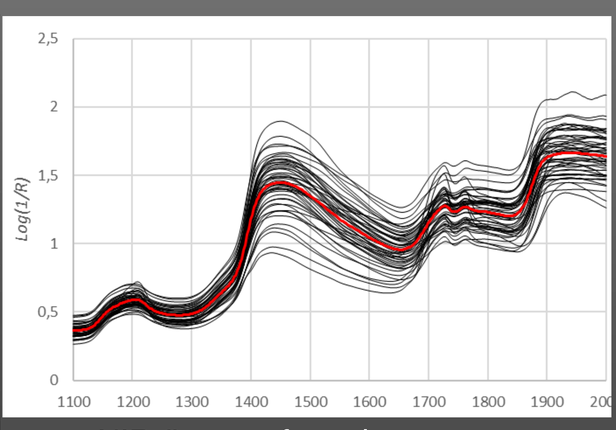


Results

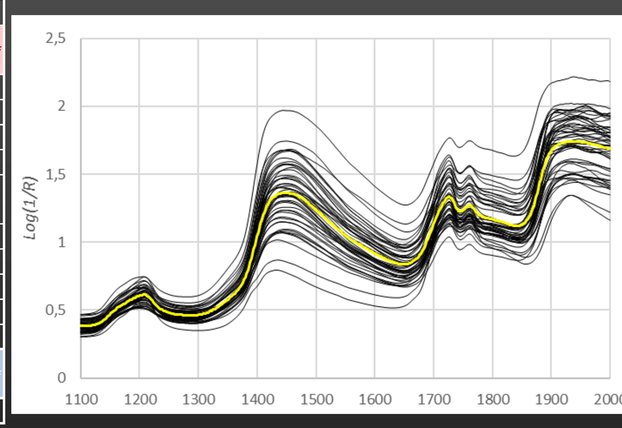
The table shows the Pearson correlation coefficients between center and point sensory parameters-

- Some characteristics of the point such as rancid odour, taste intensity, cured intensiy, sour, harndness 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 where correlated with their correspondant of the point such as salty and those related with appearance (marbling, fat colour, colour intensity , sweating) and texture (juiciness or fibrousity).
- Fat colour shows the highest number of significant correlations revealing and 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	Abnourmal odour	Fat taste intensity	Salty	Sweet	Rancid taste	Abnourmal taste	Juiciness	Fatness sensation	Fibrousity	Chewiness	Heterogeneus texture
Center Appearance	Marbling	0,462**												0,310*		-0,317*					
	Fat colour		0,321*																		
	Colour homogeneity					0,321*									-0,331*						-0,376**
	Colour intensity			0,295*	0,292*			0,371**	0,433**											-0,286*	
	Sweating					0,370**	-0,327*								-0,298*						
	White spots			0,433**	0,313*			0,288*						0,284*							
Center Odour	Odour intensity	0,319*	0,311*																		
	Cured odour							0,410**													
	Pork odour																		0,417**		0,291*
	Rancid odour		-0,338*																		
	Abnourmal odour		-0,338*																0,346*		
Center Taste	Taste intensity				0,321*																
	Fat taste intensity	0,352*	0,333*												-0,281*		0,449**		-0,424**		-0,378**
	Salty	-0,284*								-0,370**	-0,311*		0,392**	-0,332*							
	Sweet																	0,280*			
	Sour	-0,301*													0,318*						
	Rancid taste		-0,431**														-0,282*	-0,290*	0,324*		
	Abnourmal taste		-0,370**																		
Center Texture	Hardness	-0,347*	-0,350*									-0,317*					-0,475**	-0,346*	0,399**		
	Juiciness		0,414**														0,347*				
	Fibrousity		-0,384**																0,282*		
	Chewiness		-0,527**														-0,300*		0,298*		
	Pastiness		-0,597**														-0,306*				
	Heterogeneus texture																-0,377**	-0,287*	0,350*		0,287*
	Residue		-0,387**																		



NIR Spectra from the center



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 where studied. The following results are observed in both center and point zones of the dry-cured ham

- Cured odour is correlated with λ=1950 that corresponds with the protein and amine absorbance zone of the spectrum
- Salty is correlated with λ=1860 that corresponds with C-Cl
- Rancid flavor is correlated with λ=1390, 1454, 1506, 152, 1682 that corresponds mainly with protein, amine and CH_2 absorbance zone
- Rancid taste is correlated with λ=1924 that corresponds with C=0 bond
- Chewiness is correlated with λ= 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 result 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.

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