

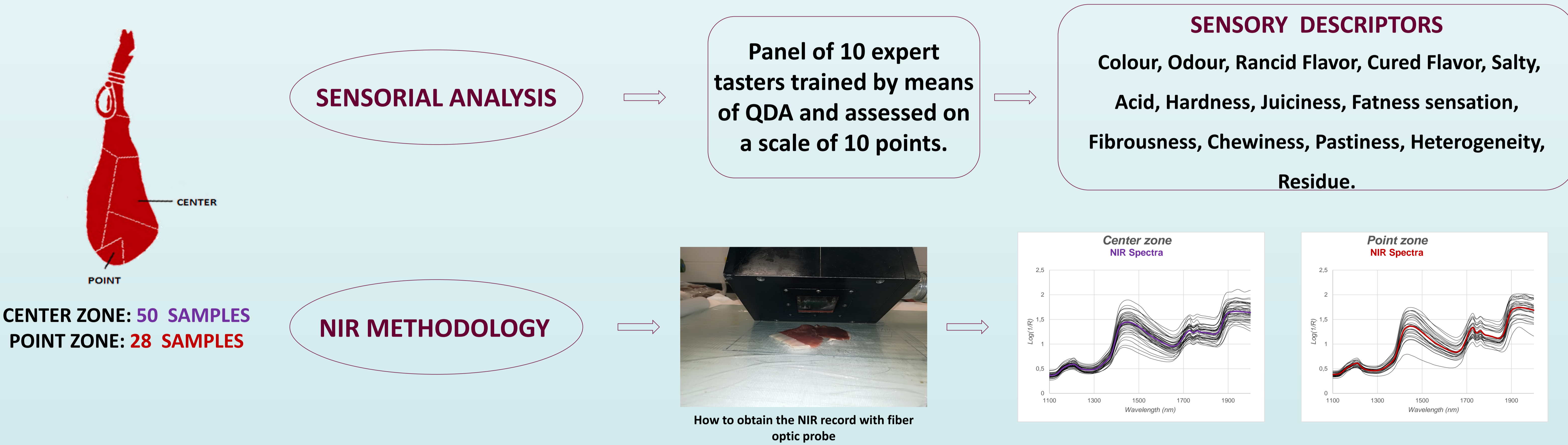
# PREDICTION OF THE SENSORY ATTRIBUTES OF SPANISH IBERIAN DRY-CURED HAM USING NIRS

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## INTRODUCTION

The objective of this work is to evaluate by infrared reflectance spectroscopy (NIR) the different sensory attributes of Spanish Iberian ham. Product included under Quality Distinctions in the Spanish market. The evaluation of the sensorial properties of the so-called Iberian acorn-fed ham cured for 3 years has been obtained by a panel of ten trained experts, data that are taken as reference. Sensory properties are quantified by NIR spectra with a remote reflectance optical fiber probe by applying the probe directly on the slices of ham from two characteristic zones of the product (center and tip). The calibration equations are developed by using Modified least squares regression (MPLS). The robustness of analytics of the method is confirmed by applying it to unknown ham samples.

## EXPERIMENTAL



CENTER ZONE: 50 SAMPLES  
POINT ZONE: 28 SAMPLES

**CALIBRATION MPLS**  
Spectra Data  
+  
Sensory Analysis Data

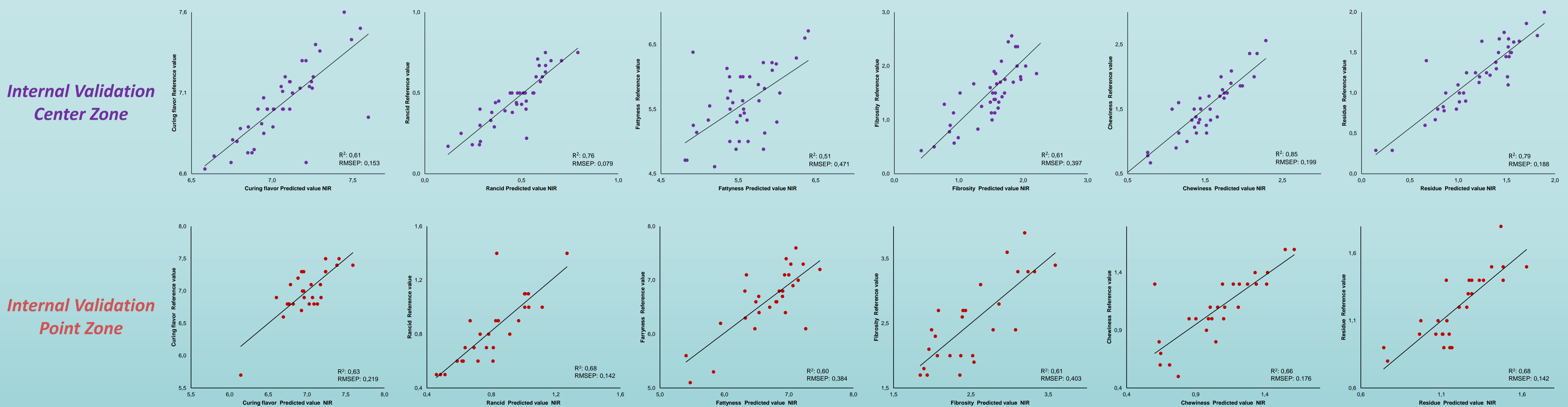
Some Descriptors of NIRS calibration.Center and point zone

| CONSTITUENTS  | ZONE   | SD  | Min-Max | SEC | RSQ  | SECV | RPD |
|---------------|--------|-----|---------|-----|------|------|-----|
| CURING FLAVOR | Center | 0,2 | 6,3-7,7 | 0,1 | 0,84 | 0,2  | 2,5 |
|               | Point  | 0,4 | 5,9-8,1 | 0,2 | 0,55 | 0,4  | 1,7 |
| RANCID        | Center | 0,2 | 0,0-1,0 | 0,1 | 0,8  | 0,1  | 2,3 |
|               | Point  | 0,2 | 0,1-1,5 | 0,1 | 0,79 | 0,2  | 1,6 |
| FATTYNESS     | Center | 0,5 | 3,9-7,2 | 0,2 | 0,83 | 0,4  | 2,4 |
|               | Point  | 0,6 | 4,8-8,5 | 0,3 | 0,67 | 0,5  | 1,6 |
| FIBROSITY     | Center | 0,5 | 1,0-4,0 | 0,2 | 0,84 | 0,4  | 2,5 |
|               | Point  | 0,6 | 0,6-4,5 | 0,5 | 0,52 | 0,6  | 1,6 |
| CHEWINESS     | Center | 0,5 | 0,0-3,0 | 0,2 | 0,84 | 0,4  | 2,5 |
|               | Point  | 0,3 | 0,2-2,0 | 0,1 | 0,81 | 0,3  | 1,7 |
| RESIDUE       | Center | 0,4 | 0,0-2,5 | 0,2 | 0,84 | 0,3  | 2,5 |
|               | Point  | 0,3 | 0,5-2,0 | 0,2 | 0,60 | 0,3  | 1,8 |

SD: standard deviation; RSQ: multiple correlation coefficients; SEC: standard error of calibration; SECV: standard error of cross-validation; RPD: ratio performance deviation.

**VALIDATION**  
Internal  
&  
External

**Application**  
to unknown  
samples



## CONCLUSION

La tecnología NIRS con sonda de fibra óptica se muestra como una técnica de gran potencial para la predicción de parámetros sensoriales en el jamón curado desconocido. Cuando se utiliza la zona centro: olor a grasa, olor curado, rancio, olor extraño, sabor curado, salado, ácido, Añejo añejo, dureza, jugosidad, grasitud, fibrosidad, masticabilidad, elegancia, heterogeneidad, residuos. Cuando se utiliza la zona de la punta se puede determinar: los parámetros: ácido, dulce, salado, cerdo, olor y sabor curado, color de la grasa, Fatness, Fibrosity, Chicness, Rancio, olor extraño, intensidad del olor, homogeneidad, blanco punto, residuo, veteado. Se aplica la sonda de la sonda de fibra óptica directamente a una loncha de jamón. Los resultados son comparables con los obtenidos por un panel de expertos.