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Development of Chato Murciano sobrasada prepared using "Appellation of Murcia Origin" paprika

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Abstract. Sustainable production of Chato Murciano breed, a Mediterranean rustic pig, requires the development of differentiated quality meat products with high commercial value. The aim was to develop a sobrasada (a fatty dry-cured sausage) manufactured with Chato Murciano pork and AMOP. Sobrasada was prepared with pork from Chato Murciano (castrated and slaughtered at 180 kg live weight). Three types of paprika (Control: 6% standard; Mixed: 3% Standard + 3% AMOP; 6% AMOP) were tested. Sobrasada was stuffed into blind gut and was ripened for 30 days (14-18ºC and 75-80% RH). Quality parameters were determined: composition, aw, pH, colour L*a*b*, proteolysis, lipolysis, lipid oxidation, total viable counts, lactic acid bacteria, Micrococcaceae, yeasts, moulds, and eating quality. The use of AMOP hardly affected the technological characteristics of sobrasada, although proteolysis was more intense in samples containing 3% and 6% AMOP. The type of paprika mainly affected the eating quality. The use of AMOP intensified the typical aroma and taste of sobrasada, but provided less intense red-orange colour. It therefore seems advisable to mix AMOP with more pigmented paprika to achieve a good balance between bouquet and colour for sobrasada made with Chato Murciano pigmeat.

Keywords. Sobrasada – Chato Murciano – Paprika – Murcia.

Développement de la Sobrasada de Chato Murciano élaborée avec du paprika "Appellation d'Origine Contrôlée (AOC) de Murcie"

Résumé. *La production durable de porcs de races rustiques, comme le Chato Murciano, exige le développement de dérivés de viande d'une qualité différenciée avec une haute valeur commerciale. L'objectif fut de devélopper une Sobrasada de porc Chato Murciano élaborée avec du paprika "Appellation d'Origine Contrôlée (AOC) de Murcie". La Sobrasada fut élaborée avec de la viande et du lard de porc de race Chato Murciano (castré et abattu à 180 kg de poids vif). Trois types de paprika furent testés (contrôle: 6% standard, mélangé 3% standard + 3% AOC, et 6% AOC). La Sobrasada a été mise dans des boyaux de porc et a maturé pendant 30 jours (14-18ºC et 75-80% HR). Les paramètres de qualité déterminés furent: composition, aw, pH, couleur L*a*b*, protéolyse, lipolyse, oxydation des lipides, aérobies mésophiles totaux, bactéries acido-lactiques,* Micrococcaceae*, moisissures et levures et attributs sensoriels. L'utilisation de paprika AOC n'a presque pas influencé les caractéristiques technologiques de la Sobrasada, bien que la protéolyse ait été plus intense dans les échantillons avec 3% et 6% de paprika AOC. Le type de paprika affecte surtout la qualité sensorielle. L'utilisation de paprika AOC a intensifié l'odeur et la saveur caractéristique de la Sobrasada, alors qu'elle a donné une couleur rouge-orange moins intense. Donc, nous recommandons le mélange de paprika AOC avec du paprika plus pigmenté ou des oléorésines pour obtenir un bon équilibre entre arôme et couleur pour la Sobrasada fermentée de Chato Murciano.*

Mots-clés. *Sobrasada – Chato Murciano – Paprika – Murcie.*

I – Introduction

Chato Murciano breed is a Mediterranean rustic pig originated from Iberian trunk. Actually, Chato is being recovered by farmers of Murcia, SE Spain. Chato pigs were raised semi-extensively, fed a balanced diet based on special feeds and optionally local raw materials, and slaughtered around 18 months old and 180 kg live weight. The sustainable breeding of Chato

Murciano would be given for the elaboration of differentiated quality meat products with high commercial value. Local consumers and restaurants have begun to demand Chato pork once again and local companies are actually developing Chato sausages. Chato pig provides heavy carcasses with high fattening (Galián *et al.*, 2008), whose excess backfat must be transformed in meat products. Sobrasada, a fatty (40-50% fat) dry-cured sausage prepared with paprika, offers great opportunities in this sense. Paprika is also traditionally produced in the Region of Murcia, being obtained by mixing diferent varieties of *Capsicum annuum* (Rosselló *et al*., 1995). Depending of origin, paprika provides particular colouring and flavouring to meat products. Thus, two traditional ingredients from Murcia, Chato pork and paprika, can be used to produce a quality differentiated sausage. The aim was to develop Sobrasada manufactured with Chato Murciano pork and Appellation Murcia Origin Paprika (AMOP).

II – Materials and methods

Sobrasada was manufactured according industrial practices with pork from Chato Murciano breed. Three types of paprika (Control: 6% standard; Mixed: 3% Standard + 3% AMOP; AMOP: 6% AMOP) were tested. The recipe (g kg^{-1}) of sobrasada was: boned pork (365), backfat (325), paprika (60), odorous white wine (6), minor spices (oregano), salt and additives (60). Sobrasada was stuffed into blind gut and was ripened for 30 days (14-18ºC and 75-80% RH). Quality parameters were determined: proximate composition, a_w, pH, colour L*a*b*, proteolysis, lipolysis, lipid oxidation, total viable counts, lactic acid bacteria, *Micrococcaceae*, yeasts, moulds and eating quality. The effects of fat level on the quality of sobrasada were determined by simple ANOVA.

III – Results

Table 1 shows the proximate composition and drying-ripening indices of sobrasada manufactured with different paprika.

Table 1. Proximate composition and drying-ripening indices for Sobrasada from Chato Murciano prepared with different paprika (standard *vs* Murcia Origin)

	Paprika source		
	Control (M ± SD)	**Mix (M ± SD)**	**AMOP (M ± SD)**
Moisture (g 100 g^{-1})	29.5±1.54	29.6±0.92	29.3±1.36
Proteins (g 100 g^{-1})	12.9±1.55 ^{a}	8.65±1.06 ^{b}	10.5±2.65 ^{ab}
Lipids (g 100 g^{-1})	51.5±0.34 ^{b}	54.0±0.32 ^{a}	53.4±0.30 ^{a}
Collagen (g 100 g^{-1})	1.50±0.27	1.33±0.28	1.11±0.24
Ash (g 100 g^{-1})	5.44±0.33	5.41±0.31	5.47±0.32
a_w	0.90±0.01 ^{b}	0.89±0.00 ^{c}	0.92±0.00 ^{a}
pH	5.38±0.07	5.51±0.02	5.46±0.13
L* Lightness (CIE units)	48.4±0.72 ^{b}	48.6±0.35 ^{b}	50.3±0.52 ^{a}
a* Redness (CIE units)	35.7±1.33	37.1±0.51	35.9±0.61
b* Yellowness (CIE units)	29.2±2.76	30.5±0.85	31.0±1.57
C* Chroma (CIE units)	49.6±6.01	48.0±0.86	47.4±1.45
º Hue (CIE units)	39.2±1.81	39.4±0.60	40.8±1.04
Proteolysis (g NPN 100 g^{-1} TN)	15.9±2.30 ^{b}	22.9±1.76 ^{a}	23.0±6.28 ^{a}
Fat acidity (mg KOH g^{-1})	19.0±0.88	20.3±2.21	18.2±0.72
TBARS (mg MDA kg^{-1})	0.19±0.02	0.18±0.02	0.18±0.04

Paprika sources: 6% standard (Control) : 3% Standard + 3% AMOP (Mix); 6% AMOP (AMOP). M: mean; SD: standard deviations; $^{a, b, c}$ Paprika effects (P≤0.05).

After drying, slight differences in proteins and lipids were found for different types of sobrasada. Agreeing this, a_w value was slight higher in AMOP than in Mix and the Control sobrasadas. Surprisingly (reddening war higher in standard paprika), no chromatic differences were found between the Control, Mix and AMOP sobrasada, although AMOP showed the highest L* value. The interaction between paprika and other ingredients, especially fat, may explain these results for colour. On the other hand, sobrasada presented higher proteolysis than the Control and Mix sobrasadas, while no effect of paprika source on fat acidity and lipid oxidation were found. The low counts found for the main fermentative groups (Table 2) indicated that no relevant fermentation take place during the ripening stage.

Table 2. Main fermentative groups (log fcu g^{-1}) for sobrasada from Chato Murciano prepared with different paprika (Standard *vs* Murcia Origin)

	Paprika source		
	Control (M ± SD)	**Mix (M ± SD)**	**AMOP (M ± SD)**
Total viable counts	5.78±0.05	5.83±0.04	5.85±0.13
Micrococacceae	$3.90±0.31^{ab}$	$3.95±0.06^{a}$	$3.44±0.41^{b}$
Lactic acid bacteria	5.55±0.26	5.43±0.03	5.46±0.02
Moulds and yeasts	5.73±0.12	5.84±0.21	5.72±0.16

Paprika sources: 6% standard (Control) : 3% Standard + 3% AMOP (Mix); 6% AMOP (AMOP).
M: mean; SD: standard deviations; $^{a, b, c}$ Paprika effects (P≤0.05).

Table 3 shows the sensory scores of sobrasada manufactured with different paprika. Sobrasada was characterized by a typical red-orange colour. In opposite to CIEL*a*b* values, the trained panellists detected colour differences between AMOP-Mix and the Control samples. The intensity of colour was lower scored in AMOP sobrasada than in the Control sobrasada, while Mix sobrasada obtained intermediate scoring. However, the aroma and taste scores were higher in AMOP-Mix than in the Control sobrasada. The use of AMOP at different concentration (3% and 6%) clearly intensified the sobrasada aroma and taste. These results suggest that AMO paprika provided better flavouring and certain discolouration to sobrasada. The physical-chemical, microbiological and sensory data obtained were coherent with those obtained from preliminary studies on Stabilization by chilling of sobrasada from Chato Murciano pigmeat manufactured without preservatives (Martínez *et al.*, 2009).

IV – Conclusions

The use of AMOP hardly affected the technological characteristics of sobrasada, although proteolysis was more intense in samples containing 3% and 6% AMOP. The type of paprika mainly affected the eating quality. The use of AMO paprika intensified the characteristic aroma and taste of sobrasada, but provided less intense red-orange colour. It therefore seems advisable to mix AMOP with more pigmented paprika to achieve a good balance between bouquet and colour for sobrasada prepared with Chato Murciano pigmeat.

Table 3. Sensory scoring for sobrasada from Chato Murciano prepared with different paprika (Standard *vs* Murcia Origin)

	Paprika source		
	Control M ± SD	**Mix M ± SD**	**AMOP M ± SD**
Colour	3.5±0.6 [a]	3.2±0.4 [ab]	2.9±0.5 [b]
Colour homogeneity	2.9±0.6	2.9±0.7	2.8±0.7
Aroma	3.0±0.6 [b]	3.5±0.5 [a]	3.4±0.4 [a]
Paprika aroma	2.8±0.6	2.9±0.7	2.8±0.7
Acid aroma	1.8±0.6	1.7±0.6	1.8±0.6
Taste	2.9±0.6 [b]	3.4±0.5 [a]	3.5±0.5 [a]
Paprika taste	3.0±0.6	3.3±0.6	3.2±0.6
Acid taste	1.7±0.5	1.8±0.5	1.9±0.5
Bitter aftertaste	2.2±0.8	2.3±0.8	2.1±0.5
Fattiness	3.4±0.8	3.6±0.4	3.7±0.4
Creaminess	3.6±0.7	3.8±0.4	3.8±0.5
Fibrous residue	2.3±0.6	2.3±0.6	2.4±0.6

Paprika sources: 6% standard (Control) : 3% Standard + 3% AMOP (Mix); 6% AMOP (AMOP).
M: mean; SD: standard deviations; [a, b, c] Paprika effects (P≤0.05).

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References

Galián M., Poto A., Santaella M. and Peinado B. 2008. Effects of the rearing system on the quality traits of the carcass, meat and fat of the Chato Murciano pig. In: *Animal Science Journal, 79*(4), p. 487-497.

Martínez P. J., Garrido M. D. and Bañón S. 2008. Stabilization by chilling of Sobrasada from Chato Murciano pigmeat manufactured without preservatives. In: *Anales de Veterinaria Murcia, 24*, p. 73-83.

Rosselló C., Barbas J. I., Berna A. and López N., 1995. Microbial and chemical changes in Sobrasada during ripening. In: *Meat Science*, 40. p. 379-385.