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The weight loss in the production of dry cured sausages "salsiccia" and "soppressata" from *"Casertana"* pig ancient autochthonous genetic type (AAGT). Further contribution

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Abstract. The study involved 605 "soppressata Sannita" and 121 "salsiccia Sannita" obtained processing meat of Casertana (CT) AAGT pigs [68 castrated males (castrated not less than 40 days before slaughter) and 53 entire females] reared at experimental farm of ConSDABI Sub N.F.P.I.-FAO in order to evaluate the effect of gender on weight loss of the ripened products. The results, valid within the observation field, showed a significant effect of gender on weight loss of both products. In particular: (i) the soppressata Sannita obtained from castrated males had a percentage weight loss greater in comparison with the meat of entire females; at the end of seasoning time (40 days) it lost ($P<0.01$) about the 51% of initial weight (+4% in comparison with that of entire female); (ii) the salsiccia Sannita that at 15 days had a percentage weight loss of 41% if obtained from meat of castrated males and of 34% if obtained from meat of entire female ($P<0.05$), after 30 days had a weight loss of 52% and 47%, respectively ($P<0.05$).

Keywords. Casertana pig – Ancient autochthonous genetic type (AAGT) – Salsiccia Sannita – Soppressata Sannita.

Diminution de poids lors de la production de "salsiccia" et de "soppressata" issus du porc de type génétique autochtone ancien (TGAA) "Casertana". Des contributions supplémentaires

Résumé. *L'étude a concerné 605 "soppressate sannite" (saucisson) et 121 "salsicce sannite" (saucisse) préparés avec de la viande de chaque porc [68 mâles (castrés au moins 40 jours avant l'abattage) et 53 femelles non castrées] du TGAA "Casertana", élevés chez le ConSDABI SUB NFP.I.-FAO afin d'évaluer l'effet du sexe sur la diminution de poids des deux produits fermentés. Les résultats, valables dans le champ d'observation, ont montré une significative influence du facteur sexe sur le taux de perte de poids pour les deux produits. En particulier : (i) la soppressata Sannita préparée avec la viande de mâle castré a un pourcentage de diminution constamment plus grand comparé à celui obtenu en utilisant la chair de femelle non castrée ; à la fin du séchage (40 jours) au total on perd ($P <0,01$) 51% du poids (+4%) par rapport à la femelle non castrée ; (ii) la salsiccia Sannita après 15 jours montre une perte de poids de 41% lorsqu'elle est produite avec de la viande de mâle castré et de 34% lorsqu'elle est produite avec de la viande de femelle non castrée ($P <0,05$), après 30 jours on perd 52% et 47% respectivement ($P <0,05$).*

Mots-clés. *Casertana – Type génétique autochtone ancien (TGAA) – Salsiccia Sannita – Soppressata Sannita.*

I – Introduction

"Casertana" (CT) in the past was reared in particular in Campania and in neighbouring regions and was appreciated, besides for its good productive performances, also for its tendency to accumulate fat. This particular characteristic was one of the reasons for which this AAGT was

replaced with pigs of foreign breeds, selected to make more lean meat. The recent attention to the conservation of the genetic resources and the high demand for local products had allowed to a renewed productive utilization of this AAGT. The valorisation of local products is a desirable and feasible target for cultural, scientific, economic and social reasons. The local products, different from industrial products for ancient origin and for specific organoleptic characteristics, allow to safeguard productive techniques and traditions, to improve the conditions of rural populations, in particular in marginal areas and also to preserve the AAGTs from the eventual extinction. This work is a part of a project aimed at enhancing the use and production of CT pig AAGT; in particular, in this note, we report the results of the monitoring of ripening process evolution of two products, soppressata Sannita and salsiccia Sannita, which enhance the ancient Italian tradition of meat and especially sausage consumer, monitoring the weight loss for 30 and 40 days respectively.

II – Materials and methods

The study involved 726 individual products obtained from 68 males (castrated at least 40 days before slaughter) and 53 entire females, slaughtered at average live weight of 169 kg and 161 kg respectively. All animals were reared in multiple boxes at experimental farm of ConSDABI Sub NFP.I.- FAO and were fed with commercial feed. The products were made at a salami factory. For the preparation of these LPs the meat was minced and mixed; pH, temperature and humidity at different seasoning times were registered. The seasoning was realized in proper places controlled for temperature and humidity during the 24 hours. Each product was weighed at the end of the drying time and then periodically (daily or weekly) until the end of seasoning time. The dough for the preparation of soppressata Sannita consisted of separable meat obtained from the partial trimming of ham and long back with the addition of lumbar subcutaneous fat derived from trimming of ham, cut manually with knife in an amount equal to about 2- 3% of the total weight of the used meat; for the preparation of salsiccia Sannita, separable meat from jowl, diaphragm, capocollo trimming, partial trimming of ham, shoulder, track, trimming of belly, ribs filet and throat was used.

The length of fresh soppressata Sannita must be about 18 – 20 cm, with a minimum regular circumference of 18 cm when it was fresh.

The length of fresh salsiccia Sannita must be about 50 – 60 cm and it has a typical form of horseshoe bat.

The seasoning included a drying phase (7 days) at controlled temperature (14-18℃) and relative humidity (60-70%) and a second seasoning period (45 and 30 days, respectively for soppressata Sannita and salsiccia Sannita) at lower temperature (10-14℃) and higher relative humidity (70-85%).

At the end of seasoning all two products, after regular brushing and washing with lukewarm water to remove the moulds, were vacuum-packed or preserved under pork fat. The data were processed using the following model of covariance analysis, with initial weight of product and net live weight as covariate for soppressata Sannita and weight of cooled carcass and age at slaughter as covariate for salsiccia Sannita (SAS, 1997):

$Y_{ijK} = \mu + b_1x_1 + b_2x_2 + gender_i + e_{ijk}$, where:

μ = constant common to all the observations (general mean);

b_1, = regression coefficients of the dependent variable from net live weight of pig or weight of 'cooled carcass' (x_1);

b_2, = regression coefficients of the dependent variable from initial weight of product or 'age at slaughter' (x_2);

$gender_i$ = fixed effect of i^{th} gender (i = 1,2);

e_{ijk} = random error and/or unknown effects.

The significance of differences between the estimated means was tested using Student's t test.

III – Results and discussion

The weight loss during the seasoning time was significantly higher in all two products obtained from castrated male in comparison with that obtained from entire female; in particular (Tables 1 and 2).

(i) for soppressata at the end of seasoning (44 days) the difference reached 4% (*P*<0.001), starting from 1.9% at 5 days (*P*<0.01);

(ii) 'salsiccia Sannita' obtained from castrated males registered about 41% of weight loss at 15 days of seasoning (P<0.05) and 52% at the end of seasoning (P<0.05), values higher than that obtained from entire females (about 34% and 47% respectively).

Table 1. Soppressata Sannita. Percentage weight variation in relation to the seasoning time and gender

Seasoning d	Sex		Δ = [(♂♂) - ♀♀]
	(♂♂)	♀♀	
5	20.4	18.4	1.9**
10	28.0	25.4	2.6***
15	34.3	31.2	3.1***
20	38.2	34.5	3.6***
30	47.6	43.7	3.9***
44	51.4	47.4	4.0***

***P<0.01; ***P<0.001*

On the average from meat of each castrated male it was obtained 27.5 kg of salsiccia Sannita while from meat of each female it was obtained 23.3 kg. This difference is due to the different live weight of each gender (169,2 *vs* 160.9 kg).

Table 2. Salsiccia Sannita. Percentage weight variation in relation to the seasoning time and gender

Seasoning d	'Sex'		Δ = [(♂♂) - ♀♀]
	(♂♂)	♀♀	
15	40.8	33.6	7.2*
30	51.8	47.2	4.6*

**P<0.05.*

Some researchers (Nold *et al*., 1999; Maiorano *et al.,* 2007) showed that meat obtained from sow has a higher water holding capacity respect to meat of male, and this can be one of the reason that had determined the different weight loss observed by us.

IV – Conclusions

The results, valid within the observation field, highlighted that, for the two considered local products, the castrated male had a greater percentage weight loss than entire female. This trend may confirm previous results (Barone *et al*., 2006). This difference could be due to the different adipose tissue's texture (for a probable different amount of saturated fatty acids), as well as to the higher intramuscular fat content and a best water holding capacity of the meat obtained from entire females. This result in association with qualitative data of product (rheology and color traits) may be suggest a diversification of the products also in the selling price on the bases of gender of the pig that provide raw material.

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