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Identifying the Potential of Old and Rustic Pig Breeds: Basque Black Pied for Crafting High-Quality Cured Food Products

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Abstract: The Basque Black Pied breed (BBP breed) is a rustic and old pig breed, well adapted to the environmental and productive conditions of the Navarre mountains. Nonetheless, the threat of competition from other, more productive breeds has pushed this local pig to the brink of extinction. A study has been conducted to assess the quality of cured products derived from the meat of this breed. For this purpose, the characteristics of the BBP breed pig carcasses and the organoleptic quality of the cured raw products have been studitab;eed and compared with those obtained from the 50% Large White × 25% Landrace × 25% Piétrain breed (LWLP breed) used as a control. Comparatively to pigs of the LWLP breed, carcasses of the BBP breed showed lower percentages of lean meat and higher percentages of fat coverage, loins, and intramuscular fat content. Expert judges evaluated the appetizing aroma and flavor of the cured raw products from the BBP breed, their texture, and their general impression. The scores of sensory attributes shown by the sausages (the "Sarta" and "Vela" chorizos) indicate the necessity of optimizing and personalizing their curing process to realize the full potential of the distinctive meat.

Keywords: Basque Black Pied breed pig; fat; meat quality; sustainability

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1. Introduction

The pig industry has been focusing on increasing the efficiency of muscle tissue production, which has led to the selection of breeds with leaner carcasses, a higher growth rate, a lower feed conversion ratio, and bigger litter sizes. Therefore, an important number of breeds have lost their productive role during the past century, and this strategy has resulted in the loss of pig genetic variety, whole-meat quality, and sensory profiles, among others. In order to adapt to consumer demand or integrate sustainable agricultural systems, it is essential to appreciate genetic variation as the primary reason for the increasing interest in local breeds, which are interesting from a genetic, economic, and biological point of view [1]. In fact, local breeds are a relevant biological source for the development of new breeds and the improvement of already-existing commercial breeds such as Large White, Landrace, Duroc, or Piétrain (and their hybrids), as well as for the protection of biodiversity [2]. Different studies have examined the value of European local breeds from a variety of perspectives. Thus, the effect of extensive/intensive fattening of the Złotnicka Spotted breed [3] and the comparison of the growth ability, carcass value, and meat quality of the Prestice Black-Pied breed pig [3] or the Basque Black Pied breed [1,4] with commercial hybrid breeds can be cited. In addition, the genetic diversity, pedigree, and variability of the Nero Lucano breed pig [5] and the Prestice Black-Pied breed pig [2] were considered. It is important to note that the consumer trend is towards high-quality meat and the recognition of the relevance of local breeds that have been developed in certain areas. These breeds are closely associated with their local environment and, in a certain manner, with individuals' dietary habits. The maintenance, development, and use of indigenous pig breeds, along with the dissemination of information about them, are crucial for the safeguarding of

local and regional resources and contribute to the preservation of the national cultural heritage [3].

Some breeds, such as the Basque Black Pied (BBP) breed pig in Spain, were disappearing, reaching the risk of extinction in the late twentieth century. The concern to protect indigenous and local breeds and products led to the recovery of this breed in 1981, and several farmers have managed to maintain a small population [4,6]. BBP is an ancient pig breed that derives its origins from the Celtic trunk. This breed is related to others that have already disappeared, such as the Chato Vitoriano or Baztanesa breeds, which were also bred in a vast region surrounding the Pyrenees, specifically in Baztan-Bidasoa in Navarre and Lower Navarre in the French Basque Country [7]. In the early 1990s, a project led by the Livestock Management and Technical Institute (Navarre, Spain) was launched with the collaboration of the Public University of Navarre (Pamplona, Spain). This project assessed the productive potential of this breed as a complement to the economic activity of family farms situated in less-favored rural areas and assessed its quality as a craft and gourmet. Previous studies have demonstrated the characteristics of the BBP breed and its comparison with highly selected pig lines for various production parameters, including lean growth efficiency, adipose development, and backfat depth. Thus, BBP breed pigs presented lower feed efficiency, higher backfat depth, and lower growth than Large White pigs, with the meat being darker, redder, and more marbled. Furthermore, it has been observed that this particular breed of BBP possesses a higher fat content than other breeds and exhibits a clear aptitude for producing dry-cured products [1]. Thus, the BBP breed pig could provide the opportunity to enhance and safeguard its intrinsic value within its corresponding natural environment (an unfavorable zone of Northern Navarre), encompassing a specific socio-economic context that depicts the farmhouse as a diverse agricultural complex centered on agriculture, livestock, and rural tourism. Given this scenario, the farming and production of this BPP pig could potentially serve as a complementary economic activity for family farms located in this less-favored area, as well as for small craft industries. Furthermore, the artisanal curing industry in Navarre could benefit from a raw material with the most requested qualities today: quality, uniqueness, and authenticity [8].

In this context, it is noteworthy to mention that, about 25 years ago, Jose Ignacio Jauregui launched a unique project in Lekunberri, Navarre, presently known as Maskarada. He acquired three animals, namely a male and two sows, and started breeding this BBP breed. Currently, Maskarada has over 200 reproductive sows on its 5 hectares of land and slaughters just over 1500 animals per year. Among other honors, Maskarada has recently won the award for the "best integral gastronomic project" from the Navarre Academy of Gastronomy (2023). This award recognizes the 25-year recovery of the pig breed, including the project consolidation of a farm, a factory, a shop, and a restaurant.

At present, there is a gap in the literature pertaining to the quality of meat and meat derivatives produced by the BBP breed pig. Only the results obtained by Pierre Oteiza from the processing of BBP breed meat have allowed us to obtain information on the quality of the products. Comparatively, it has been observed that the white pig exhibits white, pink meat and little bacon, whereas the BBP breed pig possesses red meat and tasty and abundant intramuscular fat, or infiltration fat, which requires a craft elaboration.

It is important to note that, in Spain, there are a multitude of different types of sausages that can be delicious to our palate. Among the typical cured products are the "Vela" and "Sarta" chorizos. Briefly, the Spanish Vela chorizo type is mainly characterized by its elongated cylindrical shape, which is reminiscent of a sail. This particular chorizo name (Vela chorizo) is given to chorizos that do not exceed a diameter of 40 mm. It is made with lean Iberian pork, stuffed in a natural casing, and has a longer curing time than any other type. That is the reason why it is kept for a minimum of 70 days, with a slow and prolonged healing in the cellars. Furthermore, this provides the necessary balance between flavor, aroma, and texture to relish the authentic Iberian sausage. It is ideal for consumption as tapas and snacks. The Spanish Sarta chorizo is also easily discernible. The most obvious difference between Vela and Sarta is undoubtedly their physical appearance

and presentation. The Sarta chorizo, also known as "in horseshoe", is made by tying the ends of the chorizo to each other. It has a smaller diameter than the Vela type, and it is made with lean Iberian pork and natural spices, giving it an intense flavor.

Considering all the aforementioned and the lack of studies focusing on the quality of sausages produced with meat from the BBP breed pig, the objective of this study is to determine the potential of this meat for crafting cured raw sausages, specifically the Spanish Vela and Sarta chorizo types.

2. Materials and Methods

2.1. Animal Treatment

Thirteen pure-breed animals (BBP breed pigs (five castrated males and eight females)) were selected from the holding for the maintenance of the breed managed by the Technical Institute and Livestock Management S.A. (ITGG S.A.) in Oronoz-Mugaire (Baztan, Navarra, Spain). Twelve animals of the 50% Large White × 25% Landrace × 25% Piétrain (LWLP) breed were used as reference controls. Animals of both groups were raised under standard breeding conditions up to 20 Kg. At the time of our study, there was no commercial weight for the pigs, males or females. Subsequently, through an intensive system, the animals remained in the usual conditions of industrial bait, on slabs, and in a controlled environment until their slaughter. During the feeding, the growth rate (average daily weight gain) and transformation rate (consumption control or weight gain of the animals per kilogram of feed consumed) were monitored in each of the experimental pens every two days. All animals were identically managed and fed a commercial diet. The diet provided to the animals included a blend of feeds that contained at least 60% of various grains (corn, wheat, and barley). The pigs were slaughtered at an average age of 210–225 days, on the same day and in the same slaughterhouse, in order to minimize the impact of transportation and slaughter on the results. The animals were raised and slaughtered according to the Spanish rules and regulations for animal care [9,10]. This research followed the official guidelines for the humane treatment, care, and handling of animals.

2.2. Carcass Measurements

At the slaughterhouse, the following controls and measurements were carried out: live weight at slaughter, dressing percentage, carcass classification, and pig lean percentage using the fat-o-meater probe in accordance with the regulations [11]. The pH of longissimus dorsi and semimembranosus muscles was measured using a pH-meter penetration electrode (CRISON, Barcelona, Spain) at 24 h of slaughter after the sacrifice [12]. Also, a visual analysis of the pieces was performed to evaluate their color, firmness, appearance of fat, and presence of petechiae in the cutting room of the El Bordón industry (Viana, Navarra, Spain) by the technicians in the field. The main commercial meat cuts from BBP breed pigs and LWLP breed pigs were weighed after carcass cutting.

2.3. Meat Measurements

The samples were taken from the carcasses 24 h after slaughter. Three samples of 250 g each were collected from the total boned shoulder of LWLP pig carcasses, as well as from both female and male BBP pigs. In these samples, determinations of proximal composition, including total protein [13], total fat [14], and moisture [15], were conducted.

2.4. Processing of Cured Raw Products

2.4.1. "Sarta" Chorizo Type

The product was formulated and elaborated as follows: 80% of frozen pork pieces were mixed with sodium chloride (2%), sodium ascorbate (0.5 mg/kg), sodium nitrite (0.15 mg/kg), potassium nitrate (0.15 mg/kg), paprika (2.4%), and garlic (2%). In addition, 20% of frozen pork fat pieces were also added. After mixing, the mixture was forced into a 32 mm diameter natural sausage casing, fermented for 3 days (24 °C, 85% RH), and dried for 20 days (15–18 °C, 60% RH). After this period, the product was ready to be marketed

and could be consumed raw, fried, or cooked. The characteristics and appearance of the "Sarta" chorizo type are shown in Figure S1.

2.4.2. "Vela" Chorizo Type

The formulation used to prepare this product was identical to that described for the "Sarta" chorizo type. The minced meat was then placed in a vacuum kneading machine, and after 15 min, it was stuffed into a natural 40 mm diameter casing, fermented for 3 days (24 °C, 95% RH), and dried for 4 weeks (14 °C, 78% RH). The product was ready for marketing and consumption by the end of this period. The final appearance of the "Vela" chorizo type is presented in Figure S2.

2.5. Sensory Analysis of Cured Raw Products

The sensory analysis was performed by a panel of fifteen expert judges [16]. In a preliminary session, the parameters were discussed, agreed upon, and established. The sensory analysis of the cured crude product was carried out using an intensity scale of five points (0 = I dislike it enough, 5 = I like it a lot). Three different sessions for each product ("Sarta" and "Vela" chorizo types) were conducted. In each one, the judges evaluated several slices of chorizo elaborated with the meat from both the BBP and control breeds, presented as follows:

- Whole piece: The entire piece was presented on two separate plates, one for each type of sausage, identified with the letters A (LWLP) and B (BBP). Shape, external aspect, color, and degree of curing were the sensory attributes for the "Vela" chorizo assessment. As there is no established standard for the shape and external characteristics of the "Sarta" chorizo, it was solely evaluated based on its color and degree of curing.
- Cut piece: Each chorizo type was presented on a different plate, with 12–15 g slices cut into 3–4 mm thick stripes, following the same codification as the whole piece. The assessed sensory attributes for both the "Sarta" and "Vela" chorizo types were color, oiliness, aroma, flavor, persistent residual flavor, pleasant residual flavor, texture, and overall view. Between samples, the judges were instructed to rest and clean their mouths. Each serving area had apple slices, water, and napkins.

2.6. Statistical Analysis

Statistical analysis was conducted using IBM SPSS Statistics 25 [17] for Windows (SPSS Inc., Corporation, NY, USA) to obtain the descriptive statistics of the physical, chemical, and consumer evaluation of the samples. An analysis of one-way variance at a 95% confidence level was used to detect differences between treatments, followed by the Fisher's Least Significant Difference (LSD) test whenever significance was observed. The level of significance was set at $p < 0.05$ in all cases.

The experimental design employed in this study was influenced by the number of animals from the BBP breed pig available for research, which was at the time in the process of recovering from the threat of disappearance in the region. It is important to note that, despite this limitation, both male and female animals were included in this study for the purpose of comparison with the LWLP controls. Despite the limited number of animals involved and the absence of data and other references regarding the quality of crafted meat products from the BBP breed, the design employed is robust enough to yield preliminary results related to the potential craft properties of BBP meat.

3. Results and Discussion

3.1. Growth, Carcass Characteristics, and Meat Quality

During the feeding the growth rate (average daily weight gain) and transformation rate (consumption control) were controlled. From the 100th to the 260th day of life, the BBP breed yielded 487 g and 3.9 kg of feed consumed/kg live weight gain per day, compared to the LWLP breed, which yielded 680 g and 2.8 kg per day. Upon visual examination of the pieces after cutting the carcass, it was observed that there were differences in the color

of the pieces obtained from pigs belonging to both groups, and the firmness remained similar. However, the BBP breed presented parts with a higher amount of marbling and fat deposition. The live weight at the slaughter of the animals and the characteristics of the BBP and LWLP breed pigs are presented in Table 1. The results indicate that the BBP-bred pigs (males and females) had a higher live slaughter weight than the LWLP-bred pigs. It is noteworthy that there were no differences observed among the dressing percentages, with all samples exhibiting similar values. However, more lean meat content was observed on LWLP breed pig carcasses in contrast to BBP carcasses.

Table 1. Carcass characteristics of BBP breed pigs and LWLP breed pigs. Values are presented as average ± standard deviation.

Parameter	BBP * Breed Pig		LWLP * Breed Pig
	Males	Females	Females
Live slaugther weight (kg)	121 ± 5.7 ^{a}	118 ± 4.7 ^{a}	105 ± 2.7 ^{b}
Dressing percentage (%)	76.5 ± 3.4 ^{a}	76.1 ± 4.5 ^{a}	75.7 ± 2.3 ^{a}
Lean meat content (%)	37.26 ± 1.0 ^{a}	41.21 ± 1.7 ^{b}	53.17 ± 1.1 ^{c}
pH *longisimus dorsi*	5.70 ± 0.1 ^{a}	5.73 ± 0.1 ^{a}	5.55 ± 0.1 ^{b}
pH *semimembranosus*	6.31 ± 0.1 ^{a}	6.19 ± 0.1 ^{b}	5.93 ± 0.1 ^{b}

* Basque Black Pied breed pig: BBP pig; 50% Large White, 25% Landrace, and 25% Piétrain: LWLP pig. Different superscripts in the same row indicate significant differences ($p < 0.05$).

The BBP carcasses were worse classified in the slaughterhouse (categories O and P, classification EUROP) than the LWLP ones (categories E and U primarily) because they presented significantly lower values for the percentage of lean carcasses obtained with the fat-o-meater probe. The pH of all pig carcasses decreased after a period of 24 h, attaining values that correspond to the pH range of meat considered normal (5.5–5.7) for the lomgissimus dorsi muscle, resulting in a slightly higher value for the semimembranous muscle. Therefore, there was a close connection between raw material and dry-cured meat product quality, as it was affected by characteristics related to the genotype, such as the adipogenic character and meat quality traits associated with pH [18].

Table 2 shows the values of commercial cuts from the carcasses of both studied breeds. It is noteworthy that the average weight of the loin, sirloin, top loin, ribs, and ham in the LWLP pigs was higher than that in the BBP breed pigs. In contrast, fat deposition pieces, such as bacon and jowl, exhibited a higher weight in BBP breed pigs than in the LWLP breed.

Table 2. Main commercial meat cuts from BBP breed pigs and LWLP breed pigs (Kg). Values are presented as average ± standard deviation. Different superscripts in the same row indicate significant differences ($p < 0.05$).

Parameter	BBP Breed Pig		LWLP Breed Pig
	Males	Females	Females
Loin	2.25 ± 0.08 ^{a}	2.4 ± 0.07 ^{a}	3.0 ± 0.18 ^{b}
Sirloin	0.35 ± 0.01 ^{a}	0.35 ± 0.01 ^{a}	0.5 ± 0.02 ^{b}
Top loin	1.1 ± 0.035 ^{a}	1.1 ± 0.25 ^{a}	1.5 ± 0.06 ^{b}
Rib	0.8 ± 0.04 ^{a}	0.8 ± 0.04 ^{a}	0.95 ± 0.03 ^{b}
Bacon	4.0 ± 0.13 ^{a}	3.51 ± 0.15 ^{b}	3.3 ± 0.32 ^{c}
Ham	9.4 ± 0.23 ^{a}	9.2 ± 0.29 ^{a}	11.5 ± 0.43 ^{b}
Shoulder	4.3 ± 0.12 ^{a}	4.0 ± 0.14 ^{a}	5.15 ± 0.21 ^{b}
Backfat	1.53 ± 0.10 ^{a}	1.4 ± 0.18 ^{b}	1.54 ± 0.12 ^{a}

The chemical composition of fresh meat (expressed in wet matter) from the boned shoulder is presented in Table 3. It is noted that the LWLP breed pig is leaner than the BBP breed pig, which presents a significantly higher fat content ($p < 0.05$). The values for fat

content from the shoulder include subcutaneous fat, intermuscular fat, and intramuscular fat. The visual aspect of the meat allows the observation of a high intramuscular content and subcutaneous fat cover, which could determine the high degree of marbling in the meat of BBP breed pigs (Figure S3).

Table 3. Proximate analysis of pork shoulder from BBP breed pigs and LWLP breed pigs. Values are presented as average ± standard deviation. Different superscripts in the same row indicate significant differences ($p < 0.05$).

Parameter	BBP Breed Pig		LWLP Breed
	Males	Females	Females
Moisture (%)	74.54 ± 0.64 ^{a}	62.26 ± 0.54 ^{b}	75.19 ± 0.45 ^{a}
Fat (%)	22.40 ± 1.65 ^{a}	25.29 ± 1.70 ^{b}	11.5 ± 1.65 ^{c}
Protein (%)	17.40 ± 0.65 ^{a}	15.69 ± 0.34 ^{b}	21.53 ± 0.99 ^{c}

3.2. Sensory Quality of Raw Cured Products

The values of the sensory characteristics of texture, aroma, and flavor obtained in the sensory evaluation of the elaborated "Sarta" and "Vela" chorizo types are listed in Tables 4 and 5. The "Sarta" chorizo derived from BBP pork exhibited a comparable aroma and texture to the control, and the overall assessment of this product on the tasting panel was equally favorable, albeit with a lower flavor profile. However, in the case of the "Vela" chorizo (Table 4), the product from the LWLP breed pigs obtained a higher assessment ($p < 0.05$) in all attributes except for the degree of curing and persistent residual flavor, which were similar to those of the BBP breed pig.

Table 4. Sensory scores of Sarta chorizo from BBP breed pigs and LWLP breed pigs. Values are presented as average ± standard deviation. Different superscripts in the same row indicate significant differences ($p < 0.05$).

Parameter	BBP Breed Pig	LWLP Breed Pig
Piece		
External color	3.5 ^{a} ± 0.7	3.3 ^{a} ± 0.6
Degree of curing	3.8 ^{a} ± 0.6	3.9 ^{a} ± 0.7
Slices		
Color	3.8 ^{a} ± 0.8	3.9 ^{a} ± 0.6
Oiliness	4.0 ^{a} ± 0.7	3.6 ^{b} ± 0.7
Aroma	3.9 ^{a} ± 0.8	3.8 ^{a} ± 0.8
Flavor	3.3 ^{a} ± 0.7	3.9 ^{b} ± 0.7
Persistent residual flavor	2.9 ^{a} ± 0.9	3.2 ^{a} ± 0.9
Pleasant residual flavor	4.0 ^{a} ± 0.6	3.5 ^{b} ± 0.9
Texture	3.7 ^{a} ± 0.8	3.5 ^{a} ± 0.7
Overall view	3.7 ^{a} ± 0.7	3.9 ^{a} ± 0.7

The lower scores obtained in the sensory evaluation of BBP breed sausages by the panel of expert judges could be explained by the fact that their processing followed the same guidelines used for the LWLP sausages. This suggests that, to demonstrate the unique and particular characteristics of the BBP breed, which is characterized by a higher percentage of intramuscular fat content, it is necessary to modify and personalize the processing, for example, by using longer curing times.

The high fat content of the pork shoulder muscles (Table 3) plays a decisive role in defining the sensory characteristics of juiciness and distinctive aroma associated with processed meat products. This high fat content also allows dehydration processes to be carried out slowly, which allows prolonged periods of permanence in the drying and cured stages. This favors the development of chemical reactions aimed at the formation of compounds responsible for the aroma, similar to what happens with Iberian and long-lasting mountain hams [18]. Changes in diacylglycerols, monoacylglycerols, and free

fatty acid composition of subcutaneous fat in Iberian hams were found during the dry-cured process throughout the processing time, reaching a balance value of 62% around 500 days [19]. Similar phenomena could occur in products derived from BBP breed pigs with optimized processing adapted to the inherent characteristics of their meat. Extending the maturation time to allow for a higher degree of intramuscular fat lipolysis could improve the sensory quality of the products. The sensory results (Tables 3 and 4) indicate that a curing process adapted to this porcine raw material could lead to improved flavor and aroma profiles. Muscular fat content has a positive influence on some of the texture and appearance traits of sausages, such as oiliness, flavor, juiciness, and marbling. Therefore, within the ranges of fat content found in the present study, intramuscular fat content could improve the acceptability, flavor, and aroma of sausages, as concluded in another work on the sensory quality of products made from the Iberian breed [20].

Table 5. Sensory scores of Vela chorizo from BBP breed pigs and LWLP breed pigs. Different superscripts in the same row indicate significant differences ($p < 0.05$).

Parameter	BBP Breed	LWLP Breed
Piece		
Shape	$2.9^{a} \pm 0.5$	$4.0^{b} \pm 0.7$
Aspect	$2.8^{a} \pm 0.6$	$3.6^{b} \pm 0.6$
External color	$2.9^{a} \pm 0.5$	$3.9^{b} \pm 0.6$
Degree of curing	$3.1^{a} \pm 0.4$	$3.7^{a} \pm 0.7$
Slices		
Color	$2.7^{a} \pm 0.6$	$4.1^{b} \pm 0.8$
Oiliness	$3.7^{a} \pm 0.8$	$3.9^{a} \pm 0.9$
Aroma	$3.7^{a} \pm 0.6$	$4.1^{a} \pm 0.8$
Flavor	$3.0^{a} \pm 0.7$	$3.8^{b} \pm 0.7$
Persistent residual flavor	$2.7^{a} \pm 0.5$	$3.6^{b} \pm 0.6$
Pleasant residual flavor	$3.6^{a} \pm 0.7$	$3.4^{a} \pm 0.6$
Texture	$2.7^{a} \pm 0.7$	$3.8^{b} \pm 0.8$
Overall view	$2.9^{a} \pm 0.5$	$4.1^{b} \pm 0.6$

The characteristics of the meat and products derived from BBP breed pigs are linked to their breed, their extensive farming system, their natural cereal feeding, and the age of slaughter [21]. The results obtained in this study suggest that the intramuscular fat content of the BBP breed pigs could contribute to a better quality of the cured products obtained, as noted by authors in previous studies [4,22] that suggested a minimum threshold requirement for intramuscular lipid of 3% for acceptable palatability in various red meat species. It is considered that the taste and, especially, the composition of intramuscular lipids play an important role in the intensity of meat flavor, in juiciness [23], and in the appearance of the "specific" component of the "aroma" or "flavor" of it [24]. The flavor of cured products depends significantly on lipolysis and lipid oxidation, with chorizo being one of the products in which the latter phenomenon has a positive effect on the aroma. Flores et al. [25,26] point out that the appearance of the characteristic aroma of cured products coincides with the beginning of lipid oxidation, but excessively intense oxidation can also result in unpleasant rancid flavors.

4. Conclusions

The higher fat coverage and both the intramuscular and intermuscular fat contents demonstrated by the carcasses of BBP breed pigs, in addition to the organoleptic characteristics of minced sausages, which are valued for their attractive appearance, texture, and promising aroma and flavor, highlight the productive interest of the BBP breed pig in diverse, complementary, and economic activities (agriculture, livestock, and rural tourism) within a natural setting (northern Navarre). In order to achieve the full potential of the distinctive meat, and in good agreement with the results of the sensory analyses, it is necessary to optimize and personalize the curing process of the developed sausages (the

"Sarta" and "Vela" chorizos). Future research studies should examine other products, such as cured ham, to determine if the ham made from BBP breed pigs exhibits a superior sensory quality than that made from LWLP breed pigs as a result of the abundant amount of marbling.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/gastronomy2010003/s1, Figure S1: Chorizo type "sarta" loaned by Maskarada. Figure S2: Chorizo type "vela" loaned by Maskarada. Figure S3: Ration of slices of BBP breed pig ready to eat.

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