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TECHNOLOGICAL PROCESS OF PREPARATION OF MEAT SHEEP IN TRADITIONAL WAY IN KOSOVO

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Abstract

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This work aims to provide information about the sheep meat production in Kosovo in the traditional form. The study was associated with the preparation way of meat production, thus its entire preparatory technological process. During this study the slaughtering process of sheep (i.e., starting from slaughtering of animal, removal of blood, extraction of organs, peeling skin till gaining the meat of the Sheep in traditional way, was followed. Besides this, the objective was also to identify the sheep meat yield and the amount of meat produced per year in the sheep holding households, the way of storage, its use etc. For this purpose a survey in 120 farms including six regions of Kosovo, was conducted. Sheep farms were randomly selected. Results, from this study show that in Kosovo the sheep meat is mainly consumed as fresh meat, very little amount as ham, "Pasterma" and ''Kaverrma''. Technological production process differed slightly between the regions of Kosovo, while for some regions "Pasterm" and ''Kaverrma'' is considered to be the regional product only in the region of Prizren and the technological process was rather different.

Key words: sheep meat; traditional forms; technological process

Introduction

In Kosovo are estimated approximately 198 703 sheep (Kosovo Statistics Agency, 2015), and sheep meat is highly consumed among the households in Kosovo. Sheep meat consummation in Kosovo is also related to the religion of peoples (95% of population belongs to Muslim religion). Sheep meat is a source of protein with high biological value, deserving special attention by the different segments of the production chain, considering the increase in the consumers' demand level and the expansion of markets (Costa et al., 2009). Sheep meat is known as well as for its fat content, especially for fatty acid (FA) composition which impact meat quality , as it is related to differences in organoleptic attributes, like flavour and in nutritional value of fat for human consumption (Melton, 1990; Wood et al., 1997, Nürnberg et al., 1998). Sheep and lamb meat possesses unique culinary values, such as tenderness, tastiness and high nutritional value, and hence is attractive and enjoys high demand from consumers on many foreign markets (Knapik et al., 2016). Consumers nowadays chose food regarding to their quality, according to Dransfirld (2001) the success of any food product is determined by consumer acceptability, which is largely determined by the perception of quality. In developed country sheep meet is the most expensive meat, consummation is depend on cultural factors and will be increased as population grow (Bountonnet, 1999). Sheep meat quality is influenced by many factors related to the animals from which its derivate, such as sex (Butler-Hogg et al., 1984) chronological age (Bouton et al., 1978; Ono et al., 1984), and slaughter weight (Jeremiah et al, 1998). The effect of breed is also an important factor influencing sheep meat quality (Sink and Caporaso, 1977; Fisher et al., 1999; Safari et al., 2001).

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Several studies were done about genetic diversity of sheep (Mehmeti, 2000; Bytyqi et al., 2014; Waltraud, 2009), economic value of sheep producing trains of sheep breeds (Bytyqi et al., 2015), milk sheep quality (Bytyqi et al., 2013), about selium content in sheep (Ademi et al., 2017), but there is no data about technological process of sheep meat preparation, thus the objective of this study is to show the technological process of preparation of sheep meat in the traditional way, and identifying sheep meat products that are produced traditionally in Kosovo.

Material and Methods

This research is provided through field activities. Field research was spread down in six regions of Kosovo, and covered a period from May-December 2016. A total of 48 villages and 120 households were involved in this research (Table 1). The size of farms of households was 20-100 sheep. For data collection were used questionnaires, which consisted different questions for technological process of preparation of sheep meat. Starting from the slaughter process, removal of blood, extraction of organs, peeling skin till gaining the meat, the amount of sheep product, storage, it use, and questions for technological process of preparation of sheep meat products.

Table 1
Number of villages/households involved in research

No.	Region	Number of villages	Number of households
1.	Prishtine	8	20
2.	Mitrovice	8	20
3.	Gjilan	8	20
4.	Peje	8	20
5.	Gjakove	8	20
6.	Prizren	8	20
	Total	48	120

***Statistical analysis*:** The statistical analyses of the data were done by using JMP- starter packet, a business unit of SAS program (Sall et al., 2004).

Results

Table 2 shows the results of sheep meat products identified, regarding their regional production. Our results shown that in Kosovo sheep meat in the traditional way is used as: Fresh meat (FM), Dry Meat (D.M), Pasterma (P), Kaverrma (K).

For meat production the slaughter process is the first stage in the technological process. In Kosovo in the traditional way the slaughter process is made in two ways, slaughter by butcher and individual slaughter (Figure 1). Result shows that in Kosovo in traditional way sheep are mainly slaughter individually (98%) and rare by butchers (2%).

Table 2
Sheep meat products produced in traditional way in Kosovo

No.	Region	Number of types	Sheep meat product type*
1.	Prishtin	2	FM., D.M
2.	Mitrovice	2	FM., D.M
3.	Gjilan	2	FM., D.M
4.	Peje	2	FM., D.M
5.	Gjakove	2	FM., D.M
6.	Prizren	4	FM., D.M., P, K

*Fresh meat (FM.); Dry Meat (D.M.); Pasterma (P.); Kaverrma (K)

The amount of sheep meat varies in the household holding sheep, results for meat production per year in the interview households are shown in Figure 2. Different amount of sheep meat is produced among the households it is depended on the preferences and the capacity of households. In Figure 3 are shown the results about the use of sheep meat produced. Sheep meat mainly is used for domestic consumption (92%),

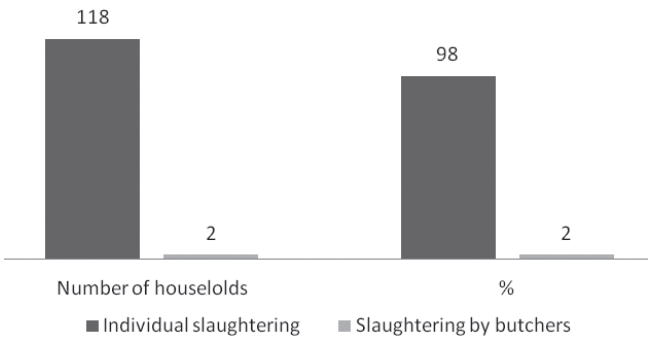

Fig.1. Slaughter methods of sheep in traditional way in Kosovo

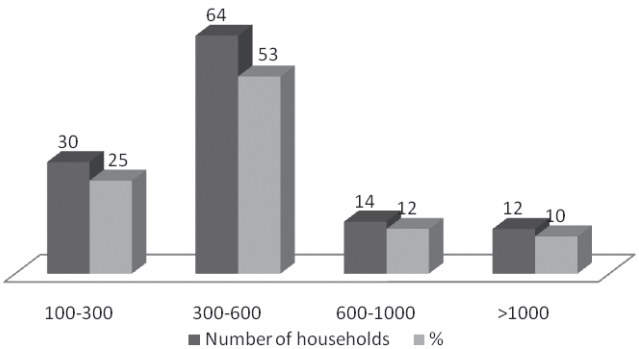

Fig. 2. The amount of sheep meat produced in the interweaved households per year

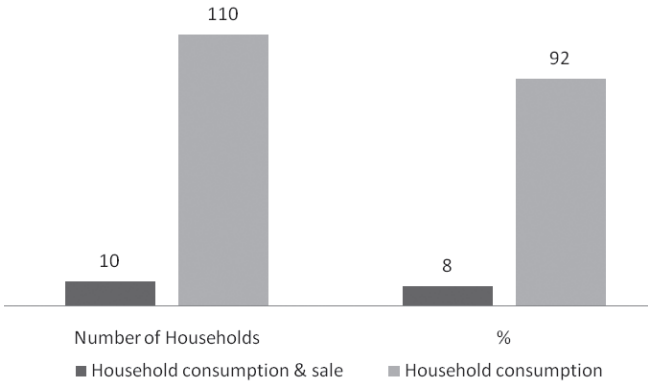

Fig. 3. Use of sheep meat produced

but a little amount of sheep meat produced in traditional way is marked too (8%). The sheep meat is marked in restaurants and market (Figure 4).

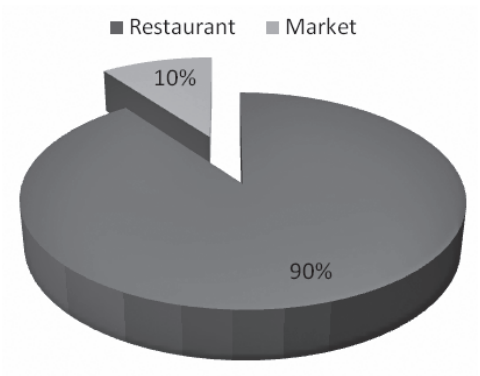

Fig. 4. Places of selling sheep meat

The results of our study show that traditionally in Kosovo sheep meat is consumed as fresh meat, dry meat, pasterm and kaverrma. The technological process for fresh meat production in traditional way is shown in Figure 5. Sheep meat in Kosovo in traditional way mainly is consumed as fresh meat.

Dry meat (Bacon sheep) Dry meat from sheep meat is spread down all over Kosovo, but it is not produce in large amount, only certain households produce this kind of meat. The process of bacon sheep meat production exceeds the following stages: Once sheep is slaughtered, the meat is divided in parts and is placed in the container for 24 hours in order to drain for the blood removal. Later become salting process of meat that affects the taste of the meat and the preservation of it. Amount of salt added depends of the meat quantity. Salted meat is placed in a sealed container for 2 days. Next comes the drying process, it lasts from 7-15 days. In different temperatures that wary from 4°C – 60°C, the period of drying is depended on the temperatures that are applied, when low temperatures were applied the draying process were longer, vice versa when high temperatures were used the draying process last less (Figure 6).

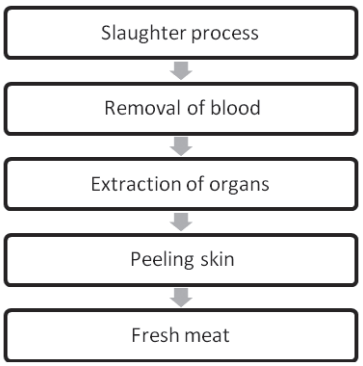

Fig. 5. The technological process of gaining fresh meat

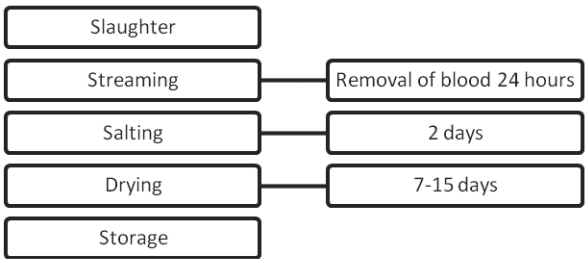

Fig. 6. The technological process of dry meat (bacon sheep) production

Pasterma The ‘’Pasterma” is known as a traditional product on the Balkan peninsula, where each country has its own special characteristics of its production. Pasterma is a fairly old product and its production is followed by generations. Pasterma production began as a form of meat preservation by farmers who did not have the condition to keep it as fresh meat. In Kosovo traditionally three types of Pasterma are produced:

- ***Cow meat Pasterma***
- ***Sheep meat Pasterma***
- ***Lamb meat Pasterma***

The cow meat Pasterma is the most common and is produced throughout Kosovo. This kind of Pasterma passes through a purely technological process, and is mainly known as dry meat. While the production of Pasterma from the flesh of sheep and lamb is characteristic for the South and Southeast of Kosovo regions, respectively. It is known as well

as the technological process of its production differs from the technological production process of cow Pasterma. The sheep Pasterma starts to be used because of the inability to preserve the meat during different seasons. This kind of Pasterma is produced throughout the year, unlike cow's meat Pasterma that is produced mainly during the winter. Sheep Pasterma is produced in the early spring, where the drying of meat is made in nature and the flesh is mainly not exposed to sun rays. During summer drying of meat is done directly with sunlight. For the protection of meat from bacterial and insect contamination, in addition to the salt it is added the maize flour too, which prevents the meat from being in contact with insects and does not allow the penetration of various pollutants into the flesh. After the meat is dry, next process it the removal of maize flour from Pasterma. During the season of the autumn it is produced in late fall, and for the production of Paterma are used sheep which are not inseminated. During the winter, it is produced in clean air with low temperatures. Pasterma is produced from healthy sheep and nourished under normal conditions. For the production of Pasterma, sheep are used in different ages, where the sheep's age does not affect the quality of the Pasterma. The technological process of the production of Pasterma passes in several steps that include:

1. *Slaughtering* – this should be done in the proper form without causing animal stress. The head of the sheep is removed and hangs down the neck so that the blood is removed. Blood drain is done for two hours.

2. *Removal of the skin and the internal organs* – removes the skin and internal organs such as the heart, the lungs, the gut, stomach.

3. *Cut-off process* – After removing the skins and the internal organs, the ewe is placed in Sofra (traditional table for eating) and with the help of the ax are cut (broken) the bones (today there are different equipments for bones cutting, but in the production of Pasterma only axes are used, as other equipment for cutting the bones falls and the flesh). First, the two side parts of the cord are cut (the ribs where they are tied to the back). The spine is removed from the neck to the back legs of the sheep but the flesh remains undamaged. The bones of the ribs can be removed or left depending on the manufacturer's preference, the rib removal process is simple. Then all nodes (big bones) were removed but caring for the back legs as they were used for hanging during the drying process. This ends the cutting process

4. *Layout* – Where the flesh of the sheep is placed in the Sofer by spreading it.

5. *Salting* – Salt is added when the meat of the sheep is stretched. Salt affects the taste of Pasterma and also affects the preservation of the meat. At the earliest times the salt during the production of Pasterma is used in large quantities (4-5 kg of salt per sheep) nowadays the salt is used in smaller quantities of 1 kg (max 1.5 kg) salt per sheep. During Pasterm production, the kitchen salt is not used as it is dissolved quickly. The iodized salt is mainly used because its digestion is slower and penetrates into all parts of the paste, ensuring uniform taste and protection. In this form it is held for 10 hours.

6. *The wrapping process* – Collect the meat from the neck by rotating and finally closing down with the back legs of the sheep, in this form it stays 8-10 days in a cool place (basement) and covered by a thin material Not to be contaminated.

7. *Drying* – After 8 to 10 days of stay in the rolled form the meat is extended, it is made by using wooden rod of beech or hazelnuts (trees that do not affect the quality of the meat). There are three bundles of rods, one on top connecting the back legs. A tie down to the front legs as well as a crossing connecting the first legs to the second so that the stretch is better. Then it settles into drying where the dryness depending of the ambient conditions lasts 7-10 days. Some farms aim to add tastes, drying is made by fire of dried nettles, using only their smoke not the fire.

8. *Storage* – After the drying is over Pasterma is cut into small pieces and placings in the paper bed, and stored in fresh rooms. Nowadays, Pasterma after is put the paper bag is placed in the freezer for storage. The storage of this Pasterme is 1-2 years.

Lamb Pasterma – The technological process of producing the Lamb Pasterma is similar to the technological process of manufacturing the sheep Pasterma. The difference between these Pasterma is that the Lamb Pasterma can be easily consumed even without boiling, and the simmering process is easier and shorter than Sheep Pasterma (Figure 7).

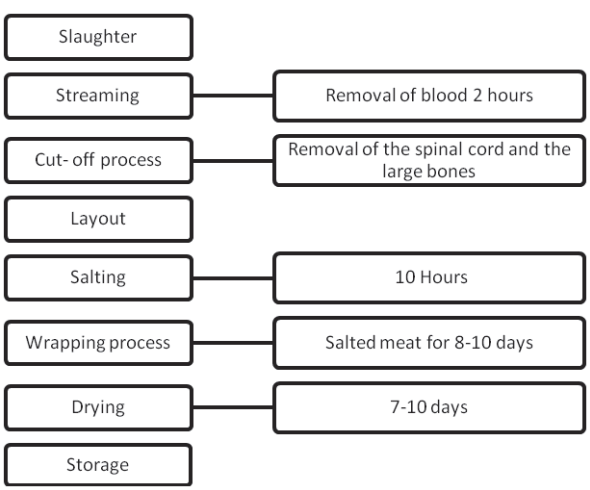

Fig. 7. Technological process of production of Pasterma

Kaverrma – Kavërrma's production began as a form of preservation of the fresh meat of the sheep after its form of preservation in the form of Pasterma, mostly applied by the farmers living in the mountains. The technological process of Kavërrm's production is more complicated than Pasterma, but on the other hand this pordukt is easier to be consumed than Pasterma.

Discussion

The first step of gaining sheep meat is slaughter of animal, and the obtained results show that in Kosovo are applied two slaughtering methods: individually slaughtering and slaughtering by Butcher. As the result shows (Figure 1) most of households have applied individual slaughter (98%) that means that the slaughter process is done by the farmers that holds sheep. This method is not very appropriate because of nonprofessionally of the farmers and may impact animal welfare, as well as meat quality, in sheep due to stress and injuries. Based on hygienic conditions in which is applied it can influence the meat quality and there is a possibility that the sheep meat to be contaminated when this kind of slaughter is applied. Strict maintenance of good slaughter hygiene practices in meat production is of crucial importance in the prevention of microbial contamination of the carcass surface in the interest of ensuring both meat quality and health protection (Zweifel and Stephan 2003).

This study show that sheep meat is consumed as fresh meat, dry meat, Pasterma, and Kaverrma the technological process of preparation of dry meat different slightly between regions of Kosovo, mainly in the temperatures that are used for draying process. Pasterma and Kaverrma are found only in the South and Southeast part of Kosovo, in the Region of Prizren respectively. Both Pasterma and Kaverrma are produced in small quantities in Kosovo, some of the reasons for this low level of production may be that many farmers consider the production process of these products as laborious and long, but at the same time many farmers do not produce these products because they do not have the tradition of producing them (i.e. lack of knowledge about the technological process of production). Pasterma production is at a slightly more enjoyable level compared to Kavermen. The production of Kaverrma is now almost a matter of fact, because its use is very rare. This product is rarely encountered, and is a product that is extinct.

The largest amount of Sheep meat is mainly produced during autumn and winter, but all interviewed households have indicated that they produce sheep meat too, for the religious holiday, Eid respectively. The result shown for different amount of sheep meat produced, among the households, it is depended on the preferences and the capacity of households and consumers demand. Sheep meat usually is store in fridge at temperature -20°C in all forms of its production, but dry meat and Pasterma can be store even in room temperature, till the all quantity of meat is consumed. Sheep meat produced mainly is used for domestic consumption, but a small amount is sale too, and the selling price of fresh sheep meat was 6 €/kg, while the price for Pasterma and Kaverma is 8-10 €/kg, indicating that besides nutritional values, these products have a great impact on the economy of households that produce these products.

Conclusions

Sheep meat is one of the products of animal origin with great consumption, and in different forms in Kosovo. Traditional sheep meat production plays an important role on diet and economy of small-scale households in Kosovo. Therefore, preservation of traditional sheep meat products production, by intervention in improving different stages of the technological process of their production in order to increase food security, while maintaining product will play a great importance on diversity of traditional foods. New studies must take place by analyzing nutrition value, issues about food safety of those products.

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