



Qualitative Indicators of Newborn Lamb Meat

Tursumbai Kubatbekov *, *Anna Semak*, *Evgenia Baranovich*, *Asat Salichov*, *Stepan Grikchas*, *Ajonajan Yuldashbaeva*

Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, 49 Timiryazevskaya str., Moscow, 127434, Russia

Abstract

Often in some countries there are situations in which the total slaughter of animals is necessary (in cases of liquidation of economically bankrupt farms and farms, in the fight against certain infectious diseases, after environmental disasters and natural disasters). However, in some countries, it is not allowed to slaughter lambs for meat before 14 days of age. Therefore, when slaughtering healthy animals younger than 14 days, carcasses and offal are sent to feed animals or disposed of. At the same time, in some countries there is no such age limit for the slaughter of animals for meat. For example, in African and South-Eastern Asian countries, on the contrary, meat of newborn animals under the age of 13-14 days is recommended for food purposes. In connection with the disagreements that arose, we conducted a comparative analysis of the meat of ram carcasses from birth to 15 days of age. Therefore, if we prove the safety in veterinary and sanitary relations of the meat of animals killed before the age of 14 days, this would be a great reserve in the balance of nutrition of the population and providing it with proteins.

Keywords: Meat of rams, quality indicators, harmlessness, total biological value

Short communication

*Corresponding Author, e-mail: sciencedept@mail.ru

1. Introduction

It is known that the carcasses of lambs killed at the age of 2-3 days in order to obtain skin are often used for food purposes. The authors [1-3] scientifically substantiated that the carcasses of such lambs can be used for canned and sausage products or smoked meats. According to some authors, meat of animals of the dairy period is the most environmentally friendly and safe for the consumer [4, 5]. The good digestibility of meat in young animals and its low-fat content determine its value and the possibility of its use in food for children and the elderly [6, 7].

2. Materials and research methods

The experiments were carried out on animals in the Kyrgyz Republic at the State Breeding Station "Elita". To confirm or refute the above factors, comprehensive, commodity and veterinary studies were carried out in the comparative aspect of the carcass of lambs of 1-15 days of age. Taking these factors into account, we decided that the implementation of this work is relevant. To perform the work, we investigated the carcasses of lambs in the postnatal period of ontogenesis in a comparative aspect, morphological and chemical parameters of 1-15 days of age in order to be able to use them in human food. To study lamb meat for harmlessness and biological value, experiments were carried

out on white rats and on voluntary tasters in comparison with milk protein - casein. The weight gain of rats when using 10 g of casein per head for 10 days was taken as 100%, and the change in the weight of rats when fed 10 g of boiled, fried and baked meat for 10 days was evaluated in comparison with the weight gain of rats receiving casein.

For each age group, five male rats were taken. In addition, in all samples of meat of experimental and control lambs, the content of tryptophan and hydroxyproline was determined and all studied samples were compared with the ratio of tryptophan to hydroxyproline. From this data Table 1 was created. In the study of the total biological value (TBV) and harmlessness of lamb meat of 1-15 days of age in comparison with the standard protein - casein in experiments on white rats, different data were obtained. Thus, in experiments on rats, the biological value of meat of 1-2- and 5-6-day-old lambs was less, and amounted to 96.4% compared to casein, meat of 7-10-day-old animals -95.4-95.8%, meat of 11-13-day-old lambs of the TBV was 94.6-94.8%, and meat of 14-15-day-old animals was also 94.6%. At the same time, the TBV of lamb meat of 1-4 days of age was 96.4 - 96.5% of the TBV of casein.

The difference in the total biological value of meat of 1-2-day-old lambs compared to casein was 3.7%, meat of 3-6-day-old lambs - 3.4-3.6%, 7-8-day-old - 4.3%, 9-10-day-old - 4.6%, 11-12-day-old - 6.2%, 13-day-old - 6.1%, as well as control 14-15-day-old lambs -6.1%. This data indicates that the biological value of the meat of lambs aged 1-2; 3-4; 5-6; 7-8; 9-10 and 11 days was higher by 0.2-0.8% than the meat of 13-, 14-15-day-old animals. The total biological value of meat in our experiments decreased to 11-12 days of age, and the meat of 13-day-old lambs practically does not differ in total biological value from the meat of control (14-15-day-old) animals. In the samples, lamb meat was examined for the content of tryptophan and oxyproline before cooking, since the ratio of tryptophan to oxyproline can usually indirectly indicate the nutritional value of meat.

The results of the studies indicate that the content of tryptophan and oxyproline in the meat of 1-10-day-old lambs was at the same level and only 0.01-0.02 differed from the content of tryptophan and oxyproline in the meat of control animals. The ratio of tryptophan to oxyproline in the meat of lambs 1-10 days old was the same and amounted to 2.58, and in the meat of 11-13-day-old lambs it decreased to 2.49-2.51, which was close to the meat of control 14-15-day-old lambs. It was found that according to the ratio of tryptophan to oxyproline, the meat of lambs of 5-13 days of age also practically does not differ from the meat of control 14-15-day-old animals.

In addition, we studied the indicators of the harmlessness of lamb meat in the early postnatal period during tasting. For this purpose, meat 6-, 9-, 12-, 14- day lambs and adult sheep 24 hours after slaughter were cooked for 30 minutes without salt and spices and tasted with the participation of 11 voluntary tasters. Each volunteer simultaneously ate up to 100 g of meat and up to 200 ml of

meat broth. The evaluation of the consumed product was taken into account within 10 days. The tasters noted that after cooking, the meat samples of 6-, 9-, 12- and 14-day-old lambs were light gray in color with a pink tinge, of a soft, delicate consistency, with a slightly pronounced specific odor, pleasant taste, but without a pronounced aroma of mutton. The broth in all cases was transparent, without signs of turbidity and sediment, with single drops of fat, which indicates that there is no pronounced difference in the evaluation of meat of 6-, 9-, 12-day and 14-day-old lambs. The color of the boiled meat of older animals was practically the same as that of lambs, but the flavor was more pronounced and the broth contained more fat.

The voluntary tasters, after eating boiled meat of 6-, 9-, 12- and 14-day-old lambs, had no disorders of the gastrointestinal tract and excretory organs during the entire observation period. In the general state of health, there were no complaints from voluntary tasters.

3. Results and discussion

Thus, the results of the study indicate that the biological value of the meat of newborn lambs in the first 5-6 days is 1.8-1.9% higher than the meat of 14-15-day-old animals, the TBV of meat of 7-12-day-old lambs was higher compared to the TBV of control animals by 0.2-1.2%. That is, the results of a biological assessment conducted on growing rats showed that the meat of lambs at the age of 5-6 days inclusive has a higher biological value compared to the meat of 14-15-day-old animals, although the difference in terms of biological value (casein, TBV) is statistically unreliable. The biological value of the meat of 13-day-old lambs did not differ from the meat of control animals.

Table 1. Indicators of the biological value of lamb meat

Age of lambs	Indicators of the biological value of meat when using white rats		
days	Casein (control)	(Total Biological Value) TBV, %	Difference in relation to casein, %
	2,50±0,02	100,0±1,4	0
1-2	2,41±0,03	96,3±1,5	3,7
3-4	2,40±0,05	96,6±1,7	3,4
5-6	2,41±0,02	96,3±1,4	3,7
7-8	2,38±0,03	95,7±1,8	4,3
9-10	2,37±0,03	95,4±1,3	4,6
11-12	2,38±0,04	93,8±1,6	6,2
13	2,37±0,03	93,9±1,5	6,1
14-15	2,33±0,04	93,9±1,8	6,1

The evaluation of meat in relation to tryptophan to oxyproline also confirms the higher biological value of lamb meat in the first 9-10 days after birth compared with the meat of 11-15-day-old lambs. In experiments on voluntary tasters, the nutritional safety of lamb meat of 6-, 9-, 12- and 14-day-old was confirmed. The biological value of the product consists of its nutritional value, harmlessness, organoleptic qualities and biological activity. Nutritional value is characterized by digestibility, digestibility and nutritional value, i.e. the metabolism of the components of the product of this chemical composition. Thus, the term "biological value" reflects not only the degree of usefulness of the mainly protein part of the product, but also its other components.

The meat of lambs older than 7-8 days, according to organoleptic and commodity indicators, approaches those of 14-15-day-old animals. According to these indicators, the meat of lambs 1-4 days old was 0.41 points lower than the meat of control 14-15-day-old animals. During heat treatment (cooking, frying, baking), the meat of 5-13-day-old lambs is inferior by 0.11-0.41 points to the meat of 14-15-day-old animals. At the same time, the biological value of the meat of 5-13-day lambs exceeds by 0.2-1.8% the meat of control 14-15-day animals.

4. Conclusions

The meat of lambs, 7-13 days old, according to organoleptic and chemical parameters, meets the requirements of the rules of veterinary medical examination and it can be recommended for use for food purposes on a general basis. Lamb meat under the age of 6 days, when used for food purposes, must undergo preliminary heat treatment by cooking at a temperature inside the piece not lower than 85 ° C. Offal of lambs 1-10 days old is recommended to be sent to animal feed or for the production of meat and bone meal, and offal of 11-13-day-old lambs can be used for food purposes.

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