Biotechnology in Animal Husbandry 23 (5-6), p 139 - 144 , 2007 ISSN 1450-9156
Publisher: Institute for Animal Husbandry, Belgrade-Zemun UDC 636.3

THE CHARACTERISTIC OF CONTROL DAY MILK AND ITS PROPERTIES IN EWES FROM DIFFERENT BREEDS IN BULGARIA**

E. Raicheva[1]*, T. Ivanova[1], E. Kipriotis[2] and E.Kistanova[3]

[1]Institute of Animal Science, Kostinbrod , Bulgaria
[2]Institute of Animal Science, Komotini, Greece*
[3]Institute of Biology and Immunology of Reproduction, BAS, Bulgaria**
*Corresponding author: emilyr@abv.bg
**Original scientific paper. The publication is connected to Bulgarian-Greece project for research of F1-crosses of Chios breed financed from Ministry of Education and Science.

Abstract: The aim was the investigation the milk and its composition for control day in local sheep breeds. The experiment was carried out with 19 Karakachan ewes and 21 West Balkan Mountain ewes from the flock of IAS-Kostinbrod and 15 Local Sofia ewes from a private flock from village Klisura. The study is a part of Bulgarian-Greece project for research of F1-crosses of Chios breed. The experimental ewes were mothers of F1 Chios' crosses. The milk for day was recorded on first control during milking period. The content of milk - fats, proteins, non fat solid, dry matter and density were estimated by individual milk samples by analyzer "Ekomilk". The average milk yield for control day of ewes from Karakachan, West Balkan Mountain and Local Sofia breeds was 0,344 l, 0,421 l and 0,633 l respectively.

The content of fat, protein and total solids in milk of Karakachan ewes was - 5,91%, 5,19% and 16,42% respectively, of West Balkan Mountain ewes – 6,41%, 5,10% and 16,67% and of Sofia local ewes – 6,35%, 5,94% and 17,57%.

Key words: sheep, local breeds, control day milk and composition,

Introduction

Local sheep breeds have preserved and held up as unique genetic resource because of their better adaptability and unpretentious to the condition of breeding. On the other hand, including the local sheep breeds in

breeding schemes as a basis to create new breeds and lines has accounted for object of researches (*Alexieva,* 1979, *Nedelchev and Stoianov*, 2004). The investigations of many authors have directed at quality ant quantity of milk from local sheep breeds (*Petrova et al.* (1998), *Kafedjiev et al*. (1998), *Genkovski* (2002), *Gerchev et al.* (2005).

The aim of this study was to make a characteristic of milk for control day and its composition at sheep from Karakachanska, West Balkan Mountain and Local Sofia sheep breeds.

Material and methods

The experiment was carried out with 19 Karakachan ewes (KK) and 21 West Balkan Mountain ewes (WBM) from the flock of IAS-Kostinbrod and 15 Local Sofia ewes (LS) from a private flock from village Klisura. The study is a part of Bulgarian-Greece project for research of F1-crosses of Chios breed. The experimental ewes were mothers of F1 Chios' crosses. The milk for day was recorded on first control during milking period, according to Instruction for control of productive qualities (2003). The milk production of each ewe was calculated as individual milk sample from morning milking was multiplied by coefficient of flock. The coefficient of flock was determinate from ration morning and evening milk/morning milk. The content of the milk - fats, proteins, non fat solid, dry matter and density was estimated by individual samples by milk analyzer "Ekomilk". The daily yield of fat and protein was calculated. The information was worked by methods of variation statistics.

Results of investigations and discussion

The milk for control day of ewes from Karakachan breed showed low values (0,344 l). The variation of milk yield was within the wide limits of 0,120 l - 1,080 l (tab. 1). The obtained results of average milk for control day were lower than these values of *Alexieva* (1979) - 0,500 l and higher than these of *Petrova* (1998) - 0,269 l, and *Kafedjiev et al.* (1998) (0,189 l).

However the average milk yield for control day at ewes of West Balkan Mountain breed had tendency of higher value (0,421l) than Karakachan ewes, it also was low and high variation (tab. 2). The lowest value was 0, 160 l, the highest – 1,060 l.

At Local Sofia ewes (tab. 3) was observed tendency of highest value of milk for control day (0,633 l), but the high variation remained (0,300 l –

1,760 l).

The high variation, which characterized the milk for control day to these three control groups have been results of leaded support selection, which guaranteed preservation of genetic variability of the flock and for this the milk yield is additional trait. The maximum values of milk yield of experimental ewes showed possibility to make higher, which explained experimental crossing with Chios' rams.

Table 1. The milk for control day and composition of milk at Karakachan breed (n=19)

Traits	x	Sx	SD
Milk for control day, l	0,344	0,078	0,280
Fat, %	5,91	0,400	1,441
Protein, %	5,19	0,213	0,769
Non fat solids, %	10,455	0,257	0,924
Dry matter, %	16,42	0,439	1,582
Density, %	1,032	0,001	0,004

Table 2. The milk for control day and composition of milk at West Balkan Mountain breed (n=21)

Traits	x	Sx	SD
Milk for control day, l	0,421	0,082	0,306
Fat, %	6,41	0,389	1,457
Protein, %	5,10	0,191	0,715
Non fat solids, %	10,32	0,236	0,883
Dry matter, %	16,67	0,506	1,894
Density, %	1,031	0,001	0,003

Table 3. The milk for control day and composition of milk at Local Sofia breed (n=15)

Traits	x	Sx	SD
Milk for control day, l	0,633	0,151	0,453
Fat, %	6,35	0,484	1,451
Protein, %	5,94	0,120	0,362
Non fat solids, %	11,22	0,114	0,342
Dry matter, %	17,57	0,497	1,492
Density, %	1,034	0,006	0,002

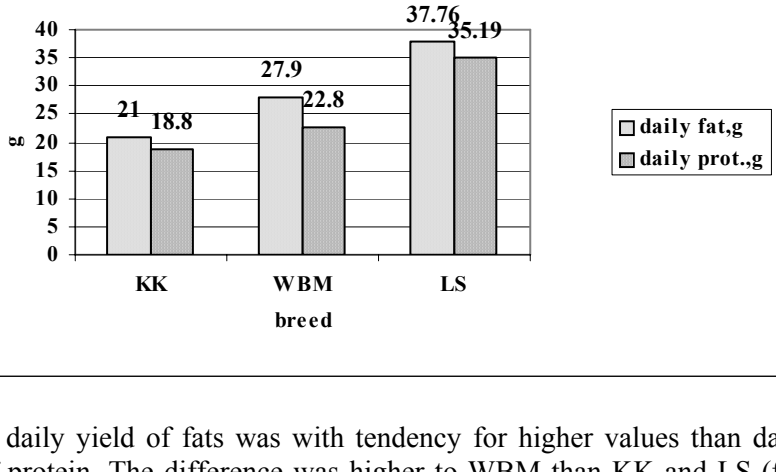
The content of milk fats of ewes from these three breeds was nearly to value and within the limits of the average for this trait according to *Tyankov et al.* (2000) (5,7 %– 7,4 %). The percentage of protein for the investigated individual milk samples was within the limits of the average for sheep milk – 5%-6% (*Tyankov et al*. (2000). The milk protein of ewes from LS breed had

tendency of the highest value. At the third breeds, the content of the milk fat had tendency for higher value in comparison to protein. The ratio protein/fat for KK, WBM and LS was respectively 0,88, 0,79 and 0,93. These values characterized the raw milk as a good material for production of quality cheese (*Peychevski and Chomakov* (1988).

The content of dry matter at investigated milk samples was respectively of sheep milk limits (16,42%, 16,67% и 17,57%).

The content of milk fat, protein and dry matter at KK ewes were lower at comparison to obtained results of *Petrova et al*. (1998) and *Kafedjiev et al*. (1998).

Fig.1 Average value of daily fat and protein gain at KK, WBM an LF breed



The daily yield of fats was with tendency for higher values than daily yield of protein. The difference was higher to WBM than KK and LS (fig. 1). The yield of fats and protein was higher to LS.

Conclusions

The average milk yield for control day at ewes from Karakachan, West Balkan Mountain and Local Sofia breeds was 0,344 l, 0,421 l and 0,633 l respectively.

The contents of fats, protein and dry matter in milk form Karakachan breed were 5,91%, 5,19% and 16,42%, from West Balkan Mountain breed – 6,41%, 5,10% and 16,67% and from Local Sofia breed – 6,35%, 5,94% and

17,57%. The ratio protein/fat for KK, WBM and LS was respectively 0,88, 0,79 and 0,93.

The daily yield of fats was 21 g, 27,9 g and 37,76 g for Karakachan, West Balkan Mountain and Local Sofia breeds respectively. The daily yield of protein was 18,8 g, 22,8 g and 35,19 g respectively.

KARAKTERISTIKE MLEKA U KONTROLNOM DANU I NJEGOVE OSOBINE KOD OVACA RAZLIČITIH RASA U BUGARSKOJ

E. Raicheva, T. Ivanova, E. Kipriotis, E.Kistanova

Rezime

Cilj ovog rada je ispitivanje mleka i njegovog sadržaja dobijenog u jednodnevnoj kontroli kod lokalnih rasa ovaca. Ogled je izveden na 19 krakačanskih ovaca (KK) i 21 zapadnobalkanskoj planinskoj ovci (WBM) iz stada Instituta za stočarstvo, Kostinbrod i 15 lokalnih sofijskih ovaca (LS) iz stada privatnih/individualnih odgajivača iz sela Klisura. Ispitivanje je deo Bugarsko-Grčkog projekta istraživanja F1 meleza rase grčka pramenka. Ogledne ovce su bile majke F1 meleza grčke pramenke. Mleko dobijeno tokom jednog dana je zabeleženo tokom prve kontrole u periodu muže. Sadržaj mleka – masti, proteini, nemasna čvrsta materija, suva materija i gustina, je ocenjivan u pojedinačnim uzorcima pomoću aparata za analizu "Ekomilk". Dnevni prinos masti i proteina je izračunat. Podaci su obrađeni metodama varijacione statistike.

Prosečni prinos mleka u kontrolnom danu od ovaca krakačanske, zapadnobugarske planinske i lokalne sofijske rase je bio 0,344 l, 0,421 l i 0,633 l respektivno.

Sadržaj masti, proteina i ukupne čvrste materije karakačanske ovce je bio - 5,91%, 5,19% i 16,42% respektivno, zapadnobalkanskih planinskih ovci – 6,41%, 5,10% i 16,67% i ovaca lokalne sofijske rase – 6,35%, 5,94% i 17,57%, respektivno. Odnos protein/mast u mleku ovaca rasa KK, WBM i LS je bio respektivno 0,88, 0,79 i 0,93.

Dnevni prinos masti je bio 21 g, 27,9 g i 37,76 g kod ovaca krakačanske, zapadnobugarske planinske i lokalne sofijske rase, respektivno. Dnevi prinos

proteina je bio 18,8 g, 22,8 g i 35,19 g respektivno.

References

ALEXIEVA S. (1979): Comparative Characterization of Some Local Sheep Breed in Bulgaria with Connection of Preservation of Genetic Resources in the Sheep Breeding. Thesis, Sofia. (BG)

GENKOVSKY D. (2002): Comparative Characterization of Sheep Different Breeds, that are Looking after the Conditions of Middle Balkan Mountain, Thesis, Sofia. (BG)

GERCHEV G., MIHAYLOVA G., SLAVOV R. (2005): Dynamics of Milk Aminoacid Content During Milking Period of Karakachan Ewes. Journal of Animal Science, 2:35-39. (BG)

NEDELCHEV D., STOYANOV B. (2004): Breeding Program for Karakachan Sheep. Breeding Association of Local Breeds in Bulgaria. Bioselena. Foundation for Organic Agriculture, 58-85. (BG)

PEYCHEVSKI I., CHOMAKOV H. (1988): Milk-production. Zemizdat. Sofia, 121. (BG)

PETROVA N., NEDELCHEV D., TODROVA D. (1998): Production and Contents of Milk from Ewes. Animal Science, 1:86-91. (BG)

TYANKOV S., DIMITROV I., STANKOV I., SLAVOV R., PANAYOTOV D. (2000): Sheep Breeding and Goat Breeding. Stara Zagora, 127-131. (BG)

KAFEDJIEV V., ODJAKOVA T., MICHAILOVA G., DIMITROV T. (1998): Yield, Composition, Properties and Technological Properties of Milk of Zigay and Karakachan Sheep Breeds. I. Milk Yield and Composition. Bul. J. of Agricultural Science, 4:369-372.

Instruction for Control of Productive Traits of Sheep. (2003). Ministry of Agriculture, Bulgaria