Milking and milk quality in two breeds of sheep

J. Olechnowicz & H. Turki

Veterinarian Department, Agricultural University of Poznan,
52 Wojska Polskiego street, 60-625 Poznan, Poland

Summary

Milking time studies and milk quality were carried out on 15 dairy ewes from the breed line 05 (13/16 East Friesian sheep, 3/16 Polish Merinos) and 14 meat white head ewes. This experiment concerned only ewes, which milk fed their lambs for two months and which had a healthy udder. Ewes were milked mechanically in a 14 Westfalia milking parlor stands with a set of 6 milking units.

The time from the first udder stimulation to milking unit attachment, milk flow time from each half of the udder, machine stripping, overmilking, total milking time and the time from the first stimulation of the udder to unit detachment were recorded for three consecutive days during morning milking. On the 75th day of lactation of both breeds of ewes, milk samples were taken from each half of the udder. Milk components and somatic cell counts were determined using Milkoscan and Fossomatic 90 respectively.

No significant differences were observed in milking variables of both breeds. The breed of sheep did not have a significant effect on milk components and somatic cell counts, however the protein percentage content of milk from the left half of the udder was influenced ($P \leq 0.05$).

Key words: *Ewes, breed, milking course, milk components.*

Introduction

Dairy use of sheep can be cost effective in the low regions of Poland. However the high milking potential of ewes and the appliance of methods that unable to increase commercial milk production are the factors that decide about it. In such herds, lambing is conducted in different times in order to insure a continuous milk production throughout the year (Wazna and Gut, 2000). Ovine milk quality depends mainly from the udder health (Olechnowicz and Steppa, 2000) on what the milking technique has a great effect (Romeo *et al*., 1996; Bruckmaier *et al*., 1997).

The purpose of this investigation was to establish the elementary milking activities in sheep as well as to evaluate milk quality in relation to milking parameters.

Material and methods

Milking time studies and milk quality were carried out on 15 dairy ewes from the breed line 05 (13/16 East Friesian sheep, 3/16 Polish Merinos) and 14 meat white head ewes in the experimental farm in Zlotnik (Poland) that belongs to the Agricultural University of Poznan in the year 2000. Ewes of both groups were qualified to milking after they milk-fed their lambs for two months and had clinically healthy udders. Ewes were milked mechanically in a 14 Westfalia milking parlor stands with a set of 6 milking units. The time from the first udder stimulation to milking unit attachment, milk flow time from each half of the udder, machine stripping, overmilking, total milking time and the time from the first stimulation of the udder to unit detachment were recorded for three consecutive days during morning milking. On the 75th day of lactation (mid April) of both breeds of ewes, milk samples were taken from each half of the udder. Milk components and somatic cell counts were determined using Milkoscan and Fossomatic 90 respectively.

For statistical evaluations STATISTICA 97 software was used. The sheep breed (dairy and meat), lactation (1,2,3 and further) and overmilking ranges (0-100; 101-180 and > 180 sec.) were taken into consideration in this analysis Means difference between groups were tested for significance Duncan's Test. Results are presented in tables as means ± SD.

Table 1. Milking parameters of dairy and meat breed ewes in seconds.

Sheep breed	Milk flow		Overmilking		Machine stripping	Total milking time	From udder stimulation to milking unit detachment
	Left	Right	Left	Right			
Dairy	61 ± 23	62 ±19	182 ± 61	181 ± 67	35 ±14	246 ±52	552 ± 157
Meat	66 ± 22	69 ± 18	163 ± 66	159 ± 61	40 ± 37	242 ± 63	512 ± 148
Breed effect	NS	NS	NS	NS	NS	NS	NS
Lactation effect	X	NS	NS	NS	NS	NS	NS

X-significant at P≤0.05.
NS-not significant.

Table 2. Milk components and somatic cell counts in relation to the sheep breed.

Sheep breed	Number of ewes	Milk components (%)									
		Fat		Protein		Lactose		Dry matter		Ln SCC	
		Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
Dairy ewes	15	3.36±0.83	3.32±0.98	5.39±0.39[a]	5.58±0.51	5.29±0.85	5.50±0.27	14.68±1.22	15.10±1.26	12.23±1.98	11.80±1.73
Meat ewes	14	3.40±0.98	3.57±1.07	5.90±0.40[a]	5.84±0.37	5.39±.015	5.43±0.14	15.38±1.07	15.54±1.16	12.36±1.51	12.08±1.32
Breed effect		NS	NS	X	NS	NS	NS	NS	NS	NS	NS
Lactation effect		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Overmilking effect		X	NS	NS	NS	NS	NS	NS	NS	NS	NS

Marks as in table 1

a- means significant at P≤0.05

Results and discussion

No significant differences were observed in the milking parameters in both breeds (Table 1). Almost all the parameters related to milking did not depend either on the number of lactation. Bruckmaier *et al*., (1997) found that the time of machine stripping in all lactations in dairy ewes Lacune breed and Ostfriesian breed was 37 sec. and 52 sec. respectively, however total milking time respectively was 144 and 211 sec.

A long overmilking time of 180 sec for dairy ewes and of 160 sec. for the meat breed did not have a significant effect on milk components and on somatic cell counts (Table 2) . The only significant difference ($P \leq 0.05$) was observed for milk protein content in the left halves of the udder between the two breeds (5.58 and 5.84 %).

References

Bruckmaier R.M., Paul G., Mayer H., Schams D.1997. Machine milking of Ostfriesian and Lacaune dairy sheep: udder anatomy, milk ejection and milking characteristics. J. Dairy Res. 64: 163-172.

Olechnowicz J., Steppa R. 2000. Wplyw stanu zdrowotnego gruczolów mlekowych na jakosc mleka owczego. Rocz. nauk Zoot., Supl., z.6: 269-273.

Romeo M., Esnal A., Contreras A., Aduriz J.J., Gonzales L., Marco J.C. 1996. Evolution of milk somatic cell counts along the lactation period in sheep of the Latxa breed. Proceedings of an International Symposium: on Somatic cells and milk of small ruminants. Bella, Italy.