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Evaluation of Florina (Pelagonia) sheep breed for milk yield, partitioning and composition

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INTRODUCTION

Sheep production in Greece constitutes the most important sector of livestock production (Skapetas and Katanos, 2008, Skapetas et. al., 2009). All the Greek local sheep breeds are dual-purpose for milk and meat.Meat production is considered as by-product of lactation. The Florina (Pelagonia) breed belongs to the long thin-tailed, thin-wooled type of sheep. The mature body weight of ewes is about 60 kg and the average milk yield is ranged from 90 to 110 kg (Alexandridis et. al., 1987). The aim of the present work was to evaluate the milk partitioning and milk composition of Florina (Pelagonia) sheep breed.

MATERIALS AND METHODS

Forty eight ewes (16 of the first, 16 of the second and 16 of the third and subsequent lactations) of the Florina (Pelagonia) breed were used to evaluate the effect of lactation stage, parity and milking hour on milk yield, milk partitioning and composition. Twelve ewes had twin type births, while the others had single type births. The experiment began on 60±5 days postpartum and lasted 24 weeks. Ewes were milked twice daily at 8:00 and 16:00 h, in a 1x24 side by side milking parlor with 12 milking units and a low milk line and air pipeline. The working parameters of the milking machine were: vacuum level 38 kPa, pulsation rate 120 pulsations/min and pulsation ratio 50:50. Milk yield and milk fractions (total machine milk and hand stripping milk) were recorded twice daily every 4 weeks. Milk composition was examined for the morning and afternoon pooled milk samples. The ponderable mean was used for the calculation of milk fat, protein and lactose percentage. All the measured variables were compared by ANOVA using the SPSS General Linear Model procedure.Multiple mean comparisons were made using Duncan's multiple range test.

CONCLUSION

Florina (Pelagonia) sheep belongs to the local Greek breeds with limited ability in milk production. Milk composition is ranged in satisfactory levels. Machine milking ability of the breed is considered unsatisfactory because the hand stripped milk was found to be 17.3%.

RESULTS AND DISCUSSION

In Table 1 the average values of milk fractions (ml) throughout lactation are shown. The fraction of the total machine milk was 683.99±18.8 ml (82.69%), whilst hand stripped milk was 143.169±5.22 ml (17.31% of milk yield). The effect of lactation stage and parity were found to be significant for both milk fractions and also for the milk yield. The same results were found for the Karagouniko and Vlachiko sheep by other authors (Hatziminaoglou et.al, 1984, Skapetas and Katanos, 2008).
Milking hour did not significantly influence the total machine milk. In the whole experimental period, total machine milk contained 7.12±0.07% fat, 6.09±0.03% protein, and 4.79±0.03% lactose (Table 2). In the hand stripped milk the fat percentage was found to be significantly higher ($P<0.01$), while protein and lactose percentages for both fractions were found to be at the same levels. Fat, protein and lactose contents of two fractions were influenced significantly by the lactation stage. Milk composition of Florina sheep is similar with the Vlachiko sheep (Skapetas and Katanos, 2008). Fat and protein percentages are higher comparatively with those of Karagouniko sheep (Hatziminaoglou et.al, 1984).

Table 1. Milk fractions and milk yield of Florina (Pelagonia) ewes during machine milking

Milk fractions		Mean±s.e.	Significance	
			Lactation stage	Parity
TMM	Morning	366.18±11.9	*	*
	Afternoon	317.81±9.7	*	*
	daily	683.99±18.8	**	*
HSM	Morning	76.01±3.4	**	*
	Afternoon	67.15±2.7	**	NS
	daily	143.169±5.22	***	*
MY	Morning	442.19±12.3	**	*
	Afternoon	384.96±11.4	**	*
	daily	827.15±23.6	***	**

TMM=Total machine milk; HSM=Hand stripped milk; MY=Milk yield
Significance levels: *P<0.05; **P<0.01; ***P<0.001;

Table 2. Milk composition of Florina (Pelagonia) ewes during machine milking

Milk composition	Mean±s.e.	Significance	
		Lactation stage	Parity
Fat TMM	7.12±0.07	**	*
Protein TMM	6.09±0.03	**	NS
Lactose TMM	4.79±0.03	*	NS
Fat HSM	8.36±0.08	**	**
Protein HSM	5.98±0.03	*	*
Lactose HSM	4.74±0.02	**	**

TMM=Total machine milk; HSM=Hand stripped milk; MY=Milk yield
Significance levels: *P<0.05; **P<0.01; ***P<0.001;

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