INTERPRETATION OF SAA CONCENTRATIONS IN MILK FROM DAIRY EWES AND GOATS

Winter P, Miny M, Baumgartner W
Department for Farm Animals and Herd Management, Veterinary University, Vienna, Austria
Email: petra.winter@vu-wien.ac.at

Introduction

The prevalence of clinical mastitis in dairy sheep and goat flocks is below 5 %, whereas the prevalence of subclinical intramammary infections is estimated about 20-30 %. The detection of subclinical infections within a herd is very poor, the available tools for diagnosis are of limited interest. California mastitis test (CMT) and bacteriological examination cannot be regularly and systemically applied to large herds. Recently, the potential of Serum Amyloid A (SAA) as an early diagnostic marker for clinical and subclinical mastitis in cattle was described. Additionally it could be demonstrated that concentrations in milk are highly elevated during experimentally induced mastitis in ewes.
The current study examined SAA concentrations in indivdual milk from dairy ewes and goats to evaluate the potential for SAA as indicators of subclinical mastitis. Furthermore the bulk milk SAA concentrations were measured to check the use for monitoring the udder health status within a herd.

Materials and Methods

Milk samples from 267 ovine udder halves and from 234 caprine udder halves were collected. The fat- and cell-free fraction of milk was prepared by centrifugation and stored at -20 °C until assayed. Samples were examined for presence of bacteria, and somatic cell counts (California mastitis test) were estimated. SAA was determined by a commercial ELISA kit (Phase SAA kit, Tridelta) according to the manufacturer's instructions. Bulk milk was collected from 7 sheep flocks and from 3 goat herds 5 to 6 times in a monthly interval. For checking the udder health within a herd a randomly assigned group of animals was sampled at each farm visit. SCC (Fossomatic) and SAA were detected in bulk milk samples. For the statistical analysis the Kruskal Wallis test, the Mann-Whitney test and the Pearson's correlation coefficient were calculated.

Results

The results of the SAA concentrations in individual milk samples are listed in table 1. There was a significant correlation between the SAA concentrations of ovine samples and the CMT results and the bacteriological results, respectively. In goat milk no correlation between the SAA concentrations and the udder health could be found. *S. aureus* positive goat samples showed significantly higher SAA concentrations.

Table 1: SAA concentrations (ng/ml) in individual milk samples

	ewes (n = 267)			goats (n = 234)		
CMT	n	mean	SD	n	mean	SD
negative	156	8,578.9	6,562.1	108	9,088,6	13,710.8
+	34	18,052.6	4,624,0	61	15,627.5	32,189.4
++	32	* 99,925.5	212,806.0	42	23,887.7	70,643.5
+++	45	* 177,242.4	308,125.7	23	20,936.2	34,531.9
BE						
negative	188	1,096.7	1,017.1	170	10,218.4	19,104.4
CNS	75	* 43,469.2	77,417.3	45	15,896.0	34,512.7
S. aureus	0			17	* 56,170.3	104,281.3

CMT = California mastitis test; SD = standard deviation; BE = bacteriological examination; CNS = coagulase negative staphylococci; * = $p < 0.05$

No correlations between the SAA concentrations of bulk milk and the SCC and the udder health status in the herd were observed.
Conclusions: SAA concentrations in milk are positive correlated with the CMT scores ++ and +++ in ewes. Intramammary CNS infections cause an increase of SAA in ovine milk. SAA is a valuable marker for screening udder health status from individual ewes. SAA cannot be used as a diagnostic tool in goats. Bulk milk SAA concentrations do not have any potential for monitoring the udder health of herds.