

Palpable udder defects in ewes increase the odds of mortality and reduce growth rate in their pre-weaned lambs. The prevalence of udder defects has been reported to be as high as 7.5% in early lactation. A study where multiple udder examinations of ewes in a single flock were undertaken during lactation and pregnancy showed changes in the percentage of udder defects; however, very limited data is available on udder defect change over time. The objective of this study was to assess weekly changes in udder half defect status (hard, lump, and normal) in the first six weeks of lactation. Udder halves from 46 Romney ewes (92 udder halves), who had a two-year history of either no udder half defects ($n = 22$ udder halves) or history of having had udder half defects ($n = 70$ udder halves) were palpated and scored prior to mating and then once weekly for the first six weeks of lactation. Descriptive statistics and plots were used to visualize the changes in udder half defect status over time, and multinomial logistic regression was used to analyse the transitional probability of udder half defect occurrence. On day 7 of lactation, 34.5% of udder halves were categorised as hard, 4.8% as lump, and 60.7% as normal. Overall, the percentage of defective udder halves decreased as the days in lactation increased; however, the percentage of udder half defects, and their persistence, appeared to be variable each week. Forty-one percent of the udder halves with no previous history of defects were normal throughout all examinations whereas only 19% of those with a history of defects exhibited no udder half defects throughout the six-week study period. Weekly udder half defect category transitions (e.g., transitions from day 7 to 14, or day 35 to 42) exhibited all possible transitions (e.g., hard to lump, hard to normal, etc). The weekly transitional probability of udder halves categorized as hard changing to normal was high (>80%) in the first 21 days and then declined. In contrast, the weekly transitional probability of udder halves categorized as lump remaining as lump increased from less than 1% on day 7 to 62% on day 35. Three udder halves were categorized as hard at pre-mating and none of these expressed milk during lactation, while udder halves categorized as lump at pre-mating were four times more likely ($p < 0.05$) not to express milk, compared to udder halves categorized as normal at pre-mating. The results show that udder half defects are dynamic and change over time in both defective (hard or lump) and normal udder halves.

doi: [10.1016/j.anscip.2023.01.223](https://doi.org/10.1016/j.anscip.2023.01.223)

O-148

Effect of vaccination against biofilm-producing *Staphylococci* on milk production and individual and bulk tank somatic cell counts in Assaf sheep in Spain

F. Crespo^a, M.A. Blanco^a, I. Sanz^a, M.A. Sanz^b, D. Giralt^b

^a Consorcio Promoción del Ovino S. Coop, Villalpando, Spain

^b Laboratorios Hipra S.A, Amer, Spain

Corresponding author: Miguel Ángel Sanz.

E-mail: miguelangel.sanz@hipra.com

Keywords: Mastitis; Vaccination; *Staphylococcus*; Biofilm

Introduction

Staphylococci are the main pathogens causing subclinical mastitis in sheep. Their primary pathogenic factor is the biofilm. This study assesses the efficacy of vaccination against *staphylococci* biofilm (VIMCO[®], HIPRA) by measuring reductions in somatic cell count (iSCC and bSCC) and gains in production.

Material and methods

This study was conducted in an Assaf sheep flock with approximately 2,500 female breeding animals located in Torres del Carrizal (Zamora, Spain).

Vaccination (VIMCO[®]) began in March 2020: animals received a 2 ml dose twice, 5 and 2 weeks before the expected lambing date. In March 2021, all animals in production had been vaccinated at least once.

Data was collected within 3 years: one year before vaccination (2019) and 1st and 2nd year of vaccination (2020 and 2021). Individual production and iSCC were collected monthly, and total production and bSCC daily.

Data was analysed in R statistical software using a linear mixed model with period of vaccination as a fixed effect and days in milk, season, and number of lactations as covariates. The outcomes of the study were logiSCC, milk yield and percentage of fat and protein. In the bSCC the covariate was the month. The percentage of sheep with SCC higher than a million was analysed through a logistic mixed model with binomial distribution and the same covariates.

Results

A population of 1,097 dairy sheep ewes in lactation was included for the analysis during the year before vaccination (2019), and 947 and 895 ewes in lactation for the 1st and 2nd years of vaccination, respectively.

Regarding iSCC, the pre-vaccinated group had a geometric mean of 204,000; the 1st year of vaccination iSCC were improved to 200,000 ($p = 0.013$), and the 2nd year they were improved to 170,000 ($p < 0.001$).

Vaccination improved the probability of SCC higher than 1 million in the 2nd year in the entire population (OR: 0.81, $p < 0.001$) but not in the 1st year (OR: 1.015, $p = 0.68$).

Regarding bSCC, the pre-vaccinated group had a mean of 967,050 while in the 1st year 1020,72 (+5.55%, $p = 0.01$), but an improvement was seen in the 2nd year, rising to 823,760 (−14.81%, $p < 0.001$).

Regarding milk yield, controls had a mean of 2.52 kg, and this was improved after vaccination, reaching 2.6 kg (3.2%, $p < 0.001$) for the 1st year and 2.71 kg (7.5%, $p < 0.001$) for the 2nd year.

Protein plus fat in pre-vaccinated group was 11.05%; in the 1st year of vaccination this increased by 0.5% ($p < 0.001$) and the 2nd year by 1.9% ($p < 0.001$).

Conclusion

Vaccination against staphylococci biofilm contributed to decrease iSCC, bSCC and increase milk production once the whole herd has been immunized.

Vaccination is an effective tool in controlling subclinical mastitis caused by staphylococci and improve the profitability of dairy sheep farms.

doi: [10.1016/j.anscip.2023.01.224](https://doi.org/10.1016/j.anscip.2023.01.224)

O-149

Plasmin-plasminogen system and physicochemical traits of milk and their association with the stage of lactation, age, and somatic cell counts in Chios and Frizarta ewes

A.I. Gelasakis, A.I. Kalogianni, E. Dalaka, G. Theodorou, I. Politis

Department of Animal Science, School of Animal Biosciences, Agricultural University of Athens, Athens, Athens, Greece

Corresponding author: Athanasios I. Gelasakis.

E-mail: gelasakis@aua.gr

Keywords: Plasmin; Plasminogen; Dairy sheep; Physicochemical traits

Introduction

The objective was to study the plasmin-plasminogen (PL-PG) system and the physicochemical traits of milk and evaluate their association with the lactation stage, age, and the somatic cell counts in Frizarta and Chios ewes.

Material and methods

A total of 52 purebred milking ewes (26 Frizarta and 26 Chios), from two intensive dairy sheep farms were used for the study. In each sampling, during the 3rd, 5th, and 6th month post-lambing, daily milk yield (DMY), body condition score (BCS) and lactation number were recorded and the PL and PG values, electrical conductivity, refractive index, pH, and SCC were measured. SPSS v23 was used for the data analyses which included descriptive statistics (mean \pm SD), one-way analysis of variance for the assessment of differences of PL-PG system and physicochemical traits between the two breeds, and mixed linear regression models to assess the effects of the stage and number of lactation, DMY, and the SCC on the PL-PG system and the physicochemical traits of milk.

Results and discussion

Mean \pm SD of PL values during the 3rd, 5th, and 6th month post-lambing were 0.03 ± 0.016 , 0.04 ± 0.017 , and 0.05 ± 0.017 $\Delta A/h$ and 0.04 ± 0.020 , 0.05 ± 0.029 , and 0.03 ± 0.017 $\Delta A/h$ for Frizarta and Chios ewes, respectively. The respective means for the PG values were 0.04 ± 0.019 , 0.07 ± 0.033 , and 0.08 ± 0.027 $\Delta A/h$ and 0.07 ± 0.030 , 0.08 ± 0.045 , and 0.05 ± 0.032 $\Delta A/h$. PL, PG, and PL+PG values were significantly higher in Chios ewes during the 3rd month post-lambing ($P < 0.05$, $P < 0.01$, and $P < 0.01$, respectively) and in Frizarta ewes during the 6th month post-lambing ($P < 0.001$, $P < 0.01$, and $P < 0.001$, respectively). Refractive index was significantly increased in Frizarta ewes' milk during the 3rd month post-lambing ($P < 0.001$) and electrical conductivity during the 3rd and the 6th month post-lambing ($P < 0.001$). pH was significantly increased in Chios ewes' milk during the 5th month post-lambing ($P < 0.001$) and significantly decreased during the 6th month post-lambing ($P < 0.001$). SCC was significantly higher in Frizarta ewes' milk during the 6th month post-lambing ($P < 0.001$). PL to PG ratio were not significantly different between the two breeds at any given time-point.

Lactation stage had a significant effect on PL, electrical conductivity, refractive index and pH in both breeds ($P < 0.05$), whereas, its effect on PG was significant only in Frizarta ewes ($P < 0.01$). Age was negatively associated with PL value in Frizarta ewes ($P < 0.05$). SCC was positively associated with electrical conductivity and pH ($P < 0.01$) in both breeds, and negatively associated with refractive index ($P < 0.05$) in Frizarta ewes.

Conclusion and implications

PL-PG system patterns and physicochemical traits of milk display breed-specific differences across lactation in intensively reared Chios and Frizarta ewes.

Acknowledgements and funding

This research was funded by the Agricultural Cooperative 'Agrinio Union' within the Regional Operational Program 'Western Greece 2014-2020-RIS3', Project code: MIS-5040306, Project name: Feed for milk.

doi: [10.1016/j.anscip.2023.01.225](https://doi.org/10.1016/j.anscip.2023.01.225)