# Ewe Mastitis and Milk Safety

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## Abstract

Sterile milk samples were directly collected from each half udder (HU) of Terrincha ewes. Samples were processed in Lab and Plate Count Agar (PCA) microbiological tests were performed. Statistical analysis was used to evaluate possible relationships between somatic cell count (SCC), Maedi Visna (MV) status and several bacteriosis found.

Results showed 1) Mean SCC of main bacteriosis were no different when influencing the SCC. 2) Medi Visna status had influence in SCC of negative subclinical mastitis (when evaluated with method of reference - RM) but did not showed influence in positive subclinical mastitis.

The bacteriosis found, with the exception of Staphilococcus aureus, were not pathogenic to humans and mostly responsible for mild or opportunistic infections in ewes udders. Present results must be expanded in higher number of females and herds.

## Introduction

Subclinical mastitis (SC) in ewes must be faced as different point of view, namely sanitary herd aspects and milk safety. Diagnosis can be made by several methods, actually by SCC and CMT.

In a previous work we evaluate the sanitary status of a milk ewe herd by SCC in milk (IMI) and CMT (Mendonça, et al., 2012). In the present work we evaluate the influence of the different pathogens found in quality and safety of milk, in the animal health and the influence of general chronic diseases (Maedi Visna) in usefulness of predicting mastitis by SCC.

The aim of this study was:

Identification of microorganisms responsible for Subclinical Mastitis in a Terrincha herd.

Evaluate the influence of microbes identified in SC countdown.

Evaluate the influence of Maedi Visna infection in use of Somatic Cell Count for subclinical mastitis screening.

## Material and methods

Twenty-nine Terrincha ewes from a flock of 200 ewes were studied for a period of nine weeks (n> 497 samples). Milk samples were aseptically collected from each half udder once a week. After being transported to Lab under refrigeration all samples were immediately processed. The tests performed were: Plate Count Agar (PCA), Bacterial ID (Blood agar, Mac Conkey and API -24 - 48 h) and an ELISA assay for Maedi Visna. We used the data presented in Mendonça et. al (2012) for somatic cells and added new data relative to pathogens identification and Maedi Visna diagnosis. We compared the influence of MV status (positive or negative) and negative and positive infected udder groups, identified by bacteriological methods, on somatic cell counts.

Data treatment involved the use of SPSS 20.0 (Statistical Package for Social Sciences). An analytical study was carried out that involved the use of Mann-Withney-Wilcoxon test in order to verify the influence of Maedi Visna infection in use of Somatic Cell Count for subclinical mastitis screening once data was not Normal distributed (Kolmogorov-Smirnoff test with Lilliefors correction). Kruskal-Wallis test was used to verify the influence of microbes identified in SC countdown once again data was not Normal distributed (Shapiro-Wilk test).

## Results

Only two ewes showed double mastitis and six others single mastitis - eight females.

We found eighteen negative female to Maedi Visna infection and seven positive. The other animals were not submitted to the test or the results were doubtful.

**Table 2 – Pathogens identified**

| Pathogens | Frequency | % | Mean SCC |
|---|---|---|---|
| *S. hiycus* | 22 | 21,8 | 771227 |
| *S. xylosus* | 17 | 16,8 | 551470 |
| *S. epidermidis* | 15 | 14,9 | 769800 |
| *S. auricularis* | 10 | 9,9 | 546222 |
| *S. simulans* | 9 | 8,9 | 840000 |
| *S. hominis* | 6 | 5,9 | 600166 |
| *S. aureus* | 1 | 1,0 | na |
| others | 21 | 20,8 | na |

**Table 2 – Influence of Maedi Visna status on Somatic Cell Count**

| | | | Somatic Cells | | | | | |
|---|---|---|---|---|---|---|---|---|
| Bacteriological method | Maedi Visna Status | N | Mean | Min | Max | D-P | C L 95% | p value |
| | Negative | 254 | 218732 | 9000 | 2497000 | 305432 | 180990;256479 | 0,008 * |
| Positive | Positive | 97 | 272216 | 7000 | 1440000 | 276318 | 216526;327907 | |
| | Negative | 45 | 740155 | 8000 | 8692000 | 1418426 | 314013;1166298 | 0,156 |
| Negative | Positive | 17 | 964176 | 12000 | 2986000 | 920079 | 491115;1437237 | |

* There's differences statistically significant for α = 5%

## Discussion

Low number of infected females (8/30) shows a herd with no problems in this level. However there are a high number of occasional infections (Table 1) needing attention.

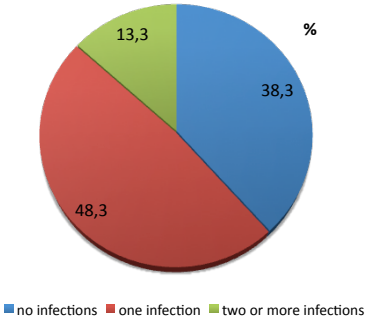
Microorganisms identified are no pathogens to humans, exception made to *S. aureus*, with a single finding (Table 1).

Other pathogens identified are mostly opportunistic agents or involving mild infections, even if a few are highly contagious (*S. hiycus; S. xylosus*). Attention should be made to udder hygiene in end lactation, animal isolation, if necessary, and sheepfold floors hygiene (Table 2; Fig 1).

Concerning influence of Maedi Visna infection on somatic cell counts (SCC) we can see an higher SCC in the MV positive group then in MV negative group (Table 2, column 4, lines 3 and 4), the difference being statiscally different ($p<0,05$). This means that the use of SCC in the diagnosis of sub clinical mastitis could lead to a (false) positive result.

The influence of MV status on the positive udder infection group has no statistical significance ($p=0,233$).

**Fig 1 – Female infections**

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## Conclusions

This particular herd apparently had not serious problems in terms of udder infections.

However the hygiene general condition is important, in daily basis, and general infections, as Maedi Visna, needs to be controlled.

Maedi Visna condition has a negative influence on the use of SCC when used for predicting negative mastitis.