



Evaluating the California mastitis test as a diagnostic tool for subclinical mastitis in dairy sheep: a pilot study

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Mastitis is the most common disease in dairy ewes and is normally caused by bacterial infection. Most mastitis cases are subclinical, lacking obvious external signs of disease. These cases are typically detected through bacteriological examination of milk, but this method is expensive and time-consuming. Milk somatic cell counts (SCC), which increase in response to intramammary infection, have been reliably used to detect subclinical mastitis in sheep. SCC can be assessed directly through laboratory analysis or indirectly using the California mastitis test (CMT). The CMT is a quick and inexpensive animal-side test developed for cows, but differences in milk composition can complicate its interpretation in sheep. Thus, this project aims to identify mastitis-causing pathogens and evaluate the relationship between CMT and SCC in dairy ewes. We predict that positive CMT results will have higher SCC than negative results. This study was approved by University of Wisconsin Institutional Animal Care and Use Committee (protocol A006445-R01). We used 55 ewes from an Assaf flock, that were between 3 to 28 days-in-milk during March and April of 2024. Milk samples were collected from both udder halves of all ewes for SCC and CMT analysis. Milk samples from ewes with positive CMT results were collected aseptically for bacterial identification using MALDI-TOF. We observed that 20% of ewes had a positive CMT result in at least one udder half. At the udder half level, 12% had a positive CMT result. Bacteria were recovered in 77% of the CMT-positive samples and were predominantly identified as non-aureus *Staphylococcus* spp. (75%) and *Enterococcus hirae* (20%). SCC was higher ($p = 0.003$) in udder halves that were CMT positive (mean \pm SD: 5,624,000 \pm 10,730 cells/mL) compared to CMT negative (328,000 \pm 2,333 cells/mL). These results support the use of the CMT as a diagnostic tool for subclinical mastitis, but further research is needed to evaluate its sensitivity and specificity in dairy sheep. We will also explore complementary tools, such as behavioral analysis and udder conformation scoring, which could be combined with CMT and SCC to improve diagnosis of subclinical mastitis in dairy sheep.

Keywords: Intramammary infection. Bacterial identification. Somatic cell count.

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