

Persistence of coagulase negative staphylococcal intramammary infections in dairy goats

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Short title: **Persistence of caprine staphylococci**

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Summary

The objectives of this Research Paper were to describe the persistence of intramammary infections (IMI) caused by coagulase negative staphylococci (CNS) in goats using strain-typing, and to evaluate the relationship between IMI status and somatic cell score (SCS). Half-level milk samples were collected from all 909 lactating goats (1817 halves) in a single herd. Milk samples were cultured on Columbia blood agar, and 220 goats with at least one half yielding a single colony type CNS were enrolled for two additional half-level samplings at approximately 1-month intervals. Isolates were identified to the species level by matrix-assisted laser desorption-ionisation time-of-flight mass spectrometry or PCR amplification and partial sequencing of *tuf* or *rpoB*. An IMI was defined as persistent when ≥ 1 follow-up sample yielded the same species and strain as on Day 0 based on pulsed-field gel electrophoresis. A generalised mixed linear model was used to evaluate the odds of persistence as a function of CNS species. A mixed linear model was used to evaluate the relationship between IMI status on a given day and SCS. Among 192 IMI, 69.8% were persistent at the species and strain levels. *Staphylococcus simulans* IMI had higher odds of persistence than *Staphylococcus arlettae* IMI. In primiparous goats, *Staphylococcus epidermidis* IMI was associated with higher SCS than *S. arlettae*, *Staphylococcus xylosus*, and “other CNS” IMI. The differences detected in the present study between CNS species with regard to persistence of IMI and association with SCS highlight the need to study CNS at the species and strain level to better understand the pathogenicity and epidemiology of CNS in goats.