TITLE: POTENTIAL ROLE OF HORN FLIES (*Haematobia irritans*) IN NON-AUREUS STAPHYLOCOCCI INTRAMAMMARY INFECTIONS IN DAIRY HEIFERS

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ABSTRACT:

Non-aureus Staphylococci (NAS) are very prevalent in dairy heifer intramammary infections (IMI). Considerable investigation into the epidemiology and risk factors for non-aureus staphylococci mastitis has been done in heifers. Evidence indicates that the horn fly (*Haematobia irritans*) is a potential vector in transmission of non-aureus staphylococci IMI. Horn flies are a particularly significant problem in the northeastern Brazil where cattle have access to pasture. The adult horn fly is able to cause teat injury and consequently initiate and spread staphylococcal mastitis among dairy heifers. With substantial populations, horn flies can cause remarkable damage to teats and may be important in transmitting NAS mastitis. This study aimed to identify NAS in horn fly samples from the backs (or undersides) of dairy heifers in Pernambuco state. A total of 40 horn flies were captured with a sweep net from 10 heifers in the barn. Nets were disinfected between collections by spraying with disinfectant and 100% ethanol. A subsample of 4 horn flies from each cow was placed into a 1.5-mL microcentrifuge tube containing 300 µL of sterile 0.9% saline and was thoroughly macerated. Fly debris was pushed to the bottom of microcentrifuge tube and 0.1 mL of the supernatant was plated on Mannitol Salt Agar supplemented with 5% v/v egg yolk emulsion for isolation and identification of *Staphylococcus* species. After 24 to 48 h at 37°C incubation, colonies were analyzed by conventional microbiological culture (MC) as well as by Matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS), to identify bacteria at the genus and species level. Microbiological culture results indicated seven isolates of *Staphylococcus* species and MALDI-TOF technique accurately classified the seven isolates as NAS [two isolates of *Staphylococcus (S.) sciuri*, two isolates of *S. gallinarum*, one isolate of *S. xylosus*, one isolate of *S. saprophyticus*, and one isolate of *S. equorum*]. The distribution of NAS causing IMI is considered highly herd-dependent, but overall, *S. xylosus* is among the most frequently found in clinical samples. From these data, it may be inferred that horn fly can be an important vector of NAS and it is hypothesized they are capable of transmitting staphylococci IMI to heifers. Fly control on dairy heifers in herds is highly recommended as a method to prevent these infections.

Keywords: dairy heifer mastitis; horn fly; non-aureus staphylococci; MALDI-TOF MS

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