Comparison of vaginal flora in estrous dogs with those of spayed dogs and dogs with recurrent urinary tract infections
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Infectious urogenital diseases represent a major source of morbidity in both intact and spayed bitches. Pyometra represents one of the major diseases of intact bitches, while urinary tract infections are a major source of disease in spayed bitches. The vaginal flora is a major component of the defense mechanism of the lower urogenital tract of the female, protecting against both urinary and uterine infections. However, no study has previously attempted to broadly characterize the vaginal flora in different groups of dogs. The current study aimed to characterize the vaginal flora of intact estrous bitches, healthy spayed bitches and spayed bitches with recurrent urinary tract infections (rUTIs). Based on previous studies we hypothesized that estrous bitches would have the most diverse bacterial flora, while dogs with rUTIs would have the highest incidence of Escherichia coli and the lowest incidence of lactic acid producing bacteria (LAB).

Samples were collected using a sterile, double-guarded swab from the cranial vagina of healthy estrous bitches (Group E; n=11), healthy spayed bitches (Group Sp; n=23) and spayed bitches with recurrent urinary tract infections (Group rUTI; n=11). Aerobic bacteria were cultured using standard procedures. Selective subculture for LAB was performed using Rogosa agar under microaerophilic and anaerobic conditions. Identification of Lactobacillus species via 16sS rRNA gene sequencing will be completed at the termination of the study. Mycoplasma ssp. were cultured in Frey’s broth with 15% swine serum, and identification was confirmed by 16S rRNA gene PCR. Numbers of bacterial genera were compared between groups using a one-way ANOVA. Prevalence of specific organism was compared between groups using a 2x3 Fisher Exact Test.

In total, 75 organisms were cultured in 45 dogs. The average number of cultivated bacterial genera was 2.1 for dogs in Group E, 1.6 for dogs in Group Sp and 1.9 for dogs in Group rUTI (P=0.2). The prevalence of E. coli was lowest for Group Sp, but no statistical differences were detected (45, 13, 27% respectively for Groups E, Sp and rUTI; P=0.13). The prevalence of LAB was not different between groups (9, 22, 0% respectively for Groups E, Sp and rUTI; P=0.23). The prevalence of Mycoplasma ssp. was higher in estrus dogs than in either healthy spayed or rUTI dogs (54, 13, 0% respectively for Groups E, Sp and rUTI; P=0.005). In conclusion, differences in flora were found between intact estrous and spayed bitches. It is not known whether these differences were the result of the bitch’s stage of cycle (estrus or anestrus) or reproductive status (intact or spayed). Work is underway to further characterize these differences and determine the effect of oral probiotics on canine vaginal flora.

**Keywords:** Canine, vaginal flora, Mycoplasma, Lactobacillus

**Reference**