Evaluation of effects from chlorhexidine hydrochloride intrauterine suspension administration in normal mares
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Introduction
Chlorhexidine gluconate solution could be used effectively for uterine lavage, but historically this substance has been implicated as irritating to mucous membranes, including the endometrium of the mare. We evaluated the use of chlorhexidine hydrochloride suspension (Nolvasan® Suspension, Zoetis, Florham Park, NJ) in the uterus of normal mares to determine if adverse effects on endometrial health were noted. We hypothesized that administration of chlorhexidine hydrochloride intrauterine suspension would result in endometrial inflammation or changes in Kenney biopsy score grades in treated mares relative to placebo treated controls.

Methods
Twelve healthy, adult light breed mares were used for this study. All procedures were approved by the Auburn University Institutional Animal Care and Use Committee. All mares were determined to be reproductively normal prior to inclusion in the study by evaluation of endometrial histopathology, cytology, and bacterial culture. Mares were randomly assigned to the treatment group or control group (n=6 per group). Each mare was treated during estrus with an intrauterine infusion of 1 gm (28 mL per tube; 35.7 mg/mL) of chlorhexidine hydrochloride suspension (treatment group) or an equal volume of lactated Ringer’s solution (control group) once daily for three consecutive days. Biopsy and cytology samples were taken 3, 7, and 14 days after completion of treatment. Cytology and biopsy samples were read by a board certified pathologist (LN) blinded to the treatments, and biopsy samples were graded using a standardized Kenney score.

Results
Differences between groups were assessed with Fisher’s exact test using commercially available statistical software (R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria). There was no difference with respect to Kenney grade biopsy score, degree of endometrial fibrosis, or presence of cytologic inflammation between control and treatment groups (p=0.55, 0.7, and 0.06, respectively); no difference was detected when accounting for sampling day. The suspension was grossly visible in the uterine lumen when mares were examined with transrectal ultrasonography for up to four days after treatment.

Conclusions
Based on analysis of endometrial biopsy scores, degree of fibrosis, and presence or absence of inflammation, there was no difference between treated and control mares. Treatment with chlorhexidine hydrochloride at this concentration does not appear to have a deleterious effect on short term endometrial health in mares.

Acknowledgement
Zoetis Animal Health provided support for this project.

Keywords: Chlorhexidine, endometrium, fibrosis