

Application of Intravaginal Probiotics to Lower Uterine Infections, Expedite Uterine Involution and Improve Reproductive Performance of Holstein Dairy Cows

Q. Deng, J. F. Odhiambo, U. Farooq, T. Lam, S. M. Dunn, Y. Wang, M. Gänzle, and B. N. Ametaj*

Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton AB T6G 2P5

*Corresponding author: burim.ametaj@ualberta.ca

Infertility related to uterine infections is a main reason for a cow to be culled from the herd. In a previous study, our group reported that 6 times intravaginal treatment of transition dairy cows with a mixture of probiotic bacteria lowered the incidence of metritis and vaginal purulent discharges, improved uterine involution, with a tendency to increase the overall pregnancy rates. In this study we tested whether lowering the treatment frequency of probiotic administration to 2-3 times could give the same results. The probiotic preparation was composed of *Lactobacillus sakei* and two strains of *Pediococcus acidilactici*, isolated from vaginal tract of healthy pregnant dairy cows. The incidence of uterine infections was 16% in cows receiving two doses of probiotics before calving, 7% in cows receiving two doses before calving and one after calving, and 38% in control group, respectively ($P < 0.01$). Probiotic treatment expedited the involution of gravid horn ($P < 0.05$) and uterine body ($P < 0.05$) as indicated by the smaller cross-sectional areas compared with the control cows. Cows receiving two probiotic doses had less days open (92 vs. 113d, $P < 0.01$), greater first service conception rate (47% vs. 38%), and greater cumulative pregnancy rate up to 5 artificial inseminations (84% vs. 76%) than those of control.

Implications: Application of probiotic supplements intravaginally holds promise to lower the incidence of uterine infections, expedite uterine involution after calving, and shorten days open of postpartum dairy cows.