

A novel approach to alleviate ergot alkaloid toxicosis of mares in early gestation

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Consumption of a wild-type endophyte-infected tall fescue (E+) has been implicated as a cause of abnormal cyclicity (i.e., prolonged luteal function) and early embryonic death in horses (Brendemuehl et al., 1994, *Theriogenology* 42:489). Recent studies have demonstrated that FEB-200TM, a yeast cell wall extract (Alltech, Nicholasville, KY), when added as a dietary supplement, was effective in alleviating the symptoms of fescue toxicity in cattle by increasing the rate of fecal excretion of ergot alkaloids thereby reducing systemic exposure (Ely et al., 2003, *J Anim Sci Suppl* 1, 86:168). Thus, the primary goal of this study was to determine the efficacy of FEB-200TM to alleviate symptoms of ergot alkaloid toxicosis in mares grazing E+ pastures during early gestation. To this end, light breed mares (n = 16) were matched by stage of gestation (16-49 days) and placed on E+ pasture from May 5 to June 24, 2003. Mares were randomly assigned to one of two rations: a commercial sweet feed (10% crude protein) alone (CON); or supplemented with FEB-200TM (TRT) at 20 g/day. Mean gestation age of CON (n = 8) and TRT (n = 8) mares at the onset of the study was 31.5 and 32.4 days, respectively. Blood samples were collected one time pre-E+ pasture exposure, twice weekly for the first two weeks and once weekly thereafter during treatment, and twice post-exposure for analysis of serum progesterone (P4), prolactin (PRL) and plasma 3-4-dihydroxyphenyl acetic acid (DOPAC, a catecholamine metabolite) concentrations. Urine and fecal samples were collected weekly for ergot alkaloid content analysis. Palpation and ultrasound examination were performed weekly to monitor status of the pregnancy and echoic changes of fetal (amniotic and allantoic) fluids. While there was no treatment (dietary FEB-200TM) effect on plasma DOPAC concentrations, there was a significant (P = 0.001) increase in plasma DOPAC values (mean ng/ml $\pm$ SE) over time from pre-E+ pasture exposure (CON = 5.8 $\pm$ 4.5; TRT = 4.5 $\pm$ 4.5), during exposure (CON = 10.2 $\pm$ 1.4; TRT = 10.1 $\pm$ 1.4) to post exposure (CON = 16.2 $\pm$ 3.3; TRT = 20.1 $\pm$ 3.2). Serum PRL concentrations were not different (P > 0.05) between treatment groups with overall mean values of 5.02 $\pm$ 0.36 and 4.88 $\pm$ 0.43 ng/ml for CON and TRT mares, respectively. However, there was a significant (P = 0.035) increase in serum P4 values during the FEB-200TM-treatment phase of the study (CON = 12.12 $\pm$ 0.75 vs. TRT = 18.01 $\pm$ 1.85 ng/ml). Although no pregnancy losses or echoic anomalies of fetal fluids were observed during the study period, one CON mare was open upon routine fall pregnancy examination. In conclusion, no overtly detrimental effects were seen in either group of mares during E+ exposure; however, dietary supplementation of FEB-200TM to pregnant mares in early gestation maintained on E+ fescue pastures had a positive influence on serum progesterone concentrations.

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