Effects of dietary zearalenone exposure on the reproductive performance of mares
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Zearalenone is a phytoestrogenic mycotoxin produced by the fungus family Fusarium that is
often a contaminant of common animal feedstuffs. Its estrogenic effects in swine and reproductive
disorders in cattle have been well documented, but the effect of the mycotoxin on equine fertility is
relatively unknown. The objective of this study was to assess the effects of zearalenone on reproductive
efficiency in healthy mares at two different concentrations. To this end, 21 mature, healthy, and
reproductively sound mares (2 -16 yr) were age-matched and assigned to one of three treatment groups
(n=7), control and either 2 mg (low dose) or 8 mg (high dose) zearalenone/day. Mares were fed (08:00
h/day, 0.5 kg horse pellets) using nose-bags that included a horse-treat previously soaked with
zearalenone in ethanol. Treatments commenced on day of ovulation (d 0) and continued for three
consecutive estrous cycles. Reproductive activity was monitored every other day by ultrasound (ovary,
reproductive tract) and stallion-teasing. Serum was collected on d 0, 2, 4, 8, and 16 of each cycle for
progesterone and estrogen analyses. Upon detection of a 32 mm follicle and uterine edema, serum was
collected and reproductive activity examined daily until ovulation was confirmed. All mares were bred on
the third estrus with at least 250 million progressively motile, morphologically normal sperm. One mare
in the control group did not ovulate, while another in the low dose had an interovulatory interval of 52
days. The mean interovulatory intervals were 21.1±0.7, 25.8±4.2, and 20.3±1.1 days for the high dose,
low dose, and control mares, respectively. Pregnancy rates were 7/7, 4/7, and 5/7 for the high dose, low
dose, and control mares, respectively. Results from endocrine analysis may provide clearer insight into
the potential disruptive effects of dietary zearalenone exposure in mares. However, initial observations
suggest that at these environmentally relevant doses of zearalenone, mares do not exhibit adverse
reproductive effects.

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