

EFFECTS OF ENDOPHYTE-INFECTED TALL FESCUE FORAGE CONSUMPTION
IN STALLIONSG Olsen¹, D Sykes¹, N Filipov¹, D Christiansen¹, P Gerard², B Fitzgerald³, P Sheerin⁴,
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The primary goal was to determine the effect of a diet containing endophyte-infected fescue (high in ergot alkaloids) on endocrine function and semen quality in stallions. Eight light-breed stallions (483.7 ± 22.2 kg) were placed on a 90-d study. Initially, stallions were stalled and acclimatized for 5 d followed by a 14-d feeding trial. Stallions were matched by age (2–17 years) and assigned to diets consisting of either endophyte-free (E–, $n = 4$; 6.8 ± 3.8 years) or endophyte-infected (E+, $n = 4$; 6.3 ± 2.2 years) tall fescue seed, mixed with a commercial equine sweet feed (10% crude protein) and molasses (50:40:10 ratio). Concentrate was fed (twice daily) at 1.0% of the stallion's BW. While stalled, horses had ad libitum access to Bermuda grass (E–) or endophyte-infected tall fescue (E+) hay and water. Stallions were given 4 h/d access to a restricted fescue-free (FF) paddock. On d 15, stallions were returned to FF pastures for 75 d. Rectal temperatures (RT) were recorded twice daily (07:00, 19:00 h) while blood and fecal samples were collected on alternate days during the feeding trial and on d 17, 21, 35, 60 and 90. A GnRH (50.0 ng/kg BW)-testosterone challenge and thyroid releasing hormone (TRH; 4.0 µg/kg BW)-prolactin challenge tests were preformed on d 13 and 15, respectively. Blood was analyzed for testosterone (T), luteinizing hormone (LH), norepinephrine (NE) and 3-4-dihydroxyphenylacetic acid (DOPAC, a catecholamine metabolite). Semen collections were performed on d –7, 0, 7, 14, 21, 35, 60 and 90. Mean RT did not differ between treatment groups (E+, 37.7 °C; E–, 37.8 °C) during the feeding trial. Changes in semen parameters and basal concentrations (ng/ml) of serum T, LH or PRL from pre-treatment values did not differ between treatments. Peak concentrations (ng/ml) of T (E+, 1.58; E–, 1.51) and LH (E+, 2.73; E–, 3.30) during GnRH challenge did not differ. No differences in peak PRL were observed following TRH challenge (E+, 49.61; E–, 49.36), but the response was delayed in E+ stallions. Mean plasma DOPAC concentrations (ng/ml) did not differ (E–, 15.39; E+, 11.78), but declined ($P = 0.001$) in both groups between the pre-treat and treatment period, with a marked post-treatment rebound (pre-11.39, treat-6.9, post-22.44). However, median concentrations for DOPAC during the treatment period were lower ($P = 0.04$) for E+ stallions. While plasma NE pre-treatment concentrations (ng/ml) were similar (E+, 0.23 ± 0.04 ; E–, 0.18 ± 0.04), they declined ($P = 0.002$) during the treatment period in E+ stallions (E+, 0.09 ± 0.03 ; E–, 0.22 ± 0.03). This is the first report that plasma catecholamine concentrations; were perturbed under short-term exposure to toxic fescue in stallions long-term exposure could affect fertility.

Keywords: Stallions; Fescue toxicosis; Fertility; Catecholamines