Effect of Season on Adrenocorticotropin Hormone Concentrations in a Group of Horses Located in Texas

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Horses in Texas exhibit higher plasma adrenocorticotropin hormone (ACTH) concentrations during the late summer and autumn. Authors’ addresses: Brazos Valley Equine Hospital, 6999 Highway 6, Navasota, TX 77868 (Buchanan); and University of Tennessee, College of Veterinary Medicine, 2407 River Drive, Knoxville, TN 37996 (Elliott and Frank); e-mail: bbuchanan@bveh.com. *Corresponding author. © 2011 AAEP.

1. Introduction
Seasonal variations in adrenocorticotropin hormone (ACTH) concentrations in horses have been reported in several geographic locations, with one report of no seasonal change in horses located in Alabama. Therefore we studied a group of horses located in Texas to test the hypothesis that seasonal alterations in ACTH concentrations would occur in Texas.

2. Materials and Methods
Fifteen horses (nine mares, four geldings, and two stallions) with a median (range) age of 15 (4–38) yr living in Willis, Texas (latitude 30.425 and longitude −95.48) were included in the study. Horses were sampled under fed (hay or grass) conditions approximately every 1 mo across a 12-mo period (September 2007 to August 2008). Blood samples were collected between 9:30 am and 10:30 am. Hormones and metabolites were measured in stored serum and plasma samples at the end of the study. Data were analyzed by repeated measures analysis of variance (ANOVA). One horse suffered from diabetes mellitus, and therefore, its data were excluded from statistical analyses.

3. Results
Plasma ACTH concentrations were significantly affected by season (time effect; p = 0.027), with a significantly higher mean ± standard deviation concentration (184.5 ± 313.3 pg/ml) detected in September compared with eight other months. Three horses had ACTH concentrations >35 pg/ml in the spring/summer, indicating pituitary pars intermedia dysfunction. There was no effect of season on serum insulin concentrations.

4. Discussion
We conclude that horses in Texas exhibit higher plasma ACTH concentrations during the late summer and autumn.

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