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Normal Steroid Levels in Racehorses

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February 28 2010 Article # 15889

Steroid usage in racehorses has received a good deal of attention in the media, perhaps reaching a peak during the 2009 Triple Crown season when Big Brown won the Kentucky Derby and Preakness on the legally administered steroid stanozolol, then flopped in the Belmont without it. While no one could ever prove the steroid helped the horse win or that his loss was associated with being steroid-free, the situation added significant fuel to the fire of medication regulation in racehorses.

One of the tough aspects of regulating substances that are naturally produced in the horse's body, such as many steroids, is that before you can decide how high a level of the substance constitutes an administered medication or abuse, you have to find out how much horses produce normally.

At the 2009 American Association of Equine Practitioners (AAEP) Convention held Dec. 5-9 in Las Vegas, Nev., one presenter discussed a study that sought to answer that question for anabolic androgenic steroids (hormones that stimulate masculine physical characteristics) in young Thoroughbreds.

Currently there are four anabolic androgenic steroids commonly used therapeutically in racehorses: Stanozolol, nandrolone, testosterone, and boldenone, said presenter Benjamin C. Moeller, BS, a graduate student at the K.L. Maddy Equine Analytical Chemistry Laboratory at the University of California, Davis.

In collaboration with veterinarians at Rood & Riddle Equine Hospital and Hagyard Equine Medical Institute (both in Lexington, Ky.), and Craig Van Balen (private practitioner in Lexington), 142 un-medicated Thoroughbred colts and 62 fillies in training at Central Kentucky farms, from five to 24 months of age, were blood tested monthly for 13 months. Their levels of 33 endogenous steroids (those produced naturally by the horse) were measured, and the following observations were made:

- In colts, testosterone and androstenedione were the most commonly detected androgens at concentrations of more than 125 pg/mL.
- Androgen concentrations increased in colts with longer day length and varied widely between individuals.
- Fillies had very low levels of testosterone. "If you see testosterone in a filly, it's highly suggestive of testosterone administration," said Moeller.
- Boldenone was not detected in any horses. Moeller noted that any boldenone level is highly suggestive of steroid administration.

"Beware of nutraceuticals and nutritional supplements; they can have quality control problems and are known to impact steroid profiles," Moeller cautioned. "They are not FDA-approved, and administration of these can alter a horse's steroid profile and cause a positive test result.

"The take-home message is that testosterone, testosterone sulfate, and androstenedione are present in yearling colts, and at low levels in fillies," Moeller summarized. "Boldenone and its metabolites (products of breakdown) are not, and nandrolone and its metabolites are not present at more than 250 pg/mL in these young horses."

Equine practitioners can use this information to help breeders, consignors, and potential buyers determine if young horses have been artificially enhanced through the use of anabolic steroids.

For more information on the status of medication regulation in racehorses see rmtcnet.com.

Readers are cautioned to seek the advice of a qualified veterinarian before proceeding with any diagnosis, treatment, or therapy.



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