

# Effects of Oral Altrenogest on Testicular Parameters, Steroidal Profiles, and Seminal Characteristics in Young Stallions

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Altrenogest is being administered to young stallions in racing and performance to decrease sexually aggressive behavior, although the effects on fertility are unknown. In young stallions, treatment with altrenogest significantly decreased sperm output, testicular size, and hormone production. Eight weeks was not sufficient for recovery. Authors' address: Dept. of Animal Science and Food Technology, Box 42141, Texas Tech University, Lubbock, TX 79409. © 1997 AAEP.

## 1. Introduction

Sexually aggressive behavior presents a widespread problem in the equine industry. Currently, an oral progestin, altrenogest (Regu-Mate<sup>a</sup>) is being administered to young stallions at racetracks and performance circuits to suppress sexually aggressive behavior. Very little is known on the effects of exogenous progestins in the stallion, particularly the young stallion. The purpose of this study was to examine the effects of Regu-Mate on testicular and seminal characteristics in young stallions.

## 2. Materials and Methods

Ten Quarter Horse stallions (ages 2–4 years) were randomly assigned to control ( $n = 5$ ) or treatment ( $n = 5$ ) groups. Animals were collected twice, 1 h apart, to determine seminal quality and to estimate daily sperm output (DSO) by the method of Dinger and Noiles.<sup>1</sup> Scrotal circumferences were measured, and venous jugular samples were drawn for the determination of testosterone and estradiol 17- $\beta$

and continued weekly for the continuation of the trial. Steroid assays were performed by using radioimmunoassay kits.<sup>b</sup> Animals in the treatment group were orally administered altrenogest at a daily dose of 0.088 mg/kg of body weight for a 57-day treatment period. This dose is twice the labeled daily dose for the suppression of estrus in mares. Measurements of scrotal circumference, estimated DSO, and seminal characteristics were taken at the end of the treatment period (8 weeks) and at 8 weeks postcessation of Regu-Mate. Testicular biopsies were taken at 8 weeks postcessation of treatment.

## 3. Results

There was a significant decrease ( $p < 0.05$ ) in scrotal circumference at the 8-week recovery period of those stallions receiving Regu-Mate for 8 weeks as compared to pretrial measurements. Measurements of scrotal circumference in control stallions did not change over the trial periods. A histological analysis of testicular tissue biopsied at 8 weeks

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## NOTES

postcessation of Regu-Mate revealed differences between groups in testicular morphology. Tissue from treated stallions had increased luminal diameters and a disorganized appearance in many seminiferous tubules, in contrast with controls. The mean spermatid numbers (per 25 seminiferous tubule cross sections) were different between treatment groups ( $227 \pm 66$ ) and control groups ( $356 \pm 83$ ;  $p < 0.07$ ).

Decreases were found in estimated DSO ( $p < 0.01$ ) in those stallions within the treatment group at 8 weeks of treatment. Spermatozoa abnormalities were significantly higher within the treatment stallions, with head ( $p < 0.009$ ) and tail ( $p < 0.001$ ) abnormalities increasing between the pretrial and the 8-week collection period.

Sexually aggressive behavior, as measured by a standardized teasing test, was significantly decreased in treated stallions. Further, poor libido at collection periods was observed in this group.

Serum testosterone concentrations showed a significant treatment by time interaction with mean levels in treatment stallions decreasing from  $3.2 \pm 0.28$  ng/ml on day 1 to  $0.038 \pm 0.029$  ng/ml after 8 weeks of altrenogest administration. Serum testosterone concentrations increased ( $p < 0.001$ ) after Regu-Mate cessation to pretreatment levels by week 12 (4 weeks into the recovery period). Concentrations of testosterone were not different between groups at the start of the experiment, but they were higher ( $p < 0.001$ ) in control stallions from week 2 until week 12. Serum estradiol concentrations showed a similar pattern. There was no difference between groups on day 1, but estradiol levels decreased during Regu-Mate treatment ( $p < 0.001$ ) and then increased ( $p < 0.001$ ) by week 12.

#### 4. Discussion

Studies in domestic animals have been carried out to suppress testosterone production with the use of progesterone or synthetic progestagens. Young boars fed altrenogest had decreased serum testosterone and estradiol levels through suppression of LH release.<sup>2</sup> Testicular and epididymal weights were also

reduced; however, testosterone secretions returned to normal levels within 2 weeks following progestin withdrawal.<sup>3</sup> Two studies have examined the treatment of altrenogest in stallions; both studies examined the effects in mature stallions. Badzinski and Squires<sup>4</sup> reported decreased DSO, seminal quality, and libido in altrenogest-treated stallions. Miller et al.<sup>5</sup> found only minor effects on seminal characteristics and behavior in mature stallions administered 0.044 mg/kg of body weight of Regu-Mate daily.

Physiological differences may exist in the response of young and older stallions to altrenogest. In our study, it is unclear if a longer recovery period would have resulted in a return to pretreatment testicular and seminal measurements in this group of young stallions. Based on this study, further research is warranted to investigate the long-term effects of altrenogest in the young stallion.

This study was supported by the Houston Livestock Show and Rodeo. The assistance of Trish La Casha is acknowledged.

#### References and Footnotes

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<sup>a</sup>Regu-Mate, Hoechst-Roussel, Somerville, NJ 08876-1258.

<sup>b</sup>Diagnostic Products Corp., Los Angeles, CA 90045.