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EFFECTS OF DIETS CONTAINING COTTONSEED MEAL ON SEMEN QUALITY, TESTICULAR TISSUE AND TESTOSTERONE PROFILES IN FINE-WOOL RAMS AND BRAHMAN BULLS

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In previous studies (1987, 1988) at New Mexico State University the effect of diets containing gossypol (cottonseed meal or whole cottonseed) on semen characteristics and spermatogenic tissues of young beef bulls was examined. Results indicated that gossypol reduced semen quality ($P > .10$) and damaged spermatogenic tissues after a 2 mo. feeding period. These findings suggested that gossypol may not be completely detoxified by rumen microbes in young bulls. Therefore, a follow-up study is being conducted in rams and additional bulls, since cotton products are also routinely used in diets of both.

Twelve fine-wool rams (18 mo old) were randomly selected and divided into two groups. One group ($N = 6$) received 12% cottonseed meal in their ration and the other group received a control diet (no source of gossypol) for 26 weeks. Semen was collected every other week throughout the study. At the end of the treatment period, one testicle was removed surgically for histological study. The results indicated that gossypol has: a) no significant effect on semen quality. However, overall percentage of abnormal sperm was higher for rams fed cottonseed meal than for those fed control diets. b) significantly ($P < .01$) reduced lumen diameter, wall-thickness, size of Sertoli and Leydig cells and number of cell layers in the seminiferous tubules. These findings indicate that diets containing 12% cottonseed meal damage spermatogenic tissues. In addition, blood samples from each animal were collected at three intervals (at the beginning, after 14 weeks and end of treatment) and will be analyzed for Testosterone level to determine if there was any alteration due to gossypol treatment. Thirty young Brahman bulls are involved in a cooperative study with researchers at the Texas A & M University Research Center in Overton, Texas. The bulls are being fed various rations containing cotton products. Semen and blood data are being collected in Texas and testicular tissues are being processed for study at the NMSU Reproductive Physiology Laboratory. Preliminary results indicate that diets containing gossypol may delay the onset of puberty in young bulls.