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Effects of Gossypol on the Reproductive System of Male Rats

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Gossypol acetic acid administered orally at 30 mg/kg body weight/day for five weeks inhibited the fertility of male rats without an apparent loss of libido. Sperm in the ejaculate were rendered immotile and were reduced in number. Serum testosterone and LH were reduced significantly from pretreatment values, whereas FSH values were not altered. Leydig cells from treated animals produced less testosterone than did control Leydig cells when incubated with LH. Furthermore, testosterone production by normal Leydig cells that were incubated with LH and gossypol was inversely related to gossypol concentration. Ultrastructural examination of epididymal spermatozoa revealed degeneration in the tail region, particularly in the mitochondrial sheath of the middle piece. Within the seminiferous epithelium, late spermatids displayed a similar degeneration, although not as severe. After a six-week recovery period, normal fertility was re-established and normal litters were produced. Sperm motility and number, serum testosterone and LH levels, and sperm structure all returned to normal.

Key words: gossypol, fertility, male rat, testosterone, LH, FSH, sperm morphology, Leydig cell

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