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JOURNAL ARTICLE

The duration of the cycle of the seminiferous epithelium is altered by administration of 2,5-hexanedione in the adult Sprague-Dawley rat

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The duration of the cycle of the seminiferous epithelium is believed to be under genetic control rather than being influenced by other factors. However, the frequencies of certain spermatogenic stages--reflecting their relative durations--can be altered under various conditions including treatment with the n-hexane metabolite, 2,5-hexanedione (HD). To investigate whether HD administration alters the duration of the spermatogenic process, adult Sprague-Dawley rats were exposed to vehicle (n = 20) or 1% HD dissolved in the drinking water (n = 40) throughout a period of 29 days. On day 17, 100 mg/kg of 5-bromodeoxyuridine (BrdU) was given intraperitoneally; 3 hours later one testis was removed, and the remaining testis was excised 12 days later. BrdU was localized in Bouin's-fixed, Paraplast-embedded testes using immunogold-silver-staining, and sections were counterstained with periodic acid--Schiff and hematoxylin to permit identification of the spermatogenic stages. HD treatment reduced weights of body, testis, and epididymis ($P < 0.05$) but had no effects on serum levels of follicle-stimulating hormone or testosterone. The seminiferous epithelium was vacuolized, and spermatogenesis was affected to various degrees. HD significantly reduced the frequency of stage VII tubules ($P < 0.01$) and increased the frequency of stage IX and stage X tubules ($P < 0.05$). Furthermore, HD reduced the stage-dependent progression of BrdU-labeled germ cells. (ABSTRACT TRUNCATED AT 250 WORDS)

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