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Endogenous Steroids in the Rat Seminiferous Tubules. Comparison of the Stages of the Epithelial Cycle Isolated by Transillumination-Assisted Microdissection

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A microdissection procedure is described that allows the isolation of segments of rat seminiferous tubules in different stages of the epithelial cycle. This procedure is based on spermatogenic stage-dependent differences in the transillumination pattern along the freshly isolated, unstained seminiferous tubules. It allows collection of segments representing defined stages in amounts sufficient for biochemical studies (5-10 mg wet weight).

Tubular segments at stages I, II-III, IV-V, VI, VIIa-b, VIIc-d, VIII, IX-XI, XII, and XIII-XIV have been used for measurement of endogenous concentrations of testosterone, 5 α -dihydrotestosterone, progesterone, and 17 α -hydroxyprogesterone by radioimmunoassays after Lipidex-5000 chromatography. Testosterone was the most abundant steroid at all stages of the cycle, and its concentration at stage VIII was significantly higher than at any other stage. The concentration of 5 α -dihydrotestosterone was markedly lower and did not exhibit similar differences in distribution. The levels of progesterone and 17 α -hydroxyprogesterone were the same at all stages of the cycle of the seminiferous epithelium.

A number of morphologic and biochemical observations suggest unique changes in the metabolic activity of both germ cells and Sertoli cells at stages VII and VIII of the cycle. The possible androgen control of these changes is discussed.

Key words: androgens, seminiferous tubules, rats, stages of spermatogenesis, transillumination

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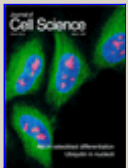
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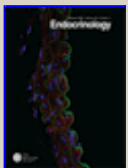
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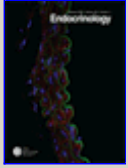
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