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Rat Testicular Phospholipase A₂ Activity:

pH Optima, Its Cellular and Subcellular Distribution in the Gonad, and Some Factors That May Modulate Its Activity

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A sensitive radiometric assay was developed for detecting phospholipase ${\rm A}_1$ and A₂ (PLA₁ and A₂) activity. Four to five times more PLA₂ activity was

Articles by COSENTINO, M. J. observed in rat testes than PLA₁ activity. Two PLA₂ were observed in the testis, one with an acid (3.5) and one with an alkaline (7.5-8.0) pH optimum. The acid pH optimal PLA₂ was located in the interstitial and lysosomal fractions. The alkaline pH optimal PLA₂ was localized in the germinal elements of the seminiferous tubules and in the lysosomalenriched and membrane-enriched fractions. Triton X-100 inhibited PLA2 at 10⁻² M and inhibited PLA₁ at 10⁻³ M. At 10⁻² M, triton X-100 activated PLA₁. EGTA inhibited PLA₂ activity, whereas Ca⁺⁺ at 10⁻² to 10⁻³ M restored this activity. Corticosterone had no effect on PLA₂ activity, but progesterone, dihydrotestosterone, and testosterone all stimulated the enzyme at lower concentrations (10⁻⁹-10⁻⁷ M), with

testosterone giving maximum stimulation at a lower dosage (ie, 10⁻⁹ M compared to 10⁻⁷ M for dihydrotestosterone). Both androgens inhibited PLA₂ activity at higher concentrations.

Key words: rat testicular phospholipase A2 activity, pH optima, localization, control

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