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Protein C Inhibitor Expression by Adult Rat Sertoli Cells: Effects of Testosterone Withdrawal and Replacement

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Protein C inhibitor (PCI), a member of the plasma serine protease inhibitor family, has been reported to be abundantly expressed in the seminal vesicles and testes. In this study, we examine the localization and regulation of the PCI gene and protein expression in testes and freshly isolated Sertoli cells from control rats, rats treated with luteinizing hormone-suppressive testosterone/estradiol (TE)-containing Silastic capsules for 7, 14, 28, and 56 days, and rats treated with TE for 56 days, followed by high levels of testosterone for 7 or 14 days. The administration of the TE capsules for 56 days resulted in reduced testicular testosterone, from approximately 100 ng/mL in the controls to approximately 10 ng/mL, accompanied by a 73% reduction in testicular weight. PCI mRNA levels in freshly isolated Sertoli cells were reduced by 30% and 54% following TE treatment for 28 and 56 days, respectively. When rats that had received TE capsules for 56 days were provided replacement testosterone, there was a 40% increase in PCI mRNA levels within 7 days in the absence of any change in testicular weight, and PCI mRNA levels returned to control values by 14 days. The decrease in PCI mRNA levels in TE-treated rats was paralleled by a decrease in PCI protein levels in whole testis lysates and in seminiferous tubule fluid (STF). Protease activity was significantly increased in STF following 56 days of TE treatment. Taken together, these results indicate that 1) PCI in the testis is expressed by Sertoli cells; 2) the testicular expression of PCI is responsive to intratesticular testosterone levels; and 3) protease activity within the seminiferous epithelium is elevated when intratesticular concentration is decreased, perhaps as a consequence of decreased PCI.

Key words: Estradiol, androgen, testis, protease inhibitor

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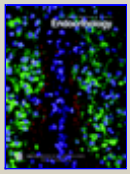

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