

54. IDENTIFICATION AND CELLULAR LOCALISATION OF CYCLOOXYGENASE-1 AND -2 IN THE ADULT RAT TESTIS

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Although the testis undergoes qualitatively normal inflammatory responses to infection and other stimuli, it is also considered to be an immune privileged site supporting prolonged graft survival. The unique immune environment of the testes appears to be due, in part, to suppression of the pro-inflammatory functions and up-regulation of anti-inflammatory functions of the testicular macrophages. In macrophages from other tissues, regulation of this phenotype has been shown to be a consequence of prolonged prostaglandin (PG) synthesis by the macrophages itself. Although PGs are present at significant levels in the testis even under normal conditions, little is known about their cellular origin or regulation. Synthesis of PGs involves one of two distinct forms of cyclooxygenase (COX): the constitutively expressed COX-1, and the inducible COX-2, which promotes inflammation. Expression of COX-1 and -2 was examined in cultures (3 h, 37°C) of isolated rat testicular cells (macrophages, Sertoli cells, Leydig cells), seminiferous tubules, whole testis fragments and peritoneal macrophages (as control) with or without lipopolysaccharide (LPS; 10 µg/mL), using real-time PCR and/or Western blot analysis. Both COX-1 and -2 were detected in all testicular cells and fragments. However, following stimulation with LPS, COX-2 was significantly up-regulated in testicular and peritoneal macrophages only. As expected, COX-1 showed no response to LPS in any cell type. These data describe, for the first time, the cellular distribution of both COX forms in the rat testis. Both COX forms are expressed in a wide range of testicular cell types, including the testicular somatic cells, macrophages and germ cells, but only the macrophages show an increase in the inflammatory COX form in response to LPS-stimulation. These data provide an explanation for the endogenous levels of PGs in the normal testis, and suggest that production of PGs by testicular cells other than the macrophage may influence the anti-inflammatory/immunosuppressive phenotype of the testicular macrophage.