IDENTIFICATION OF ELEVATED LEVELS OF APOPTOSIS AMONG T-CELLS ISOLATED FROM THE RAT TESTIS

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Protection of the developing gametes from attack by the immune system is essential for reproductive success. Autoimmune infertility represents a failure of this protection. Specific T-cell apoptosis is the main mechanism for control of antigen-specific immune responses. Studies were undertaken to investigate this regulatory process in adult rat testes. Flow cytometry was employed in conjunction with annexin-V/propidium iodide dual staining to identify apoptotic cells concurrent with CD3 staining to identify T-cells. CD3-positive cells isolated from the testicular interstitial tissue were shown to be 34.12 ± 3.0% apoptotic (mean ± s.e.m., $n = 3$) at collection. This was consistently greater than the numbers of apoptotic CD3-positive cells isolated from lymph nodes (4.04 ± 1.95%, $n = 2$), spleen (16.77 ± 4.73%, $n = 4$) and peripheral blood (9.64 ± 1.44%, $n = 2$). These results also were confirmed by using T-cells purified with MACS microbeads against the pan T-cell marker OX52 to improve sample purity: 40% of isolated testicular T-cells and 3% lymph node T-cells were found to be undergoing apoptosis. The level of apoptosis among T-cells isolated from another non-lymphoid organ, the liver, was only 6%. It is hypothesised that the immunosuppressive milieu of the testis induces an increased level of apoptotic deletion among T-cells that gain entry into the testis and potentially threaten gamete viability. Further studies of the mechanism responsible for this elevated level of T-cell apoptosis in the testis will significantly enhance our knowledge of how testicular immune tolerance is maintained.

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