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JOURNAL ARTICLE

Characterization and developmental expression of a testis-specific adenosine deaminase mRNA in the mouse

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Adenosine is able to alter intracellular cAMP levels and to affect the physiological functions of sperm. It also modulates FSH action through its Gi protein coupled receptors. Adenosine deaminase (ADA), an enzyme regulating adenosine levels, exists in the plasma membrane of the sperm, but little is known about its action on testicular function. The present study investigates the expression of a testis-specific ADA mRNA with development and in comparison to several other tissues in the mouse. In addition, the sequence of a testis-specific ADA cDNA was determined from an adult mouse testis library. We demonstrate for the first time the presence of a major 1,350 bp testis-specific ADA mRNA and a weaker 1,200 bp ADA transcript whose developmental expression starts on day 28 of life. Sequence analysis of the testis-specific ADA cDNA indicated that exons 1 and 2, as well as the first 8 nucleotides of exon 3 of the somatic cell ADA cDNA were absent in the testicular ADA cDNA. The deduced open reading frame of the testis-specific ADA cDNA indicates absence of the first 51 amino acids at the 5' end that are present in the somatic cell ADA protein. The developmental onset of expression of the testis-specific ADA mRNA may be related to specific proliferation/differentiation events of spermatogenesis.

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