Journal of Andrology, Vol 15, Issue 3 244-249, Copyright © 1994 by The American Society of Andrology

JOURNAL ARTICLE

Proacrosin gene expression in rat spermatogenic cells

L. S. Raab, D. W. Hamilton and L. W. Hancock
Department of Cell Biology, University of Minnesota, Minneapolis.

Mammalian proacrosin gene expression was considered to be exclusively postmeiotic until recent studies detected the presence of proacrosin mRNA in mouse pachytene spermatocytes. To determine if rat proacrosin gene expression was initiated during meiosis, a 314-bp proacrosin cDNA fragment was amplified from rat round spermatid RNA, using proacrosin-specific primers, for use as a probe. Sequence analysis of the round spermatid 314-bp cDNA fragment confirmed > 99% identity with the rat proacrosin cDNA sequence. This 314-bp fragment was subsequently used for Northern blot analysis of RNA isolated from testicular germ cells. A 1.6-kb transcript was detected in pachytene spermatocytes, round spermatids, and a mixed population of condensing spermatids/residual bodies, with the highest level of expression in round spermatids. Northern blot analysis of testicular RNA during development revealed the earliest timepoint of expression to be at 24 days of age, further demonstrating the association of proacrosin mRNA with spermatocytes. These data demonstrate diploid expression of the rat proacrosin gene, in agreement with mouse proacrosin gene expression but in contrast to the apparent haploid expression of proacrosin described for the bull and the boar. These studies provide evidence that, in the rat, the process of acrosome biogenesis begins during meiosis.

This article has been cited by other articles:

Reproduction HOME

I A Zervos, M P Tsantarliotou, G Vatzias, P Goulas, N A Kokolis, and I A Taitzoglou
Effects of dietary vitamin A intake on acrosin- and plasminogen-activator activity of ram spermatozoa
Reproduction, June 1, 2005; 129(6): 707 - 715.
[Abstract] [Full Text] [PDF]

Molecular Human Reproduction HOME

H. Obermann, I. Raabe, M. Balvers, B. Brunswig, W. Schulze, and C. Kirchhoff
Novel testis-expressed profilin IV associated with acrosome biogenesis and spermatid elongation

Mol. Hum. Reprod., January 1, 2005; 11(1): 53 - 64.
[Abstract] [Full Text] [PDF]