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Cell- and Stage-Specific Expression of the Murine *nm23*-M5 Gene during Late Spermatogenesis and Spermiogenesis

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Nucleoside diphosphate kinases (NDPKs) are conserved through evolution and have been shown to be involved in various biological phenomena. By functional screening in yeast, we identified a new member of the NDPK family, *nm23*-M5, which encodes a 211-amino acid protein with 86% identify to the human homolog, *nm23*-H5. Northern blot analysis reveals that *nm23*-M5 encodes two transcripts of 0.8 and 0.7 kb, which are highly and specifically expressed in adult testis. Reverse transcriptase polymerase chain reaction analysis shows that *nm23*-M5 first appears in pachytene spermatocytes and increases in abundance through subsequent stages. However, a low level of *nm23*-M5 mRNA was detected by RT-PCR in other tissues such as ovary, brain, and heart. By *in situ* hybridization we localized testicular *nm23*-M5 transcripts in stage 12 to stage 16 spermatids in the neighboring lumen of seminiferous tubules, a distribution which contrasts with that of human *nm23*-H5 transcripts, which is specifically expressed in spermatogonia and early spermatcytes. In addition, the heterologous expression of *nm23*-M5 in yeast cells confers protection from cell death induced by Bax, which is due to the generation of reactive oxygen species. Taken together, these results suggest that the murine *nm23*-M5 plays an important role in late spermiogenesis by acting as a scavenger for reactive oxygen species.

Key words) ***sperm, spermiogenesis, ROS***