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JOURNAL ARTICLE

Further characterization of a secreted epididymal glycoprotein in mice that binds to sperm tails

R. B. Vernon, C. H. Muller and E. M. Eddy

Sperm maturation antigen 4 (SMA-4) is a surface component of the mouse sperm tail. Previously, immunofluorescence studies indicated that SMA-4 may be secreted by principal cells of the distal caput epididymidis and bound to spermatozoa as they pass through that region of the duct. In the present study, detergent extracts of spermatozoa from the cauda epididymidis were subjected to polyacrylamide gel electrophoresis under reducing and denaturing conditions, transferred to nitrocellulose, and immunostained with a monoclonal antibody against SMA-4. A band of approximately 54,000 molecular weight was revealed. The band was also stained by the periodic acid-Schiff (PAS) procedure. This glycoprotein was not detected in extracts of spermatozoa from the proximal caput epididymidis or of spermatozoa from the cauda epididymidis that were preincubated for 4 hours in an in vitro fertilization environment. Blots of sperm-free fluid from the corpus and cauda epididymidis displayed an immunoreactive and PAS-positive band of about 85,000 molecular weight that was not observed in fluid from the caput epididymidis. The difference in the molecular weights of the antigen in the fluid and that in extracts of cauda spermatozoa suggests that SMA-4 may be modified chemically upon association with the sperm surface.

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