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JOURNAL ARTICLE

Molecular characterizations of an intraacrosomal antigen defined by HS-33 monoclonal antibody

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Among the numerous anti-sperm monoclonal antibodies generated in our laboratory, HS-33 was shown to react with a conserved antigen on the acrosome of spermatozoa from human and mouse. By using indirect immunofluorescent assay, it was demonstrated that HS-33 did not bind to live human sperm. However, this antibody was found to react with the methanol-fixed acrosome-intact, but not with acrosome-reacted sperm. The human sperm antigen recognized by this antibody was purified from human sperm extract by immunoaffinity chromatography. The purified cognate human sperm antigen designated as HSAg-33 was found to be a protein with a molecular weight of approximately 72 kDa on sodium dodecyl sulfate polyacrylamide gel electrophoresis under reducing conditions. The tissue-specificity and the developmental expression of this sperm antigen were examined using frozen sections of various human and mouse tissues. The antigen was shown to be expressed specifically in the testicular sperm at the postmeiotic stages of spermatogenesis but not in any other somatic tissues. "Spontaneous" acrosome reaction was determined following 18 hours of incubation in Biggers, Whitten, and Whittingham (BWW) medium by using HS-33 monoclonal antibody and *Pisum sativum* agglutinin (PSA) as probes. The number of sperm stained positively with this antibody decreased significantly following overnight incubation, indicating the occurrence of an acrosome reaction. The results of this study suggest that HSAg-33 is a potentially useful sperm-specific acrosome marker for studies of sperm capacitation and acrosome reaction.

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