

Role of sperm surface proteins with epididymal origin on fertilization

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Abstract

During transit of spermatozoa through the epididymis, where develop its capacity to fertilize oocytes, several new antigenic determinants appear on surface of spermatozoa. Many of these are proteins and glycoproteins with epididymal origin. The aim of this study was evaluation the role of epididymal secretory proteins on fertilizing ability of spermatozoa. In This study, epithelial cells from proximal portion of rat epididymis were cultured in RPMI medium supplemented with growth factors and androgens. To identify epididymal secretory proteins, pulse labeling with [³⁵S]- (Met, Cys) was used. Labeled conditioned medium recovered and subjected to SDS-PAGE and flurography. Antiserum against 8 secretory proteins were produced in Rabbits. The immunogens were lyophilized narrow strip of polyacrylamide gel from preparative electrophoresis with ultrapure proteins. Incubation of intact rat spermatozoa with these antisera was revealed secretory proteins on surface of spermatozoa. The effects of these antisera on in vitro fertilization were evaluated. The results showed that epithelial cells secreted about 20-30 proteins in culture medium. High titer antisera for 8 secretory proteins were produced. Three antisera were reacted with surface of rat spermatozoa (20, 24 & 72 kD proteins), and only 20 kD protein antiserum decreased fertilization rate. (28% in treatment group against 89% for control group). In Conclusion, the epididymal maturation process of spermatozoa was associated with the secretion of a number proteins by epididymal epithelial cells, many of these proteins bound to plasma membrane of spermatozoa. Only secreted 20 kD protein has a critical role in fertilizing ability of spermatozoa.

Keywords: Secretory protein, Epididymis, Rat, IVF, Sperm maturation.

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