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JOURNAL ARTICLE

Functional characterization of the primate sperm acrosomal antigen (PSA-63)

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Monoclonal antibody (HS-63) raised in mice against human ejaculated sperm, polyclonal antibodies raised in rabbits against the cognate mouse testicular antigen (MSA-63; or Fab) and polyclonal antibodies raised in the rabbit against recombinant fusion proteins (GST-63) showed acrosomal localization in permeabilized rhesus monkey and human ejaculated sperm. Tail localization of the cognate primate sperm antigen (PSA-63) was also seen with intact MSA-63 antibodies and Fab fragments. The ability of these antibodies to inhibit sperm binding to the zona pellucida was measured with hemizona binding assays (HZAs). HS-63 (1.2 mg/ml) inhibited rhesus monkey sperm binding (mean +/- SEM) to homologous hemizonae (treatment, 15.5 +/- 3.3; control, 58.9 +/- 9.4; $P < 0.025$), whereas comparable concentrations of protein from nonimmunized mouse preparations were inactive (ascites fluid, 67.6 +/- 43.5; no ascites fluid, 72.0 +/- 44.6). Intact MSA-63 antibodies inhibited (up to 99%) monkey sperm-zona binding in a concentration-dependent manner. Moreover, inhibition in this case by intact MSA-63 antibody was limited to capacitated sperm. Similarly, intact MSA-63 antibodies inhibited (up to 85%) human sperm binding to homologous zonae in an antibody concentration-dependent manner. Fab fragments derived from MSA-63, when present in insemination mixtures (0.5 mg/ml), inhibited ($P < 0.01$) primate sperm binding to homologous hemizonae (monkey, 9.6 +/- 3; human sperm 9.4 +/- 2) compared with matched hemizona controls (monkey, 117 +/- 29; human, 20.4 +/- 3). Furthermore, rhesus monkey sperm-zona binding was reduced by 84% in the presence of rabbit anti-GST-63 antibodies.(ABSTRACT TRUNCATED AT 250 WORDS)

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Biol Reprod, May 1, 2000; 62(5): 1201 - 1208.
[Abstract] [Full Text]