

Human sperm interaction with *Staphylococcus aureus*: A molecular approach

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Staphylococcus aureus is one of the predominant flora in infertile men and its presence has been correlated with altered sperm parameters, but the exact mechanism and its role in infertility is still unknown. In the present study *S. aureus* strain capable of causing immobilization of spermatozoa was isolated from the cervix of a woman with unexplained infertility and sperm immobilization factor (SIF) purified from the supernatant was found to be a ~20kDa protein. SIF caused 100% immobilization of human spermatozoa at 10µg/ml after 30 min at 37°C and instant loss of viability at 200µg/ml. It also inhibited the Mg⁺⁺-ATPase activity of spermatozoa and induction of acrosome reaction by ionophore at concentration of 50µg/ml and 10µg/ml, respectively. Characterization of SIF using LC-MS revealed its homology with hsp-70 protein. K_m and V_{max} value of SIF were found to be 10×10⁶sperms/ml and 20µg/hr respectively. Binding studies of FITC labelled SIF with spermatozoa showed fluorescence over entire sperm signifying the presence of receptors. Receptor extracted by 3M NaCl was purified and then characterized by MALDI-TOF indicating receptor homology with MHC class II antigen. Further calorimetric studies showed that receptor moiety on spermatozoa bind specifically to purified ligand. Thus receptor-ligand interaction might cause immobilization of spermatozoa by SIF and the future studies of detailed molecular mechanisms of sperm immobilization by these interactions could possibly lead to useful insights for improvements in the treatment of infertility, and to create safe and effective sperm immobilizing contraceptives.

Biography

Vijay Prabha did his B.Sc. (HS), M.Sc. (HS) and Ph.D. from Department of Microbiology, Panjab University, Chandigarh. Currently he is Professor and Head, Department of Microbiology, Panjab University, Chandigarh. He has more than 30 research publications in reputed journals. He has attended a number of national and international conferences. His area of interest is isolation and purification of microbial metabolites and their role in infertility and development of these microbial metabolites as vaginal contraceptive agents. He is on the reviewer panel of journals of international repute and editorial board member of 'Fertility and Sterility' journal.

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