This study has been undertaken to investigate some of the problems the results of which may be of value in drawing suitable conclusions for application in fertility control of animals.

Testes homogenate, epididymal spermatozoa, ejaculated washed spermatozoa and seminal plasma of goats were found to be highly antigenic in rabbits. Immunization of rabbits and goats with these antigens produced high titred antisera in which specific antibodies against epididymal spermatozoa, ejaculated washed spermatozoa and seminal plasma were detected.

The sperm immobilization and sperm agglutination tests against ejaculated washed spermatozoa specifically detected the level of the sperm immobilizing and sperm agglutinating antibodies. The sperm immobilising antibodies caused immobilization and inactivation of the sperms treated with immune sera. The immobilizing antibodies had the effect of completely inhibiting the wave like progressive motion of active sperms in freshly ejaculated semen of bucks.

Sperm agglutinating antibodies were produced against epididymal spermatozoa of bucks (goats). Similarly antigens of testes homogenate also led to the production of sperm agglutinating antibodies which were tested with epididymal sperms. Treatment
of semen with antibodies produced against ejaculated washed spermatozoa gave rise to different patterns of agglutination. Low dilutions of immune sera specifically caused tail-tail agglutination as compared to head-head agglutination with higher dilutions. Normal sera occasionally produced head-head agglutination. These patterns of agglutination with immune sera were due to antigen-antibody reaction between surface antigens on tails and heads of buck spermatozoa.

Studies on samples of semen treated with immune sera against ejaculated washed spermatozoa showed that the viability of buck spermatozoa was suppressed due to mortality of sperm cells owing to the action of immune antibodies. Approximately one-third of the treated sperms in semen escaped the lethal effect and remained alive after 30 minutes of treatment with antiserum.

Studies were conducted on the antigenic composition of some of the antigens of male genital tract of bucks (goats) using gel diffusion and immunoelectrophoretic techniques. The testes homogenate of bucks consisted of at least six different antigenic components. Four of these antigens were considered as major antigens of the testes. The antigenic properties of epididymal spermatozoa of bucks were due to the presence of seven antigenic components, four of which appeared to be common with antigens of testes. Investigations on the antigenic composition of the ejaculated washed spermatozoa revealed four antigenic constituents. Two of these were regarded as sperm specific antigens. Two of the other sperm antigens were found to be common to seminal plasma.
Immuno diffusion and immuno-electrophoretic analysis of buck seminal plasma showed the presence of eight and eleven antigenic factors respectively. Immunelectrophoresis of seminal plasma with corresponding immune sera showed the distribution of different components in the different electrophoretic mobility regions. Gel filtration of dialysed pooled samples of buck seminal plasma revealed the presence of four different fractions. The major fraction of the buck seminal plasma was purified. This gave a single precipitation arc located in the beta-globulin region. Electrophoretic studies also indicated that the purified sample was the major antigenic component of the goat seminal plasma.

Immunization of goats produced high level of antibodies against testes homogenate and ejaculated washed spermatozoa in the serum. No antibodies were detected in the vaginal mucus of goats immunized intravaginally with the same antigens. The sera of the intravaginally immunized goats had antibody titres varying from 1/16 to 1/128. All the eight immunized goats had normal gestation and gave birth to 18 kids. These results indicated that antibodies against testes homogenate and spermatozoa did not cause fertilization failure in goats. There was no evidence of local production of antibodies in the vagina of goats immunized by intravaginal route. There was no evidence of passage of antibodies against these antigens from systemic circulation to the genital tract in the experimental animals.

The secretions of vagina, cervix, uterus and oviduct of the immunized female did not appear to cause agglutination of sperm present in the lumen.
Studies on immune allergic orchitis in goats revealed that this species is vulnerable to the immune disease. But the protective mechanism to counteract the lesions seemed to be present. There was a differential response in the goats immunized with different number of injections.

The histopathological changes observed in the testes of the immunized goats did not conform strictly to the definition of inflammatory reaction. Therefore the immune disease in goats may not be orchitis in a strict sense. Hence the degenerative changes in the testicular tubules of goats have been referred to as immune allergic aspermatogenesis.

All the goats developing different degrees of testicular lesions showed an altered sexual behaviour which was evidenced by high reaction time and poor libido. It appeared that the sexual behaviour of goats could indicate the pathological changes taking place in the testes.

Studies on the semen characteristics of immunized goats showed a rise in the percent dead spermatozoa of the bucks in the ejaculates collected after one and two weeks following immunizations. This rise in the mortality of spermatozoa was seen correlated with degenerative changes in the testes.