Thesis Title The Effects of Male Antifertility Agents on sperm surface and epididymal fluid proteins in rats

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ABSTRACT

The possible effects of some antifertility agents on the epididymal fluid and sperm surface proteins were investi-gated in adult male Fischer rats treated with sulfapyridine (SP),450 mg/kg/day for 6 weeks,or alpha chlorohydrin(AC),9 mg/kg/day for 1 week.At the end of treatment period,luminal fluid contents from the caput and cauda epididymidis were collected by micropuncture or retrograde perfusion of the vas deferens. Sperm concentration was counted in a haemocytometer chamber. Both epididymal fluid and sperm surface proteins were analysed by linear gradient(7-15%)SDS-PAGE.Protein concentrations of the sperm free epididymal fluids and protein contents of the epidi-dymal sperm extracts were determined by Lowry's method. SP and Ac produced a marked reduction infertility being 33.3 $\pm$7.2(n=15) % and 14.0$\pm$7.0 (n=7) % compared to their corresponding control values of 96.4$\pm$1.5 (n=18)% and 94.0$\pm$2.8 (n=8)%,respectively.The concentrations of spermatozoa in both the caput and the cauda

fluids were significantly decreased by SP or Ac treatment. In the caput fluids, the sperm concentrations after SP and AC treatments were, respectively, 0.13 ± 0.02 (n=8) and 0.18 ± 0.03 (n=6) $X10^9$ cells/ml compared to their corresponding control values of 0.43 ± 0.1 (n=7) and 0.38 ± 0.11 (n=7) $X10^9$ cells/ml, whereas in the cauda fluids the values after treatment were 0.96 ± 0.15 (n=15) and 0.76 ± 0.18 (n=9) $X10^9$ cells/ml compared to their corresponding control values of 1.77 ± 0.25 (n=17) and 1.45 ± 0.25 (n=9) $X10^9$ cells/ml, respectively. However, there appears to be no changes in protein concentration of fluid and protein contents of sperm in the caput or cauda of the treated groups. On the other hand, SDS-PAGE revealed a reduction in intensity of some minor protein bands of the caput fluid with MWs of 32K, 31K, 28K and 26.5K and the cauda fluid with MWs of 84K, 77K, 32K, 31K, 28K, 26.5K, 19K, 15.5K and 14.2K after both SP and AC treatments. However, SP and AC failed to cause any change in protein pro-files of the caput sperm surface. Of particular interest was the increase of 3 additional bands with MWs of 85K, 44K and 28K from the cauda sperm extracts after SP treatment, whereas AC produce the reduction in intensity of proteins 50.5K and 49K, respectively. The results suggest that SP and AC may inhibit the fertilizing capacity of the rats spermatozoa directly by producing an alteration of proteins on the cauda sperm surface and/or indirectly by changing the secretion or absorption processes of some proteins in both caput and cauda epididymal fluids.