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JOURNAL ARTICLE

Enhanced susceptibility of follicle-stimulating-hormone-deprived infertile bonnet monkey (*Macaca radiata*) spermatozoa to dithiothreitol-induced DNA decondensation in situ

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Immunoneutralization of endogenous follicle-stimulating hormone (FSH) of adult male monkeys leads to oligospermia and infertility despite unchanged testosterone levels. The inability of these monkeys to impregnate despite repeated exposures to cycling females appeared to be due to abnormal alterations in the kinetics of germ cell transformations and deficient spermiogenesis. Here we investigated the stability of sperm chromatin in oFSH-immunized monkeys as a marker for spermiogenesis. The susceptibility of spermatozoa to in vitro decondensation induced by dithiothreitol (DTT, 0.05-50 mM) was studied by measuring the nuclear fluorescence of DTT-treated, ethidium bromide (EB)-stained sperm using flow cytometry. Changes in sperm morphology and binding of thiol-specific 14C-iodoacetamide (14C-IA) were also monitored under the same conditions. Sperm from the immunized monkeys decondensed at a lower concentration of DTT, bound more EB, and decondensed more extensively than those from control animals. The difference was apparent in sperm from all regions of the epididymis. Immunized monkey sperm also bound significantly more 14C-IA at all concentrations of DTT. Overall, the effective concentration of DTT required to elicit 50% of maximal decondensation (ED50) of epididymal and ejaculated sperm was significantly lower for the immunized monkeys than even the caput sperm of controls. These results suggest that FSH deprivation in monkeys results in production of sperm with limited potential for disulfide formation and reduced chromatin stability.

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