Journal of Andrology, Vol 12, Issue 1 36-45, Copyright © 1991 by The American Society of Andrology

JOURNAL ARTICLE

Teratospermia in domestic cats compromises penetration of zona-free hamster ova and cat zonae pellucidae

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The ability of spermatozoa to bind and penetrate zona-free hamster ova and the zonae pellucidae of domestic cat oocytes in vitro was compared between normospermic (greater than 60% structurally normal spermatozoa per ejaculate) and teratospermic (less than 40% normal spermatozoa per ejaculate) domestic cats. The effects of culture media (Biggers, Whitten, Whittingham [BWW] versus modified Krebs Ringer bicarbonate [mKRB]) and simple dilution (DR), ejaculate centrifugation, and either resuspension (NS) or swim-up processing (SU) on penetration also were examined. High percentages of structurally normal spermatozoa were bound to zona-pellucida-free hamster ova regardless of the morphological forms in the inseminant. Mean percent normal spermatozoa bound to ova in DR, NS, and SU sperm aliquots from teratospermic male cats were not different (P greater than 0.05) from similarly treated normospermic aliquots. However, the percent penetration of hamster ova by normospermic ejaculates (10.5%) was superior (P less than 0.05) to that of teratospermic ejaculates (2.8%). Although swim-up processing improved percent sperm motility, progressive motility, and normal morphology in teratospermic ejaculates (P less than 0.05), no difference was observed in ovum penetration among the DR-treated, NS-treated, and SU-treated spermatozoa (P greater than 0.05). Culture medium had no effect on sperm binding in the hamster assay, but ovum penetration rate by spermatozoa in the normospermic ejaculates was enhanced (P less than 0.05) using mKRB (13.5%) when compared with BWW (7.6%) medium. Spermatozoa from teratospermic cats were capable of binding and penetrating cat zonae; however, sperm-zona interaction (defined as percent of oocytes with spermatozoa binding to or penetrating into the zona) was different (P less than 0.05) between normospermic (65.3%) and teratospermic (24.2%) cats.(ABSTRACT TRUNCATED AT 250 WORDS)

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