The effect of geldanamycin on the cryosurvival of equine sperm

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The objective of this study was to evaluate the effect of geldanamycin, an inhibitor of heat shock protein 90, on the cryosurvival of equine sperm. Semen samples were obtained from five fertile stallions individually housed at UC Davis. One ejaculate from each of the stallions was collected using an artificial vagina. The sample was centrifuged at 300 g for 10 min. The pellet was resuspended in INRA 96 (IMV, Maple Grove, MN, USA), 2 % egg yolk and 0.3 M glycerol with differing concentrations of geldanamycin (0, 1.8, 4.5, 8.4 µM; Enzo Life Sci., Plymouth Meeting, PA, USA). Following cryopreservation one straw per treatment was thawed for 30 sec in a 37 °C water bath. Computer-assisted sperm analysis was used to determine sperm motility characteristics. Post-thaw membrane integrity was monitored with Sybr-14 and PI and fluorescence was measured using flow cytometry. Post thaw motility was measured at 5, 30 and 60 minutes. Treatment differences were calculated using a general linear model analysis of variance. The data were normally distributed, and post-hoc treatment comparisons were performed using Tukey’s least squares method at a significance level of P < 0.05. There was no effect on post thaw viability (Mean=49.26% SEM=1.85) or 5 minute post thaw progressive motility (Mean=57.40% SEM=4.01) for any treatment group. There was a significant effect on 30 and 60 min progressive motility at 4.5 and 8.4 µM concentrations of geldanamycin. These results suggest a role for heat shock proteins under cryopreservation conditions in stallion spermatozoa.

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