

EFFECTS OF LACTOFERRIN ON STALLION SPERM SURVIVAL AND FUNCTION IN VITRO

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Our laboratory has recently demonstrated that lactoferrin reduces post-breeding uterine inflammation in mares. Potentially, lactoferrin could be incorporated into commercially available semen extenders to modulate this uterine inflammation post-breeding. Our study aimed at determining the effects of lactoferrin on sperm survival and function in vitro. Our hypothesis was that addition of lactoferrin to semen extender would not affect sperm motility and viability. Four ejaculates from four stallions were collected and seminal plasma was removed by centrifugation. Sperm were resuspended in extender containing 0 (control), 10, 20, and 30 mg/mL of lactoferrin. Samples were stored at 5° C and evaluated at 0, 24, and 48 h for motility (Computer-Assisted Semen Analysis and subjective readings) and viability (NucleoCounter®). At 24 h of incubation, an aliquot of each sample was cultured under aerobic conditions to determine the growth of microorganisms. Data were analyzed by ANOVA for repeated measures and significance set at $P < 0.05$. Total and progressive motility were similar between control and lactoferrin groups at times 0 and 24 h post-incubation. However, a significant decrease in total and progressive motility was observed at 48 h for 20 mg/ml (47% & 24%) and 30 mg/ml (44% & 22%) lactoferrin compared to control (61% & 38%), respectively. No significant changes in sperm survival were observed between groups. Growth of microorganisms was significantly reduced when lactoferrin was present at 20 mg/ml and 30 mg/ml. In conclusion, higher concentrations of lactoferrin (20 and 30 mg/ml) reduced sperm motility after 48 h of incubation. However, lactoferrin did not affect sperm viability over time and was effective in reducing the growth of microorganisms.

Keywords: Lactoferrin, stallion, semen, spermatozoa, horse