Influence of repeated treadmill exercise on quality and freezability of stallion semen

Summary / Zusammenfassung

The objective of this study was to investigate changes of quality and freezability of stallion semen in response to repeated acute treadmill exercise. Ejaculates from 11 stallions were collected, evaluated and frozen weekly during 4 periods of 4 weeks each defined as before (period 1), during (period 2) and after (periods 3 and 4) intense exercise. In fresh semen the gel-free volume, sperm concentration, motility, normal sperm and sperm with major defects (acrosome defects, nuclear vacuoles, abnormal heads, midpiece defects and proximal droplets) were evaluated. In frozen-thawed semen, motility as well as viability (SYBR-14/PI) were examined. In period 2 all stallions were exercised on an indoor high speed treadmill twice a week (total of 8 sessions) using an incremental workload test. Heart rate was monitored telemetrically during exercise and blood samples were taken for determination of cortisol, testosterone and lactate. Results of our investigation demonstrate that heart rate and the plasma concentrations of cortisol, testosterone and lactate significantly (P<0.05) increased during each exercise session. Furthermore, significantly more major sperm defects were present in periods 3 (69.5±2.1%) and 4 (66.8±2.1%) than in periods 1 (62.2±2.4%) and 2 (62.5±2.2%). Acrosome defects increased towards the end of exercise but improved 3 weeks later to values observed before exercise. In frozen-thawed semen motility was significantly lower in period 2 (45.4±2.3%) compared to period 4 (51.6±1.7%) and viability was significantly lower in period 2 (49.2±2.0%) than in periods 1 (53.8±2.1%) and 4 (53.7±1.6%). Our results clearly demonstrate that in the stallion repeated strenuous treadmill exercise can negatively influence semen quality and freezability.

Publications / Publikationen


Keywords / Suchbegriffe

Stallion, semen quality, exercise, cryopreservation

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