Comparison between centrifugation and filtration process to concentrate stallion sperm before cooling

Department of Animal Reproduction and Veterinary Radiology, School of Veterinary Medicine and Animal Science, São Paulo State University–UNESP, Botucatu, SP, 18618-970–Brazil

Centrifugation of stallion semen is a necessary step for the stallion semen cryopreservation procedure, allowing the concentration of sperm. Centrifugation is also required for maximizing spermatozoa quality in semen from some particular stallions subjected to cooled transport because of the detrimental effects of seminal plasma. However, the centrifugation process has potential deleterious effects, including reduction in sperm quality as well as loss of sperm numbers. A recent publication from our laboratory has shown the efficiency of a filter made of a hydrophilic syntetic membrane to concentrate stallion sperm. The present experiment aimed to verify the effect of this novel system on cooled stallion semen quality. One ejaculate from a total of 30 stallions was collected. After collection the ejaculate was split into three aliquots and submitted to the following procedures before cooling at 15°C for 24 hours: G1—diluted with skim milk extender, G2—fresh semen filtration, and G3—centrifugation (500g for 10 minutes). G2 and G3 samples were resuspended with the same milk based extender used in G1. Motility parameters were analyzed by CASA and plasma membrane integrity by fluorescent probes. No differences (p>0.05) were observed 24 hours after cooling on total motility (TM; 37%, 51 %, and 47%), progressive motility (14%, 21%, and 17 %), membrane integrity (35%, 45%, and 47%), respectively for G1, G2 and G3 when samples from all stallions were evaluated. However, when data only from bad cooler stallions (TM <30% after cooling) were evaluated, a significant improvement (p<0.05) in TM was observed in G2 and G3 groups (13 %, 36 %, and 33%, respectively for G1, G2 and G3). We conclude that the filtration technique was practical, fast and safe for concentration of stallion sperm before cooling and that removal of seminal plasm is beneficial to some particular stallions.

Keywords: Stallion, semen, seminal plasma, filter, cooling