Sperm Selection Using Single-Layer Centrifugation Prior to Cryopreservation Can Increase Post-Thaw Sperm Quality in Stallions

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1. Introduction

Several sperm isolation techniques have been described for human semen and have been adapted for veterinary use. These techniques can also be applied for the selection of a superior sperm sample from stallion semen. Until recently, the major downside of these techniques was the limitation in sperm volume that could be processed. Androcoll-E had been shown to successfully process large volumes of equine semen, but few data substantiate the potential beneficial effect of freezing a selected equine sperm sample to obtain a higher post-thaw quality.

2. Materials and Methods

In this study, split ejaculates were frozen after either cushioned centrifugation (Maxifreeze) or colloid centrifugation selection using Androcoll-E in Botu-Crio. The pre-freeze and post-thaw samples were analyzed for motility (using computer-assisted sperm analysis), membrane integrity (SYBR-14/PI), acrosomal status (FITC-PSA), and DNA status (Sperm Chromatin Structure Assay). Androcoll-E–treated sperm had increased quality parameters prior to freezing (P < 0.001). The only downside of Androcoll-E–treated sperm was the markedly lower (P < 0.001) yield after selection (50.9%) when com-
pared with the cushion centrifuged control group (97.1%).

3. Results

Post-thaw quality analysis showed an overall improved sperm quality for Androcoll-E–treated samples compared with cushioned control samples. Androcoll-E–treated ejaculates were 50% more likely to result in accepted straws (post-thaw PM ≤30%) compared with ejaculates subjected to cushioned centrifugation. Androcoll-E treatment increased the likelihood that straws were accepted, based on post-thaw PM (≤30%).

4. Discussion

In conclusion, sperm selection before cryopreservation using Androcoll-E increased post-thaw sperm quality. However, the markedly reduced number of straws available makes the technique of limited value for stallions whose semen can be frozen with good results using conventional cryopreservation protocols.

References