

Recent advances in cooled-semen technology[☆]

Christine Aurich^{a,b,*}

^a *Graf Lehndorff Institute for Equine Sciences, Neustadt (Dosse), Germany*

^b *Centre for Artificial Insemination and Embryo Transfer,
University for Veterinary Sciences, Vienna, Austria*

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Abstract

The majority of horse registries approve the use of artificial insemination, and horse breeding has widely taken benefit from the use of cooled-stored semen. New insights into cooled-semen technology open possibilities to reduce problems such as impaired semen quality after cooled-storage in individual stallions. The stallion itself has major impacts on quality and fertility of cooled-stored semen. Dietary supplementation of antioxidants and polyunsaturated fatty acids improves semen quality in a variety of species, but only few studies on this topic exist in the horse. Proper semen collection and handling is the main key to the maintenance of semen quality during cooled-storage. Semen collection should be achieved by minimal sexual stimulation with a single mount; this results in high sperm concentration, low content of seminal plasma and minimal contamination with bacteria. Milk-based semen extenders are most popular for semen processing and storage. The development of more defined extenders containing only the beneficial milk ingredients has made extender quality more constant and reliable. Semen is often centrifuged to decrease the seminal plasma content. Centrifugation results in a recovery rate of only 75% of spermatozoa in the semen pellet. Recovery rates after centrifugation may be improved with use of a “cushion technique” allowing higher centrifugation force and duration. However, this is not routinely used in cooled-semen technology. After slow-cooling, semen-storage and shipping is best performed at 5 °C, maintaining semen motility, membrane integrity and DNA integrity for up to 40 h after collection. Shipping containers created from Styrofoam boxes provide maintenance of semen quality at low cost.

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* Correspondence author. Tel.: +43 1250776400; fax: +43 1250775491.

E-mail address: christine.aurich@vu-wien.ac.at.