

Kanittha Phetudomsinsuk 2009: The Characteristics and Preservation of Thai Native Crossbred and Purebred Horse Semen. Doctor of Philosophy (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Kaitkanoke Sirinarumitr, Ph.D. 100 pages.

The study was aimed to evaluate semen characteristics of Thai native crossbred (T) and purebred (F) stallions after preservation by cooled storage and cryopreservation. The outcome of this study could benefit to the application of artificial insemination technology, which will be an important tool for genetic and reproductive management in this species.

Semen were collected by using artificial vagina, from 5-12 years old T (n=5) and F (n=4) stallions. The semen characteristics examined were color, osmolarity, pH, volume, total motile sperm (TMOT), progressive motile sperm (PMOT), sperm viability, morphology and concentration. The seminal characteristics observed were opalescent white. Some semen parameters were significant different ($P<0.05$) between breeds. Semen quality of T was better than F stallions in terms of TMOT and PMOT. Furthermore, in normal morphologically sperm, head of T sperm were larger and rounder than that of F sperm.

The effects of extenders (Kenney, Kenney+ 50 mM L-glutamine, INRA and INRA+50 mM L-glutamine) on semen characteristics after cooled storage (5 °C) were examined. The cooled samples were evaluated for sperm viability, TMOT, PMOT, and motion velocity, which were significantly decreased ($P<0.05$) after storage for 24 - 48 h in all extenders. However, in both T and F, INRA extender tended to maintain sperm motility and membrane integrity longer than other extenders.

The freezability of semen in different extenders (INRA, INRA+ 50 mM L-glutamine, Lactose-EDTA, Lactose-EDTA+ 50 mM L-glutamine) with glycerol was determined. Lactose-EDTA gave better results ($P<0.05$) than other extenders in post-thaw TMOT and PMOT. Nevertheless, only semen from two T and one F stallions could be preserved by cryopreservation ($> 30\%$ post-thaw TMOT).

Student's signature

Thesis Advisor's signature

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