medication had elevated DFI values, e.g., 48% which following removal of the medication decreased over a period of 2 months to 10%. For boars, a heterospermic trial was conducted to assess fertility. The boars were divided into two groups consisting of three boars of higher fertility and three of lower fertility. Boars siring more piglets than statistically expected had significantly lower %DFI than those that had fewer piglets. In another study, a significant negative correlation was found between average total number of pigs born per litter versus %DFI suggesting that sperm with fragmented DNA fertilized the eggs but the embryos died in utero due to sperm deficient DNA. Bulls with the best heterospermic performance had significantly ($r = 0.94$, $p < 0.01$) lower %DFI. In other bull fertility studies, SCSA data were significantly correlated (-0.65, $p < 0.01$) with non-return rates.

Many cases have been seen where different species of males have been considered fertile due to an acceptable semen analysis. However, when such males failed to produce offspring, the SCSA has often provided the likely etiology, namely, the presence of live, normal appearing sperm that have fragmented DNA leading to early embryo death.

Keywords: Sperm DNA fragmentation; SCSA; Infertility

CRYOPRESERVATION OF STALLION SEMEN TREATED WITH CHOLESTEROL-LOADED-CYCLODEXTRINS

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Cholesterol-loaded-cyclodextrins (CLCs) were added to stallion sperm in an attempt to improve cryosurvival. Eight stallions were collected three times a week for 5 weeks. Each ejaculate was diluted to 50×10^6 sperm/mL in a modified Tyrode's Medium and split into two equal fractions. One fraction was treated with 1.5 mg/mL CLCs while the other was not treated. Samples were held at 22 °C for 15 min, then centrifuged at 2400 rpm for 11 min, and the sperm pellets suspended to 400×10^6 sperm/mL in a EZ-Freezin ''LE'' (Animal Reproduction Systems (ARS), Chico, CA, USA). The sperm were packaged into 0.5 mL straws, frozen in liquid nitrogen vapor, and stored in liquid nitrogen for >48 h prior to thawing. Straws were thawed in 37 °C water for 30 s, the sperm diluted to 40×10^6 sperm/ml in EZ-Mixin' CST (ARS) and maintained at 37 °C for 5 min prior to motility analysis using a computer-assisted sperm analysis system (IVOS, Hamilton Thorne Biosciences, Beverly, MA, USA). Treating sperm, with CLCs prior to freezing, improved cryosurvival of sperm for all stallions and ejaculates within stallions. Samples treated with CLCs exhibited higher percentages of total motile sperm (51%) than the control sperm (37%; S.E.M. = 3; $P < 0.05$). Similarly, progressive motility for CLC-treated sperm was higher than the control sperm (33% versus 22%, respectively, S.E.M. = 2; $P < 0.05$). In conclusion, addition of CLCs to stallion sperm prior to freezing maintained higher total and progressive motility of equine sperm after cryopreservation. In addition, this procedure can easily be incorporated into routine processing of stallion sperm for cryopreservation.

Keywords: Cholesterol; Semen; Equine; Cryopreservation; Motility

EFFECT OF CENTRIFUGATION ON EQUINE SEMEN QUALITY OVER TIME DURING COOL-STORAGE INCUBATION

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The objective of this study was to determine the effect of centrifugation over time on equine semen quality during cool-storage incubation. We hypothesized that the removal of seminal plasma would result in higher semen quality over time than non-centrifuged semen samples.

Twenty ejaculates were collected from eight stallions of known fertility. Immediately after collection, concentration, motility, membrane integrity (HOST; swelling test), and viability (eosin–nigrosin) were determined. Samples from each ejaculate were extended with one of five commercially available semen extenders (four skim-milk based and one egg-yolk based) to a final concentration of 50×10^6 mL^{-1}. An aliquot of these samples were centrifuged at $400 \times g$ for 10 min and resuspended to 50×10^6 mL^{-1} with its respective extender. All samples were stored at 5 °C and analyzed at 24 h and 48 h. Data were statistically analyzed utilizing a repeated measurements design with a 2×5 treatment structure (SAS Institute Inc., Cary, NC). Results, summarized in Table 1, were expressed as

least square means and differences with $P < 0.05$ were considered significant.

Table 1
Effect of centrifugation on stallion seminal characteristics (expressed as least square means) over time during cool-storage incubation at 5 °C

Seminal characteristics	Time (h)	Non-centrifuged	Centrifuged
Motility	0	47.95	46.14
	24	48.46	52.50*
	48	41.71	50.37*
Viability	0	81.98	81.98
	24	65.86	73.35*
	48	62.19	70.04*
HOST	0	76.91	76.91
	24	42.42	49.66*
	48	34.40	41.45*

* $P < 0.05$.

It has been recently suggested that removal of seminal plasma is protective to sperm DNA integrity [Love, et al. Theriogenology 2005;63:1584–91]. In the present study, removal of seminal plasma by centrifugation resulted in better preservation of semen quality during short-term storage than non-centrifuged semen. Centrifugation of semen may be indicated for stallions with significant decrease in semen quality after overnight shipping.

Keywords: Horse semen; Seminal plasma; Cool storage; Centrifugation

Food Animal

EFFECT OF HUMAN CHORIONIC GONADOTROPIN (hCG) ADMINISTRATION ON OVARIAN ACTIVITY AND FERTILITY OF HOLSTEIN COWS

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The objectives of the study were to evaluate the effect of hCG administration 7 days after insemination on the induction of accessory corpora lutea, the level of plasma progesterone and the fertility of Holstein cows. Two hundred and four lactating Holstein cows were randomly distributed into two treatments: the cows in T1 ($n = 102$) received 1000 UI of hCG 7 days after insemination and the cows in T2 ($n = 102$) received 2 ml of saline solution, in both cases by intramuscular injection. The cows were fed with a total mixed ratio containing fresh alfalfa, alfalfa hay, corn silage and a commercial concentrate with 16% CP and 2.7 MCal ME as wall as water and a commercial mineral premix ad libitum. On days 7 and 14 after the service blood samples of the jugular vein were collected to determine the level of plasma progesterone and on day 14 the ovaries were scanned with an ultrasound (Sonovet 600, Medison, USA) equipped with a 7.5 MHz transducer to evaluate the incidence of accessory corpora lutea and its diameter, perimeter and area. Progesterone was determined using radioimmunoassay. The diagnosis of pregnancy was conducted on days 35 and 60 after the service by ultrasound in cows that did not return to estrous the following estrous cycle. The incidence of accessory corpora lutea and pregnancy rate were analyzed through logistic regression and the characteristics of the corpora lutea and the level of progesterone through mixed models procedures. The level of progesterone on days 7 and 14 after insemination were similar ($P > 0.05$) between T1 and T2. The incidence of accessory corpora lutea was higher ($P < 0.01$) in T1 (76.5%) compared with T2 (8.8%). There were no differences ($P > 0.05$) in the diameter, perimeter and area of the accessory corpora lutea between T1 and T2 (17.1 ± 0.3 versus 17.4 ± 0.8; 65.9 ± 1.3 versus 66.2 ± 3.4; 299.9 ± 10.9 versus 293.9 ± 29.7), respectively. Similarly there were no differences ($P > 0.05$) in pregnancy rate between T1 and T2 on day 35 (53.9% versus 43.1%) and 60 (43.1% versus 35.3%), respectively. In conclusion, the administration of hCG 7 days after insemination induces the formation of accessory corpora lutea, without affecting its morphologic characteristics, the level of progesterone in plasma and the fertility of lactating Holstein cows.

Keywords: Gonadotropins; Accessory corpora lutea; Pregnancy rate; Dairy cows

THE INDUCTION OF PARTURITION IN DAIRY GOATS AND THE OUTCOME OF KIDDING EVENTS

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The use of dexamethasone in combination with a prostaglandin $F_2\alpha$ analogue, dinoprost tromethamine (Lutalyse®, Pfizer, USA) was considered as a management practice for the induction of parturition in dairy goats to concentrate kidding events during hours of