of sperm concentration (×109 spermatozoa) were 0.318 ± 0.018, 0.271 ± 0.014 and 0.243 ± 0.017 in D, L and Y, respectively, and concentration was lowest on period III and highest on period I in all breeds. LSM of motility (%) were between 91.2 and 91.9 for all breeds and showed the highest values on period I and lowest on period III in all breeds. This study showed that period of semen collection has important effect on semen quality and this effect does not depend on breed.

OC 7.1

Secretion of LH, FSH and testosterone in a bovine testicular degeneration model

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Testicular degeneration is associated with loss of fertility and may affect endocrine pathways. We have developed a testicular degeneration model in bulls by partial resection of the scrotum without testes removal. Testicular histology, LH, FSH and testosterone release were compared in bulls with scrotal resection (SR; n = 10), gonad-intact bulls (GI; n = 8) as negative and Burdizzo-castrated bulls (BZ; n = 9) as positive controls. Blood only was collected from orchidectomised bulls (OR, n = 10). Surgeries were performed at 54 ± 3 days of age and testes were obtained 474 ± 11 days thereafter. Blood for hormone analysis was taken at 8, 16, 24, 32 and 40 w. SR bulls showed partial testicular degeneration with no sperm in 6 and reduced sperm numbers in 4 animals. Testes were completely degenerated in BZ bulls while histology was unimpaired in GI controls. LH concentrations were higher in BZ and OR than in SR and GI bulls ($p < 0.001$) and decreased in all groups until 24 w. FSH levels were basal in SR and GI bulls, but in BZ and OR bulls were elevated at 8 w and decreased throughout the study ($p < 0.001$ between groups and over time). Testosterone concentrations increased in SR and GI but not GI and OR bulls ($p < 0.05$). In conclusion, complete testicular degeneration and testes removal led to a transient increase in LH and FSH release due to lack of negative feedback. Incomplete testicular degeneration in SR bulls did not change endocrine testicular function and gonadotropin release.

OC 7.2

Fertility of lactating dairy cows treated with different timed artificial insemination protocols before using of sex-sorted sperm vs. conventional semen

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The objectives were to compare P/AI with sex-sorted sperm (SS) or conventional semen (CS) in dairy cows subjected to one of the three timed AI (TAI) protocols. Dairy cows (n = 356) between 39–45 days postpartum were assigned into one of six treatments, with three synchronization methods and two types of semen. Treatments were Ovsynch protocol (OVS), Presynch-Ovsynch protocol (PO), or Double-Ovsynch protocol (DO). On the day of TAI, within each synchronization treatments, cows were assigned to be inseminated with either SS or CS from the same sire. All statistical procedures were performed using SAS. Ovulation to the first GnRH of breeding Ovsynch increased ($p < 0.01$) with presynchronization (59.1% in OVS vs. 79.2% in PO+DO). Regardless of the treatments, insemination with SS reduced ($p = 0.01$) P/AI on days 31 (38.0% vs. 50.6%) compared with CS. Cows inseminated with SS had numerically less P/AI when synchronized with PO than DO (35.4% vs. 47.6%), whereas those inseminated with CS had numerically greater P/AI with PO than DO (59.3% vs. 49.0%). Pregnancy loss between 31 and 62 days was not affected by method of synchronization or type of semen. In conclusion, presynchronization of the estrous cycle before subjecting cows to the Ovsynch protocol improves P/AI when cows are inseminated with either SS or CS. No difference in P/AI was observed with method of presynchronization, although cows inseminated with SS had numerically higher fertility with DO, whereas those inseminated with CS had numerically higher fertility with PO.

OC 7.3

Glucose use and lactate production by equine fresh semen in human and equine extenders

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Aim of the study was to assay equine sperm metabolism in media containing different glucose and lactate concentrations. Five stallions were collected four times. Each ejaculate was divided in 4 samples. After centrifugation, pellets were diluted to 40 or 100 million/ml in extenders (INRA96 and Allgradwash), with 25% of seminal plasma. Concentration and motilities were assayed in raw semen and after 1, 8 and 24 h. Preservation of motility was calculated by dividing post-storage motility by raw semen motility. After 24 h of storage, lactate and glucose concentrations in samples supernatant were assayed by Nuclear Magnetic Resonance. Differences were analyzed by Kruskal-Wallis test. INRA96 contained more glucose than Allgradwash; the opposite relation was observed for lactate. Preservation of TM was lower in Allgradwash after 24 h at 40 million/ml ($p < 0.01$) and 8 h at 100× million sperm/ml ($p < 0.05$). Preservation of PM was lower in Allgradwash after 1 h at both storage concentrations ($p < 0.05$). Glucose and lactate concentrations differed between media after 24 h of storage ($p < 0.01$). Glucose and lactate concentrations after 24 h in the same medium didn't differ between sperm storage concentrations. Median glucose concentration observed in INRA96 after 24 h of storage (25.57 mmol) was higher than in native medium (17.86 mmol). This study shows that this human semen extender doesn't support equine semen preservation. Sperm cells' glucose consumption and lactate production seem to be negligible, as these parameters were not affected by sperm concentrations in our study. Our results suggest that spermatozoa are able to cleave complex carbohydrates as glucose concentration in INRA96 increased over time.

OC 7.4

Assessment of the respiratory activity in equine sperm

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The intensity of energy metabolism is a very important criterion to assess sperm quality. ATP consumed during movement of sperm is kept constant by glycolysis and respiration. Respiration is more important than glycolysis in equine sperm. The aim of this work was to study respiratory activity of equine sperm. Sperm samples from 30 stallions was frozen. Respiration was assessed by the polarographic method. Respiration rate of fresh sperm was 291 ± 60.4 nAO2/min which is similar to the rate of respiration of bovine and porcine semen. We detected an increase of respiration (in 1.2 ± 0.06 times) after addition of potassium succinate, which illustrates a little damage in membrane permeability. After freezing, we observed a greater increase in respiratory stimulation by succinate (1.7 ± 0.09), indicating further damage of the membranes. Further, we studied conjugation respiration and phosphorylation, which was evaluated by the reaction of respiration on adding 2,4-dinitrophenol (2,4-DNP). In fresh semen, respiratory stimulation by 2,4-DNP was 1.8 ± 0.14, indicating a good pairing respiration and phosphorylation. After thawing we observed a decrease in respiratory stimulation by 2,4-DNP (1.5 ± 0.11), which

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