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Effects of different refrigeration rates and temperature of glycerol addition on post-thaw quality in goat sperm obtained by two collection methods

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We have studied the effects of refrigeration rate from 30 to 5°C (fast: 10 min vs. slow: 90 min) and temperature of glycerol addition (30 vs. 5°C) on thawed sperm from samples obtained by artificial vagina (AV) and electroejaculation (EE). After collection by AV and EE, ejaculates were diluted with Fraction A of Biladyl® and split in four aliquots. For two of them, Fraction B of Biladyl® (glycerolated fraction) was added at 30°C and then cooled to 5°C using both fast and slow refrigeration rates. The other two aliquots were also cooled to 5°C using the same refrigeration rates, and then Fraction B was added. Aliquots were maintained at 5°C for 2 h more and frozen in nitrogen vapors. At thawing, our results showed higher values in samples obtained by AV for subjective motility (SM; 47 vs. 40%), but not for acrosome integrity (NAR) and viability assessed by flow cytometry. In both recovery methods, SM was significantly higher when we used slow refrigeration rates (VA: 50 vs. 44%; EE: 46 vs. 35%) irrespective to temperature at which glycerol was added. For the AV method, viability resulted significantly lower (29%) when fast refrigeration was used and glycerol was added at 5°C. In conclusion, we suggest the use of slow refrigeration rates irrespective to collection method used, being better adding the glycerol at 30°C when sperm samples are obtained by AV.

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Potential alternatives to traditional cryoprotectants for goat sperm cryopreservation

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In an attempt to improve goat sperm cryopreservation, we studied different strategies employing diluents free from additives of animal origin as egg yolk and developing chemically defined semen extenders. In addition, as glycerol is potentially cytotoxic, our aim was also to test the efficiency of trehalose as an alternative. Therefore, this experiment was designed to assess the effect of the inclusion of 0.6 mM of butylated hydroxytoluene (BHT) or 1% (w/v) soybean lecithin or 15% (v/v) powered egg yolk supplemented with 5% glycerol or 100 mM of trehalose in a Tris-based medium for cryopreservation. Briefly, fresh ejaculates from 6 Blanca de Rasquera bucks (1 year old) were collected by an artificial vagina and immediately mixed. Spermatozoa were washed by centrifugation, and then the pellet was split into six equal aliquots and resuspended in the different extenders before freezing. Sperm cryosurvival after thawing was determined by motility using a computer-assisted sperm analysis and viability by eosine-nigrosine stain. Even the present results are still preliminary, no significant differences were observed between the egg yolk and soybean lecithin based media supplemented with 5% glycerol or trehalose in terms of postthaw sperm viability, meanwhile the worse results were observed when the spermatozoa were preserved in BHT based media ($p < 0.05$). These results suggest that lecithin and trehalose can be used as substitutes for egg yolk or glycerol, respectively. However, more analysis should be made, as some motility parameters seem to be different between the studied extenders.

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Effect of different extenders on caprine semen conservation at 4°C

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The assay aims to find extenders able to keep the best motility of fresh goat semen. Seven extenders, INRA 96®, OviXcell® and bioXcell® from IMV technology, Triladyl®, AndroMed® and OviPro® from MiniTüb and Ovidil, result of researches carried out by the University of Namur, were compared. Ejaculates were collected by artificial vagina from four adult bucks, split into seven aliquots, diluted at a final concentration of 6×10^8 spermatozoa/ml in each extender and progressively cooled to 4°C. At 0, 4, 8, 12, 24, 48 and 72 h after dilution, the pH was recorded, the ratio of live sperm analyzed by specific staining and the mass motility estimated after 1 min of heating at 30°C on the microscope stage using a classical 0–5 scale. The pH remained stable between 5.9 (INRA 96) and 6.3 (Ovipro) for all extender except for Ovidil where the pH decreased gradually from 7.1 to 6.7. At the end of the assay, higher sperm survival was observed with Ovidil (80%) and OviPro® (73%), it was medium with Triladyl® (52%) and INRA 96® (42%) and lower with the other extenders. A mass motility of diluted semen, 72 h after collection, was maintained in Ovidil, OviPro, Triladyl and INRA 96, with respective average values of 2.1, 1.6, 1.4 and 1.1, whereas in the other diluents, motility was only individual. In conclusion, Ovidil, OviPro®, Triladyl® and INRA 96® allow a better conservation of goat semen at 4°C. These results have to be confirmed by artificial inseminations using these four extenders.

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Effect of non-genetic factors on kidding interval, age at first birth and prolificacy of Florida goats

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The reproductive management in goats has advanced in recent years. However, there are no well known factors related to reproductive rate. To determine the effect of factors on the age at first birth (AFB) (n = 12,838), prolificacy (P) (n = 39,641) and kidding interval (KI) (n = 41,455) in Florida goats, data from 2003 to 2010 were analyzed. An analysis of variance using a lineal additive model of restricted maximum likelihood was developed; this included fixed effects for KI and P: exploitation system (S: stabled, semi-stabled), year of birth (YB: 2003–2010), season of birth (SB), birth number (BN: 1 to ≥5), type of birth (TB: simple, multiple) and their interactions. To AFB were considered the fixed effects: S, YB, SB and their interactions. All