

Effect of ascorbic acid concentrations, methods of cooling and freezing on boer goat semen cryopreservation.

ABSTRACT

To improve the Boer goat semen quality during cryopreservation process, three experiments were carried out to investigate the effect of (i) different concentration of ascorbic acid supplementation (ii) rate of cooling with chilled semen characteristics and (iii) method of freezing on post-thaw Boer goat sperm using Tris-based extender. Ascorbic acid at 8.5mg/ml improved the sperm parameters (motility, integrity of membrane and acrosome, morphology and viability), compared to control in cooled samples ($p < 0.05$). With regard to other concentrations and post-thawed parameters, ascorbic acid at 2.5-8.5mg/ml led to higher percentages of sperm motility and integrities of membrane and acrosome when compared to control ($p < 0.05$). Slow cooling rises to higher percentages of sperm motility, acrosome integrity and viability, in comparison with fast cooling, in terms of cooled and frozen samples ($p < 0.05$). Programmable freezing method produced the higher percentages of sperm motility, integrities of membrane and acrosome and viability when compared to the freezing method of polystyrene box during goat sperm freezing ($p < 0.05$). In conclusion, chilled and post-thawed sperm quality of Boer goat was improved when a Tris-based extender supplemented with ascorbic acid was used at stages of different cooling rates and freezing methods. © 2012 Blackwell Verlag GmbH.

Keyword: Cryopreservation; Cell membrane; Cryoprotective agents; Freezing; Boer; Goats; Male; Semen preservation; Spermatozoa.