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Effects of Adding Sodium Nitroprusside in Semen Diluents on Motility, Viability and Lipid Peroxidation of Sperm of Holstein Bulls

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Abstract : We know that nitric oxide (NO) plays an important role in all sexual activities of animals. It is made in body from NO synthase enzyme and L-arginin molecule. NO can bound with sulfur-iron complexes and because production of steroid sexual hormones is related to enzymes which have this complex, NO can change the activity of these enzymes. NO affects many cells including endothelial cells of veins, macrophages and mast cells. These cells are found in testis leydig cells and therefore are important source of NO in testis tissue. Minimizing damages to sperm at the time of sperm freezing and thawing is really important. The goal of this study was to determine the function of NO before freezing and its effects on quality and viability of sperms after thawing and incubation. 4 Holstein bulls were selected from the age of 4, and artificial insemination was done for 3 weeks (2 times a week). Treatments were 0, 10, 50 and 100 nm of sodium nitroprusside (SNP). Data analysis was performed by SAS98 program. Also, mean comparison was done using Duncan's multiple ranges test ($P<0.05$). Concentrations used was found to increase motility and viability of spermatozoa at 1, 2 and 3 hours after thawing significantly ($P<0.05$), but there was no significant difference at zero time. SNP levels reduced the amount of lipid peroxidation in sperm membrane, increased acrosome health and improved sample membranes especially in 50 and 100 nm treatments. According to results, adding SNP to semen diluents increases motility and viability of spermatozoa. Also, it reduces lipid peroxidation in sperm membrane and improves sperm function.

Keywords : sperm motility, nitric oxide, lipid peroxidation, spermatozoa
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