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In vitro effect of sodium arsenite and ferrous ascorbate on ram epididymal spermatozoa

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ABSTRACT

The present study was aimed to evaluate and compare the adverse effects of Sodium arsenite (SA) and ferrous ascorbate (FeAA) on the ram epididymal spermatozoa. A total of 24 testicles from slaughtered adult healthy rams of 2 to 3 years of age were collected. Testicle processing by incision method was applied to recover the spermatozoa from the cauda epididymis. The spermatozoa were suspended in tris based extender and equally divided into three treatment groups, viz. Control (sperm sample), T1 (sperm sample +10 µM sodium arsenite) and T2 [sperm sample +FeAA (150 µM ferrous sulphate + 750 µM ascorbic acid)]. The sperm quality was determined with respect to percentage of sperm motility, live sperm count, intact acrosome and hypo-osmotic swelling test (HOST), at incubation time of 0, 2 and 6 hours. The per cent motility was same for all the control and treatment groups at 0 hour. However, at 2 and 6 hours, T2 maintained significantly lower ($p < 0.05$) sperm motility than control but non-significantly higher motility ($p > 0.05$) than T1. The per cent live sperm count, intact acrosome and HOST reacted spermatozoa were significantly higher ($p<0.05$) for control than all other treatment groups at 2 and 6 hours of incubation. Among treatment groups, T2 maintained non-significantly lower ($p>0.05$) percentage of live sperm count, intact acrosome and HOST than T1 but significantly lower ($p < 0.05$) than the control. In conclusion, both SA and FeAA induced sperm damage under in vitro condition and hence, they may be used for future experimentation for fertility/ infertility trials.

Keywords: Ram, Spermatozoa, Sodium arsenite, ferrous ascorbate