IRIS AperTO

UNIVERSITÀ DEGLI STUDI DI TORINO

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Effect of EGF on viability of cryopreserved beef bull semen

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Different concentration of Epidermal Growth Factor (EGF): 0 (control) 50, 100, 200 and 400 ng/mL, before cryopreservation was used to improve the vitality of diluted bull semen. Semen was collected weekly for 8 weeks from 4 Piedmontese beef bulls, pooled and extended with Bullxcell extender. After dilution, semen was cooled, equilibrated and finally frozen in the liquid nitrogen. After thawing at 37°C for 40 s, semen was assessed for sperm motility and velocity parameters with CASA after 0, 1, 2, 3 and 4h of incubation at 37°C; in addition to sperm vitality, acrosome, plasma membrane and DNA integrities, apoptosis, mitochondrial membrane potential, mucus penetration distance and superoxide dismutase activity, were performed. The data were analyzed as mean ± SEM with ANOVA. Duncan test was used for multiple comparisons and Pearson correlations for different parameters correlations. P value was set at <0.05 to define statistical significance. EGF significantly ($p<0.05$, $p<0.01$) improved the total sperm motility after 0, 1,3 and 4 h incubation mainly with the concentrations 100 and 200 ng/mL. The progressive motility after 1 and 2h and the rapid motility after 1, 2 and 3h of incubation ($p<0.01$) mainly with the concentration 200 ng/mL were improved. The EGF significantly ($p<0.05$, $p<0.05$) improve the different velocity parameters after the different incubation periods mainly with the concentrations 100, 200 and 400 ng/mL. EGF significantly improved the sperm vitality ($p<0.01$) and decreased sperm apoptosis ($p<0.05$) with the concentrations 100, 200 and 400 ng/mL without affecting acrosome, plasma membrane and DNA integrities. In conclusions, incorporation of EGF especially at concentrations 100 and 200 ng/mL could improve the vitality parameters of cryopreserved bull semen.