

Effects of selection by the Percoll density gradient method on motility, mitochondrial membrane potential and fertility in a subpopulation of Atlantic salmon (*Salmo salar*) testicular spermatozoa

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Abstract

The aim of this study was to evaluate effects of selection using the Percoll density gradient method on motility, mitochondrial membrane potential (Delta Psi Mit) and fertility in a subpopulation of testicular spermatozoa obtained from Atlantic salmon (*Salmo salar*). Samples were divided into three groups: Control (C), T1 (45/90 % Percoll (R)) and T2 (45/60 % Percoll (R)). Sperm motility was evaluated using CASA (Computer-Assisted Sperm Analysis), Delta Psi Mit using flow cytometry, and fertility evaluating whether cleavage of fertilised eggs had occurred after 16 h of incubation at 10 degrees C. Results indicate that motility was greater in T1 (92 +/- 2.91 %) and T2 (89 +/- 2.88 %) than in the Control (83.2 +/- 2.04 %). The percentage of Delta Psi Mit was 88.3 +/- 0.58 % and 85 +/- 2% for T1 and T2, respectively, compared to 35 +/- 6.24 % for the control. The fertility rates were 76 +/- 9.1 % and 70 +/- 8.1 % for T1 and T2, respectively, compared with 66 +/- 12 % for the control. The kinetic characteristics for T1 were curvilinear velocity (VCL): 92.44 +/- 21.12 mu m/s, average path velocity (VAP): 85.87 +/- 21.83 mu m/s; and for T2 VCL was 78.69 +/- 17.63 mu m/s and VAP was 73.62 +/- 17.08 mu m/s. The results indicate sperm motility and Delta Psi Mit were greater in T1 and T2 compared with the control (P < 0.05). Similarly, there was an increase in the fertilisation rate compared to the control. The results from this study are the first where sperm quality variables were evaluated for *Salmo salar* testicular sperm using the Percoll (R) density gradient method.

Keywords

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