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Computer assisted semen analysis for cortisol antagonist induced sperm motility in *Anarhichas minor* (spotted wolfish)

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A major constraint in the culture of Spotted Wolfish (*Anarhichas minor*) is low sperm count and motility in captive conditions, where they are known to produce high plasma levels of cortisol. Synthetic cortisol antagonist (RU486) was tested to increase the motility of sperms in order to increase the fertilization rate. An experiment was conducted in completely randomised design with control (without RU486) and treatment (intramuscular injection of RU486 dissolved in propylene glycol via dorsal musculature), with 10 replicates. Control and treatment groups were held in rectangular tanks with seawater (32-34 ‰ salinity) of 90 % O_2 saturation in the outlet water. Fish were kept at ambient temperature and natural photoperiod (Tromso, Norway – 70 °N 19 °E), and were fed in excess with pellet food. At the end of the experiment, all fish were stripped and computer assisted semen analysis was performed to asses the influence of RU486 on sperm motility. Straight line velocity (VSL), average path velocity (VAP), beat cross frequency (BCF), curvilinear velocity (VCL) and percentage motility of sperm cells were the most sensitive indicators of movement. Increased plasma levels of RU486 significantly ($p<0.05$) increased the BCF (8.5 ± 1.71 cycles/s), VCL (47.7 ± 4.6 μm/s), VSL (16.5 ± 4.40 μm/s), VAP (22.1 ± 5.15 μm/s) and the percentage motility (49.1 ± 6.75 %) in treated group compared to respective controls (4.5±1.35 cycles/s, 39.8 ± 6.01 μm/s, 9.5 ± 1.58 μm/s, 16.6 ± 3.63 μm/s, and 40.9 ± 4.93 %). There were large differences between the VCL (~45 μm/s) and the VSL (~12 μm/s). This is in contrast to the smooth curve of the trajectory of sperm of most fish species in which the VSL and VCL are similar. Results of the present study indicate that RU486 significantly increases all aspects of sperm motility and could be used to increase the fertilization rate in wolfish.

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