ANTIOXIDANT AND PUFA SUPPLEMENTED DIET IMPROVES FERTILIZATION SUCCESS OF CRYOPRESERVED SPERM

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Sperm presents a natural powerful antioxidant system that can be unbalanced by an inadequate diet. This unbalance can reduce the antioxidant spermatozoa status impairing sperm functionality in terms of motility, viability and fertility and may influence the cryopreservation potential of samples. Therefore in the present study we evaluated the effect of an antioxidant supplemented diet on the quality of Dicentrarchus labrax sperm, cryoresistance and fertilizing ability.

Material and Methods: Two broodstocks were maintained under the same photoperiod and temperature conditions. Males in each tank (n=22) were fed 2% BW/day with Diet 1- CTRL and Diet 2- EXP (SPAROS, SA). EXP diet had a supplementation of 700% Vit.E and 150% Se, regarding CTRL. Sperm samples from both treatments were collected using abdominal massage. Sperm motility was determined using CASA software (Cabrita et al. 2011), recording total motility, velocity (VCL) and linearity. Cell viability was performed using IP/SYBR-14 stain. Sperm was cryopreserved using the NAM extender (Fauvel et al. 1998) + 10% DMSO. In addition, sperm from CTRL was also artificially supplemented in the extender with (0.25mM Vit.E, 5mM Vit.C, 0.25 mM DHA and 12mM Se). Post-thaw sperm quality was analyzed as described before. Fertility tests were performed with eggs from the same female (3g per batch) per triplicate. Hatching rates were recorded both in fresh and cryopreserved samples.

Results and Discussion: In fresh sperm, motility and viability were similar in both broodstocks, showing no significant improvement of supplements introduced in diet. After cryopreservation, sperm velocity (VCL) was significantly improved by the extender supplementation but not by diet. Hatching rates were lower when CTRL cryopreserved sperm was used, however EXP males produced hatching rates similar in fresh and frozen samples. Our results indicate an improvement of sperm cryoresistance that should be further investigated.

References: