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Protein profile of seminal plasma and functionality of spermatozoa during the reproductive season in common carp *Cyprinus carpio* and rainbow trout *Oncorhynchus mykiss*

Anna Shaliutina-Kolesova, Kotas P, Sterba J, Rodina M, Cosson J and Linhart O
University of South Bohemia České Budějovice, Czech Republic

The purpose of the study was to analyze seminal plasma composition, sperm production and sperm motility rate over the course of the spawning season in rainbow trout *Oncorhynchus mykiss* and common carp *Cyprinus carpio*. The highest mean percent of motile sperm cells (carp $98.3 \pm 1.64\%$ and rainbow trout $92.75 \pm 5.55\%$) was observed in the mid-phase of the spawning period at 5 s post-activation. Sperm volume and spermatozoon concentration increased in the early spawning period, then decreased significantly towards the end of the season in both species. Seminal plasma osmolality was 262-270 mOsmol kg⁻¹ in carp and 232-248 mOsmol kg⁻¹ in rainbow trout with little variation over the spawning period. Protein concentration in carp seminal plasma was stable throughout the reproductive season while in rainbow trout the highest protein level (2.14 ± 0.28 mg mL⁻¹) was observed in the mid-phase of the spawning period. Seminal plasma composition in both species was analyzed using 2D-PAGE combined with MALDI-TOF/TOF MS. 16 differentially expressed protein spots in rainbow trout seminal plasma and 13 protein spots in carp seminal plasma were observed to vary over the course of the reproductive season. The unique proteins identified are involved in the regulation of spermatogenesis, sperm motility, maintenance of sperm membrane lipid stability and antioxidant protection. These results provide further understanding of the role of fish seminal plasma proteins present in the reproductive tract as well as for the identification of novel markers of sperm quality.

Biography

Anna Shaliutina-Kolesova has completed her PhD from the University of South Bohemia in České Budějovice, Faculty of Fisheries and Protection of Waters. She is a Scientific Researcher. She has published more than 20 papers in reputed journals.

annucha1987@gmail.com

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