

JOINT EVENT

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Study of the potential use of antifreeze proteins of *Deschampsia antarctica* in the cryopreservation of *Salmo salar* spermatozoa**Short S, Farías J G, Díaz R and Bravo L A**
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Cryopreservation allows to preserve genetic resources in aquatic species, such as Atlantic salmon (*Salmo salar*). However, freezing may cause cell damage affecting the sperm quality. New procedures including antifreeze proteins (AFPs) seem to improve sperm quality after cryopreservation. AFPs have the ability to bind to ice crystals inhibiting their growth, and ice recrystallization (IRI) *in vitro*. *Deschampsia antarctica* is a freezing tolerant vascular plant species (LT50 -27°C) exhibiting apoplastic antifreeze activity. We hypothesize that AFPs from *D. antarctica* favor the sperm quality of cryopreserved *S. salar* spermatozoa. The aim of this work is to evaluate cryoprotection of AFPs from *D. antarctica* in *S. salar* spermatozoa. Cryopreservation of *S. salar* spermatozoa has been made with a standard freezing medium (C⁺) and different treatments with protein extracts (20 µg/ml) of *D. antarctica* supplemented with permeating, DMSO 1.3 M, glucose 0.3 M, and non-permeating, BSA 2% w/v cryoprotectants. Post-thawing plasma membrane integrity (PMI) by SYBR-14/PI and mitochondrial membrane potential (MMP) by JC-1 markers were assessed using flow cytometry. Thawed cells in the presence of protein extracts from *D. antarctica* without BSA maintained PMI as well as C⁺ and showed significant differences respect to the other treatments. The percentage of cells thawed with protein extracts of *D. antarctica* and with cryoprotectants showed higher MMP than C⁺. While, treatments without permeating and non-permeating cryoprotectants maintained a similar MMP to C⁺. AFPs from *D. antarctica* showed a cryoprotective effect in *S. salar* spermatozoa and these would act as non-permeating cryoprotectant, replacing BSA in standard freezing medium.

Biography

Short S completed her Biotechnology Engineering at Universidad de La Frontera and started her Doctoral studies in Applied Cellular and Molecular Biology at the Universidad de La Frontera. She is currently TA of Enzymology, Protein Structure and Immunology at the same institution. She has published five articles in reputed journals.

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