Boar Sperm Function following Freezing-Thawing Process

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Purpose: The present study was designed to determine damage induced by cooling (5°C) and freezing-thawing procedure and to evaluate sperm damage using flow cytometry in boar semen.
Materials and Methods: Eight mature boars were used in this study, and semen was cooled to 5°C and cryopreserved. After cooling and freezing-thawing, sperm plasma membrane integrity (CFDA/PI), acrosomal membrane integrity (PNA/PI), mitochondrial membrane function (R123/PI) and ROS levels (HE/Yo-Pro and DCF/PI) were evaluated for comparison with extended semen.
Results: Cooling and freezing-thawing process showed decrease in plasma membrane integrity and increase in acrosomal membrane activity while mitochondrial membrane activity was not changed in these processes compared with control. Freezing-thawing process decreased intracellular superoxide significantly but did not affect hydrogen peroxide.
Conclusion: The cooling and freezing-thawing procedure significantly may affect membrane integrity and ROS levels. It is therefore recommended that these parameters be used as an additional parameter for the assessment of sperm quality after freeze-thawing in boar semen.

Key words: cooling, freezing-thawing, membrane integrity, ROS levels

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