SP in boar sperm freezing, how relevant is it?

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Boar sperm cryopreservation has been extensively improved in recent decades. However, post-thaw sperm quality and functionality and consequent fertility are still now unsatisfactory compared with liquid stored semen. Recently, seminal plasma (SP) has arose the attention in sperm cryopreservation for its important physiological role during ejaculation, preservation and subsequent survival of sperm in female reproductive tract [1]. Beneficial and detrimental effects of SP on sperm cryopreservation were both observed through application of SP before freezing or post thawing [2-4]. When considered in freezing stage, results showed that best post-thaw sperm quality and functionality were found in sperm from sperm rich ejaculate fraction (SRF), while inferior results were found in those from entire ejaculate, where SP from post-SRF is majority [5]. Accordingly, it was proposed that SP from post-SRF might have a detrimental effect on boar sperm cryopreservation. To confirm that, in this study boar ejaculates were collected in portions (the first 10 ml of SRF, the rest of SRF and the post-SRF) with a hand-gloved method. Immediately, fractionated semen was centrifuged to separate sperm and SP. Sperm from the first 10 ml of SRF and the rest of SRF were then respectively incubated with its own SP or SP from post-SRF. Samples were conserved 24 h at 17ºC before freezing. Post-thaw sperm quality (motility and viability) and functionality (intracellular ROS generation, plasma membrane fluidity, membrane lipid peroxidation and early apoptosis) were evaluated. In addition, differences in sperm protein composition, particularly of plasma membrane, between sperm from different ejaculate portions were also evaluated in order to determine possible interaction between sperm and SP during ejaculation, taking sperm from epididymis as control.

References

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