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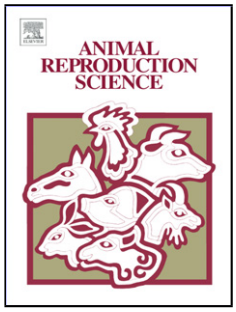

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PII: S0378-4320(17)31045-X
DOI: https://doi.org/10.1016/j.anireprosci.2018.02.011
Reference: ANIREP 5767

To appear in: *Animal Reproduction Science*

Received date: 19-12-2017
Revised date: 28-1-2018
Accepted date: 13-2-2018

Please cite this article as: Wang S, Sun M, Wang N, Yang K, Guo H, Wang J, Zhang Y, Yue S, Zhou J, Effects of L-Glutamine on boar sperm quality during liquid storage at 17°C, *Animal Reproduction Science* (2010), https://doi.org/10.1016/j.anireprosci.2018.02.011

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Effects of L-Glutamine on boar sperm quality during liquid storage at 17°C

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ABSTRACT

The quality of boar spermatozoa is affected by oxidative stress during preservation *in vitro*. It has been demonstrated that L-Glutamine (Gln) can effectively protect cells from oxidative stress-induced injury. There are, however, no reports to date evaluating the effects of Gln on boar semen liquid preservation at 17°C. The aims of the present study were to elucidate whether the addition of Gln to the extender BTS could improve the quality of boar spermatozoa when stored at 17°C and to determine the mechanism underlying Gln protection of spermatozoa against preservation-induced damage. Boar semen samples were collected and diluted with Beltsville Thawing Solution (BTS) containing different concentrations (0, 10, 20, 40 or 80 mM) of Gln. The results indicated the addition of 20 mM Gln to the BTS improved ($P < 0.05$) the motility, acrosome integrity and membrane integrity of boar sperm during liquid preservation. Interestingly, treatment of spermatozoa with Gln addition to the extender resulted in ROS quenching, while enhancing γ-glutamyl cysteine synthetase (γ-GCS) activity, and glutathione (GSH) content of spermatozoa. These results suggest that BTS supplemented with Gln can provide greater protective capacity to boar sperm against oxidative stress by enhancing GSH synthesis during liquid preservation.

Keywords: L-Glutamine; Boar semen; Liquid preservation; Reactive oxygen species

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