

New protectants and antioxidants in cryopreservation of boar semen – preliminary results of the studies

Summary

Despite intensive research to develop an effective cryopreservation method, the use of frozen boar semen is very limited in practice and accounts for less than 1% of all inseminations. Boar spermatozoa are more sensitive to freezing compared to the sperm of other farm animals. The semen preservation procedure largely disturbs the endogenous antioxidant system, which is counteracted by some antioxidant extender components. Another issue in the improvement of boar semen cryopreservation technique is the introduction into the extender of the components that protect sperm plasma membranes against cryogenic damage. Research was conducted at the Department of Animal Reproduction Biotechnology of the National Research Institute of Animal Production to modify the composition of freezing extender by supplementing it with a mixture of vegetable protein and/or soybean lecithin (Pp) as well as antioxidants L-glutathione, butylated hydroxytoluene (BHT), and catalase. This study, involving 54 ejaculates, showed that following the freezing-thawing procedure, the highest percentage of progressively motile sperm and the highest percentage of live sperm and sperm with high mitochondrial potential were observed for the extender supplemented with BHT. The lowest percentage of apoptotic spermatozoa was identified in the extender supplemented with vegetable proteins and soybean lecithin (Pp) (0.0005 g/ml). Statistically significant differences ($P < 0.05$) were found for the percentage of individual sperm subpopulations between different extender variants. The present study shows that cryopreservation procedure does not induce DNA fragmentation in boar spermatozoa.

KEY WORDS: boars, semen quality, cryopreservation, antioxidants, apoptotic markers