

## **Effect of antioxidants on biological value of boar semen stored at above-freezing temperatures**

### **Summary**

Pig insemination mostly makes use of liquid preserved semen, because long-term efforts to develop an efficient and simple method for freezing boar semen has still not produced satisfactory results. Considering the problems in developing an efficient method for semen cryoconservation and the need for long-term storage of semen, attempts have been made to develop an extender allowing boar semen to be stored at 15-17°C for at least 5 days without lowering fertilizing capacity of the spermatozoa. This article presents the results of research on the effect of different antioxidants (L-glutathione, butylated hydroxytoluene, catalase, and peroxide dismutase) added to extenders allowing liquid preservation of semen on improving storage time and semen quality. In our experiments, in addition to evaluation of semen that included semen concentration, motility and morphological assessment, we used an additional evaluation method in which apoptotic changes were detected using YO-PRO-1 fluorochrome and staining with annexin V labelled with fluorescein, and mitochondrial transmembrane potential ( $\Delta\Psi$ ) was measured using JC-1 stain. The semen of 6 boars (5 ejaculates per boar) were extended with Biosolwens Plus (control), Biosolwens Plus supplemented with 0.12 g L-glutathione, Biosolwens Plus supplemented with 0.04 g BHT (butylated hydroxytoluene), and Biosolwens Plus supplemented with 0.01 g catalase and 0.0064 g peroxide dismutase. The extenders were stored at 15-17°C and motility was evaluated daily until the day on which sperm motility decreased to 30%. Our study shows that adding 0.04 g of butylated hydroxytoluene to Biosolwens Plus extends semen storage by 2.7 days, during which time it maintains a motility of 30%, and decreases the percentage of apoptotic and early apoptotic spermatozoa compared to control.

**KEY WORDS: boars, semen quality, antioxidants**