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Comparison of two vitrification methods for cryopreservation of porcine embryos

Říha J., J. Vejnar

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[fulltext]

The aim of this study was to compare two vitrification methods of porcine perihatching blastocysts with regard to the success of transfer of these embryos to the recipients. Expanded, hatching, or hatched blastocysts were recovered post mortem from superovulated donors in 5.5 to 6.0 days after artificial insemination of donor gilts with homospermic doses. In protocol VS I, the embryos in perihatching developmental stage were equilibrated in a culture medium H-MEMD with 10% v/v of glycerol (1.37M solution of glycerol in medium) for 10 min and placed in a vitrification medium for 1.5 min max. (vitrification medium contained 50% v/v 2M sucrose in tridistilled water, 30% v/v of glycerol, and 20% v/v of foetal calf serum – FCS). Then they were dropped with micropipette and stored in liquid nitrogen vapour. For protocol VS II, we used H-MEMD culture medium supplemented with 20% v/v of FCS, 25% v/v ethylene glycol, and 25% v/v dimethyl sulphoxide (DMSO). Embryos were equilibrated for 10 min in a mixture of the vitrification medium and culture medium (1 : 1), and were kept in the vitrification

medium for 1.5 minutes. Then they were dropped with micropipette and stored in liquid nitrogen vapour. Embryos were thawed by immersing the drop with the embryo in H-MEMD culture medium with 0.8M sucrose for 10 minutes. After thawing and washing in the medium with sucrose, all embryos were washed three times in a fresh medium and prepared for transfer. Recipients were synchronized either using Regumate-feeding followed by treatment with PMSG and HCG (gilts) or using piglet weaning (sows – 1st and 2nd parity). Recipients showing standing heat at the time of donor insemination were used for laparoscopic and non-surgical ET on day 5.5–6.0 of the cycle. The fraction of viable embryo vitrified under VS I or VS II protocol was 85% and 80%, compared to 95% in control fresh embryos ($P > 0.05$). Pregnancy of recipients was 57.3% (5/7), 67.0% (4/6) for VS I or VS II group and 42.7% (10/23) for control ($P < 0.001$). We can conclude on the basis of our data that both protocols for vitrification yielded similar results and can be used for cryopreservation of porcine embryos.

Keywords:

pig; embryo; transfer; cryopreservation; vitrification; recipient; gilt; sow; natality

[fulltext]