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Effect of Warming Temperature on the Viability of Bovine IVP Blastocyst Cryopreserved by Glass Micropipette (GMP) Vitrification

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The purpose of this study was to investigate the warming temperature and exposed time on the post-thaw survival rate and viability of bovine blastocyst cryopreserved by GMP vitrification. Groups of three bovine IVP blastocysts were sequentially placed into vitrification solution before being loaded into the GMP straws and immersed into LN_2 within 20 to 25 sec. The warming rate was increased 2 times of warming temperature for improvement of post-thaw survival rates. The frozen embryos were warmed either at 35 or 70℃ for 1 or 2 sec and then diluted in sucrose solution. Post-thaw blastocysts were serially washed in 0.25 and 0.15 M sucrose in holding medium (HM: TCM199 supplemented with 10% FCS) and TCM-199 for each 5 min, respectively, and then cultured in TCM199 for 24 h. The rate of re-expanded blastocyst was significantly different for 35 and 70℃ warming temperature (76.4 vs. 89.3%; $P<0.05$). The rate of re-expanded blastocyst at 70℃ for 1 sec was significantly higher than that for 2 sec (91.1 vs. 70.9%; $P<0.05$). The number of nuclei counted were significantly different among control, 35 and 70℃ (121 ± 8.5 vs. 104 ± 11.7 vs. 114 ± 10.3; $P<0.05$).

These results indicated that the increasing of warming rate can provide high survival rates of bovine IVP blastocysts. Especially, the best viability of post-thaw blastocyst could be thaw at 70℃ for 1 sec. The warming temperature and exposed time for warming was considered to be limiting factors to the viability of bovine IVP embryos. he purpose of this study was to investigate the warming temperature and expose.

Key words) ***Thawing temperature, Bovine, Blastocyst, Glass micropipette***