O-13 Systems for Production of Calves from Hanwoo (Korean Cattle) IVM/IVF/IVC Blastocyst

II. Simple, Efficient and Successful Vitrification of Hanwoo Blastocyst

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This study demonstrates that higher survival of vitrified-warmed bovine IVM/IVF/IVC blastocysts can be obtained using electron microscope (EM) grid as an embryo container at freezing, rather than plastic straw. In vitro produced day 7 bovine blastocysts after IVF were vitrified with EFS40 freezing solution, which is consisted of 40% ethylene glycol, 18% ficoll, 0.3 M sucrose and 10% FBS added m-DPBS and their post-survival after thawing was compared when two types of embryo containers (EM grid and straw) were used at freezing. Embryo survival in vitro was assessed as re-expanded and hatched rates at 24 hr and 48 hr after thawing, respectively. When the effect of exposure in vitrification solution and chilling injury from the freezing procedure on in vitro produced expanded blastocysts were examined, embryo survival in the exposure group (100.0, 73.3%) was not different compared with that in the control group (100.0, 84.4%). After vitrification, the hatched rate of the EM grid group (67.8%) at 48 hr after thawing was significanlty higher than that of the straw group (53.3%) ($p<0.05$). Fast developed embryos (expanded blastocyst and early hatching blastocyst stage) were indicated the better resistance to freezing than delayed one (early blastocyst stage), irrespective of embryo containers (early; 57.1 and 24.4%, expanded; 84.7 and 60.6%, early hatching; 91.7 and 80.0%) ($p<0.001$). Especially, in expanded and early hatching blastocysts, embryo survival of the vitrification-EM grid group (67.8, 95.0%) was significantly higher than that of the vitrification-straw group (53.0, 65.0%) at 48 hr post thawing, respectively ($p<0.05$, $p<0.001$). Therefore, this study presents the usability of EM grid as an advanced freezing technology for the simple, efficient, successful vitrification of bovine IVM/IVF/IVC blastocysts.

O-14 Advanced Culture System of Human Primordial Germ Cell on the Feeder Cell Secreting Murine Recombinant LIF

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Embryonic germ (EG) cells as like embryonic stem (ES) cells have the ability to remain undifferentiated and proliferate indefinitely *in vitro* while maintaining the potential to differentiate into derivates of all three embryonic germ layers. EG cells have several morphological characteri-