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EFFICACY OF USING *IN VITRO*-PRODUCED CATTLE EMBRYOS TO DEVELOP AN EQUINE EMBRYO CRYOPRESERVATION SYSTEM.

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Unfortunately, there is no reliable *in vitro* system available to provide a routine and economical source of equine embryos for research and commercial use. We explore the use of standard *in vitro*-produced (IVP) cattle embryos for the development of a direct transfer (dt) equine embryo cryopreservation system. Ovaries were collected from mature females at an abattoir and transported to our laboratory. Cumulus–oocyte complexes (COC) were aspirated from 2- to 6-mm follicles with an 18-gauge needle fixed to a vacuum pump system. Only COC surrounded by 2 or more layers of compact cumulus investment and containing oocytes of equal size were placed into a commercial TCM-199–based IVM system (Minitube of America Inc., Verona, WI). After 22 h of IVM, mature COC were placed into standard IVF. Prospective embryos were cultured for 120 h in CR-1/BSA (Minitube of America Inc.), and then supplemented with 10% fetal bovine serum (FBS) and cultured for an additional 48 h. Only excellent to good morula-blastocyst stage IVP cattle embryos were used in this study. As a control, the Colorado State University equine embryo dt-vitrification system (CSU; Carnevale EM Vet. Clin. North Am. Equine Pract **22**, 831–841) was used on IVP cattle blastocysts. Two different Minitube EquiPRO-based dt-media with either 10% FBS or Minitube BSA-V (Fraction-V; Minitube of America Inc.) were tested on IVP cattle embryos. Minitube BSA-V is highly defined and internationally compliant BSA approved for use in raw form or in culture medium in the United States and European Union. Of 103 IVP cattle embryos cryopreserved by the CSU method, 45 (43.7%) embryos were viable after 24 h of culture. Of 121 IVP cattle embryos cryopreserved with Minitube EquiPRO + 10% FBS, 52 (42.9%) embryos were viable after 24 h of culture. Of 90 IVP cattle embryos cryopreserved with Minitube EquiPRO + BSA-V, 40 (44.4%) embryos were viable after 24 h of culture. Minitube EquiPRO + BSA-V was used with *in vivo*-produced equine morulae (no capsule). A total of 9 mares were flushed on Day 6.5, and 8 excellent to good morulae were recovered. All 8 embryos were dt-vitrified in the Minitube EquiPRO + BSA-V system. All 8 embryos were later warmed and transferred to synchronous recipient mares. On Day 14 of presumptive pregnancy, 7 (87.5%) mares were confirmed pregnant by real-time ultrasound examination. Not all presumptive foals were needed, so 4 recipient mares were randomly selected and intentionally aborted. Three mares were selected to carry presumptive foals to term. All 3 mares produced live and healthy foals at the term of gestation. Standard IVP cattle embryos can serve as a relatively inexpensive model for the development and testing of equine embryo cryopreservation systems.