PREGNANCY RATES AFTER TRANSFER OF BOVINE EMBRYOS PRODUCED IN VIVO AND IN VITRO VITRIFIED BY THE CRYOTOP METHOD

Milena Lopatarova¹, Helena Lalova¹, Petr Krondorad², Leos Pavlata¹, Lubomir Holy¹

¹Ruminants Clinic, University of Veterinary and Pharmaceutical Sciences Brno, Brno, ²BOVET Company, Sloupnice, Czech Republic

The aim of this study was to evaluate the effects of Cryotop vitrification (Vitrification kit Cryotop, Kitazato®, Japan) on pregnancy rate after transfer of bovine embryos produced in vitro and in vivo and to assess feasibility of this vitrification procedure in commercial embryo transfers under field conditions. The conventional slow freezing method was used as a control. Oocytes matured and fertilized in vitro were cultured for 7 or 8 days (Group 1). In vivo produced embryos were collected from superovulated donors on day 7 or 8 after artificial insemination (Group 2). After culture or flushing, the embryos of excellent morphological quality (only Grade 1) from both groups were selected according to the developmental stages (morula, blastocyst and expanded blastocyst) and they underwent freezing procedures. Pregnancy rates after transfer of in vitro produced morulae reached 40.0% (6/15) for the vitrified and 45.0% (9/20) for the conventionally frozen (control) embryos, p < 0.05. The corresponding pregnancy rates for blastocysts were 36.4% (12/33) vs. 32.3% (10/31), p < 0.05, respectively. After transfer of vitrified expanded blastocysts there were 40.0% (8/20) of animals pregnant in contrast with 44.8% (13/29) pregnancies after transfer of control embryos, p < 0.05. Pregnancy rates the after transfer of in vivo produced embryos vitrified or conventionally frozen at the morula stage were 54.2% (13/24) and 52.6% (10/19), p < 0.05, respectively. No significant differences were found between pregnancies of transferred embryos vitrified or conventionally frozen at the stage of blastocyst (50.0% (13/26) vs. 52.2% (12/23), p < 0.05). The pregnancy rates after transfer of embryos vitrified at the expanded blastocyst stages were not significantly higher 56.7% (17/30) than the conventionally frozen embryos (48.0% (12/25). The study demonstrated comparable pregnancy rates of in vitro and in vivo produced high quality bovine embryos after vitrification and conventional slow freezing method regardless of their developmental stages. The Cryotop method is applicable under the practical conditions in commercial embryo transfer programs.

Supported by the grant MSM 6215712403.