Effect of Potential Oocyte Transport Protocols on Blastocyst Rates After Intracytoplasmic Sperm Injection in the Horse

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Intracytoplasmic sperm injection (ICSI) is used to produce foals from otherwise infertile mares and from stallions with limited sperm stores. Data from this study provide practical information supporting transport of oocytes for ICSI. Shipment of oocytes to an ICSI laboratory would allow mares to remain under the care of their primary veterinarians. Authors’ addresses: Equine Medical Services, Inc, 5851 Deer Park Road, Columbia, MO 65201 (Foss and Ortis); Departments of Veterinary Physiology and Pharmacology and Large Animal Clinical Sciences, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX 77483 (Hinrichs); e-mail robertfoss@centurytel.net. *Corresponding and presenting author. © 2013 AAEP.

1. Introduction
Intracytoplasmic sperm injection (ICSI) is used clinically to produce foals, but only at limited locations. The objectives of this study were to determine and define protocols that would allow successful transport of oocytes for ICSI.

2. Materials and Methods
Oocytes were recovered from dominant follicles 24 hours after deslorelin administration (DSF follicles) or from subordinate follicles (immature, IMM). DSF oocytes were incubated overnight under differing conditions before ICSI to model transport. IMM oocytes were placed in various conditions overnight before in vitro maturation, followed by ICSI. The rate of blastocyst production was compared among treatments.

3. Results
Blastocysts were produced in all groups. The highest blastocyst production in DSF oocytes (70%) was obtained after holding in sealed tubes in pre-equilibrated control maturation medium maintained at 37°C. IMM oocytes were held overnight for one or two nights in modified M199 medium or for one night in commercial embryo holding solution, in air at room temperature, yielded 35% to 37% blastocyst production.

4. Conclusions
A commercially available medium can be used for shipping IMM oocytes with good resulting blastocyst rates. Better blastocyst rates are obtained from DSF oocytes, but these are more sensitive to temperature changes and delays. Further research is needed to determine the ability of blastocysts produced from the various protocols to establish normal pregnancies.