after foaling. Effect of treatment on foal viability was determined using Fisher’s Exact Test ($P < 0.05$ was considered significant).

**Results:** More ($P < 0.05$) mares in Group TXT delivered live, viable foals (10/12; 83%) than mares in Group CON (0/5; 0%). Gestational length was longer ($P < 0.05$) after infection in mares from Group TXT (mean = 31 days; range: 5–55 days) than Group CON (mean = 7 days; range, 2–17 days). Ten of twelve foals (83%) in Group TXT had negative blood culture results at birth. All foals in Group CON (5/5; 100%) had positive stomach content and thoracic fluid cultures, with *S. equi* subs. *zooepidemicus* recovered in samples from three of five (60%) foals. Five mares (42%) from Group TXT had no growth from uterine swabs obtained after foaling, whereas uterine cultures from six mares (50%) grew predominantly *S. equi* subs. *zooepidemicus* and *Enterobacter* spp in one mare. Predominantly *S. equi* subs. *zooepidemicus* was obtained from uterine cultures of all mares in Group CON (5/5; 100%).

**Discussion:** Long-term treatment with oral SMZ, PTX, and ALT resulted in longer pregnancies and more viable foals in mares with placental infections than untreated mares. We inferred that this combined regimen reduced effects of infection and inflammation in initiating preterm labor, but did not reliably eliminate bacteria from the uterus.

**Acknowledgements:** This work was funded by the Grayson-Jockey Club Research Foundation and Intervet.

**Keywords:** Equine; Pregnancy; Placentitis; Preterm labor; Treatment

DOI: 10.1016/j.theriogenology.2007.05.037

---

**PHARMACOKINETICS OF CARBETOCIN, A LONG-ACTING OXYTOCIN ANALOGUE, FOLLOWING INTRAVENOUS ADMINISTRATION IN HORSES**

A.R. Schramme $^1$, C.R. Pinto $^1$, J.L. Davis $^2$, M.D. Whitacre $^1$, C.S. Whisnant $^3$

$^1$ Department of Population, Health and Pathobiology, College of Veterinary Medicine, North Carolina State University, Raleigh, NC 27606, USA

$^2$ Department of Clinical Sciences, College of Veterinary Medicine, North Carolina State University, Raleigh, NC 27606, USA

$^3$ Department of Animal Science, North Carolina State University, Raleigh, NC 27695, USA

Carbetocin is a long-acting, synthetic analogue of oxytocin commercially available in Europe, Canada and Mexico. The objective of the present study was to investigate the pharmacokinetics of carbetocin after intravenous administration in four healthy, adult, non-lactating anestral mares of mixed breed and one American Quarter horse gelding. All horses were given iv 2.5 mL of Hypophysin$^{16}$ LA (0.07 mg/mL, Veyx-Pharma GmbH, Schwartenborn, Germany) that corresponded to 8.75 units of native oxytocin. They were monitored periodically throughout the study for elevations in temperature, heart and respiratory rates, and signs of pain or discomfort. Blood samples were collected from all horses at 2, 4, 6, 8, 10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 140, 160, 180, 210, 240, 270, 300, 330 and 360 min and at 7, 8, 9, 10, 11, 12, 24, 36 and 48 h after the carbetocin treatment for determination of concentrations of plasma carbetocin by radioimmunoassay. Non-compartmental pharmacokinetic analysis was performed using a commercially available software program (WinNonlin, Version 4.0, Pharsight Corp, Mountain View, CA, USA). Data were reported as mean ± S.D.

Carbetocin was very well tolerated in all horses. Minor localized sweating in the neck and inguinal areas were seen in one out of five horses. No other major adverse reactions to carbetocin were observed during the study. The half-life ($t_{1/2}$) for carbetocin was $17.22±3.79$ min. The volume of distribution was $6.52±1.64$ L/kg and the clearance was $265.7±64.1$ mL/kg/min.

The $t_{1/2}$ of carbetocin in other species such as the goat (22.3 min), pig (85–100 min) and humans (60 min) is higher than that documented for horses in the present study. Previous studies in cattle and pigs have shown that the administration of carbetocin can result in intense myometrial activity for up to 6 h,
which is longer than that reported for oxytocin in those same species (≈20 min). Although the \( t_{1/2} \) of carbetocin in the present study was only 2.5-fold higher than that reported for oxytocin in horses (6.8 min), it is possible that administration of carbetocin would result in a more prolonged ecbolic effect as carbetocin is more lipophilic than oxytocin. Further research is needed to compare the contractility properties of carbetocin versus oxytocin on the myometrium of the normal and diseased equine uterus. Based on the results of this study, we inferred that carbetocin is an attractive alternative as an ecbolic agent for utilization in brood mare management.

*Keywords:* Oxytocin; Pharmacokinetics; Equine; Carbetocin

DOI: 10.1016/j.theriogenology.2007.05.038