

EFFECT OF HUMAN CHORIONIC GONADOTROPIN ON CONCEPTION RATES OF SYNCHRONIZED FIRST SERVICE LACTATING HOLSTEIN AND JERSEY COWS

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Fertility in high producing lactating dairy cattle has been declining over the past several decades. Some studies show decreased blood progesterone levels associated with increased dry matter intake in dairy cows. Other studies have found improvements in conception rates by raising progesterone levels post-insemination in estrus-bred lactating dairy cows. The purpose of this study was to evaluate the effects of hCG administered at two different dosages day 5 post-insemination on numbers of corpora lutea (CL), serum progesterone concentrations, and conception rates in first service lactating dairy cows following estrus synchronization. The study was conducted on two Colorado commercial dairy farms. All cows were presynchronized with two injections of PGF2 α administered at 2 week intervals and 14 days later subjected to the Heatsynch protocol (100 μ g GnRH, 7 days later 25mg PGF2 α , 24 h later 1mg ECP, estrus detection for 48 h and then timed AI of cows not observed in estrus). Five days after insemination cows were randomly assigned to one of three treatment groups: 3300 IU hCG i.m (Treatment A, n = 272), 1650 IU hCG i.m (Treatment B, n = 271), or control (Treatment C, n = 261). Blood collection and ovarian ultrasonography were performed once between day 12-16 post-AI. Pregnancy status was determined on day 28 ($\pm$ 2) and reconfirmed on day 57 ($\pm$ 3) by ultrasonography. Percentage of cows with greater than one CL differed ($p < .0001$) by treatment group (83.1%, 75.4%, and 17.0% for treatments A, B, and C respectively). CL numbers averaged 2.29, 2.06 and 1.14 within those groups. Serum progesterone concentrations were higher ($p < 0.05$) for both hCG treatment groups than controls, with no difference between hCG treatment groups (Serum progesterones were 4.76 ± 0.34 ng/ml, 4.54 ± 0.34 ng/ml, and 3.56 ± 0.27 ng/ml for Treatments A, B, and C respectively). Conception rates on days 28 or 57 were not different among any of the treatment groups. Day 28 conception rates were $34 \pm 5.6\%$; $32 \pm 5.4\%$; and $37 \pm 5.8\%$ and day 57 conception rates were $30 \pm 5.4\%$; $27 \pm 5.1\%$; and $33 \pm 5.6\%$ for groups A, B, and C respectively. Treatment with either 3300 IU hCG or 1650 IU hCG day 5 post-insemination induced accessory CL formation and increased serum progesterone concentration, but did not increase conception rates in first service lactating dairy cows.

Key Words: hCG, Progesterone, Dairy cows, Corpus Luteum, Conception Rate