CURRENT STATUS OF EMBRYO-TRANSPLANTATION IN DENMARK

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During the past three years superovulation, non-surgical recovery, low temperature preservation (-196°C) and surgical and non-surgical transfer of bovine embryos has been applied under practical conditions in many Danish dairy herds. One hundred and three lactating dairy cows of the main domestic breeds (64 Holstein-Friesian, 31 Jersey, 4 Red Danish, and 4 Red and White) served as donors in this study. The average donor age was 66 months (5½ years) and the average age of calvings per cow was 3.57. The time from calving to superovulation (PMSG-treatment) averaged 126 days, with a considerable variation.

One hundred and twelve superovulations were initiated with 2400 I.U. of PMSG on day 9-13 of the cycle followed 2 or 2.5 days later by 500 μg Cloprostenol IM. The mean interval from Cloprostenol treatment to standing heat was 45.5 hours and from PMSG to heat was 4.1 days.

Twenty superovulated donors (18%) were not collected because of a poor superovulatory response and one horn only was flushed in 13 animals (11.6%) because of unilateral ovulations. Embryo collections were done nonsurgically seven days after estrus. Approximately 500 ml of flushing medium, of which 98% was recovered, was used in each horn. Ninety-two donors produced an average of 11 ovulations and six embryos per collection. Embryos were classified as viable (54%), retarded (6%), degenerate (24%) and unfertilized (16%).

An average of 3.3 embryos per donor were suitable for transfer and 1.65 or 50% resulted in pregnancy following surgical transfer via flank incision. All procedures were performed under field conditions. Nonsurgical transfers have been carried out simultaneously using a Cassou mini-inseminator. Following nonsurgical transfers, pregnancy rates have been 27% in heifers and 50% in normal cycling dairy cows. Several embryos have been deep frozen and stored at -196°C for different periods of time and several calves have been born following transfer of deep frozen embryos. The average survival rate after freezing/thawing is currently 80-85%. Pregnancy rate following surgical transfer of frozen embryos is 48-52%.