

Use of Assisted Reproduction for Improvement of Milk Production in Camels (*Camelus dromedarius*)

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There is a significant variation in milk production between dromedaries. Mean daily yields range from 5 to 10 kg and few camels produce over 20 kg of milk per day or continue to lactate for more than 700 days. (Juhasz et al., 2008). Despite occasional high individual production, genetic improvement for milk production has been very slow in this species. The calving interval is long as dromedaries dry off within 3 months of conception and therefore, without the use of assisted reproduction, lactating camels only give birth once in every 2.5 to 3 years (Nagy and Juhasz, 2010). The aim of this study was to increase the number of offspring by superovulating high producing dromedaries during lactation and to transfer embryos into low producing recipient camels.

Ten, 8 to 15 years old, high producing lactating dromedaries were selected as donors at the end of the breeding season and were milked by machine twice a day. Follicular activity was monitored by regular rectal examination and ultrasonography (Aloka 500, 5 MHz, Japan) and donors were induced to ovulate with 20µg Buserelin i.v. (Receptal, Intervet, Holland). Then, starting on day 4 after ovulation each donor was treated with a combination of 2000 IU eCG im., (Folligon, Intervet, Holland) administered as a single injection and a total dose of 700 IU/400 mg, pFSH (Folltropin, Bioniche Animal Health, Ireland) injected twice daily in declining doses over a period of 4 days. Donors were mated with a fertile bull twice 24 hours apart when follicles reached 10 to 15 mm in diameter and embryo recovery was carried out on Day 7 after ovulation. Recovered blastocysts were transferred non-surgically into recipients that had been induced to ovulate 1 day after the donors and pregnancy was diagnosed by ultrasonography and serum progesterone determination at 14, 21, 35, 60 days and 5 months.

The average total milk production per lactation and daily yield were 3345 ±199.7 kg and 8.1 ±0.4 kg per donor (mean ±SEM) respectively. Superovulation was successful in 9/10 camels resulting in the development of an average of 19.6 ±2.8 follicles and 14.3 ±2.0 corpora lutea per donor. A total of 56 embryos were recovered (6.2 ±1.5 embryos/donor) with significant variation in recovery rate between camels (12 to 76 %). Embryos were transferred into 46 recipients (36 single and 10 twin transfers) and the pregnancy rate at 14, 21, 35, 60 days and 5 months was 47.8 % (22/46), 43.5 % (20/46), 39.1 % (18/46), 34.8 % (16/46) and 32.6 % (15/46), respectively. Pregnancy loss between 21 to 60 days was 20 % (4/20).

This is the first report in which high producing lactating dromedaries were selected as donors for an embryo transfer program. We conclude that assisted reproduction has great potential and an indispensable role in accelerating genetic improvement in the dairy camel industry.

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