

Effect of body condition changes and milk urea content after calving on reproduction in Czech Fleckvieh cows

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The Czech Fleckvieh is an original dual-purpose cattle breed in the Czech Republic and belongs to the Simmental cattle family. Dual-purpose cattle are believed to have different responses to negative energy balance from dairy cows (Holstein) because of their lower genetic merit for milk production and for mobilization of body reserves. The objective of this study was to examine the relationship between body condition (BCS) change and milk urea content (MUC) post partum, and reproduction in Czech Fleckvieh cattle. The BCS was measured before calving and then at monthly intervals. Milk samples were taken monthly and milk urea content was determined. Next, data from the reproduction performance database of the Czech Fleckvieh herd book were used to record selected reproduction indexes (calving to first service interval, calving to conception interval, calving interval and number of services per conception). The dataset was analyzed by multifactorial analysis of variance using the procedures COOR and GLM. The significant effect of BCS change after calving on the length of the calving to conception interval was determined. In the cows with a BCS change in the 1st month of lactation of +0.25 to -0.25 points this interval was shortest; animals with BCS loss of more than 1.75 points had the longest interval. The milk urea content at conception was related to the calving to conception interval and calving interval. The shortest indexes applied to cows with the lowest milk urea content. In this study, it is obvious that both BCS change and milk urea content in Czech Fleckvieh cows didn't influence ovarian function and the onset of estrus after calving, but they did affect probability of conception or embryo development. This study was supported by the projects MZE 0002701404, MSM 6007665806.

Short co-incubation time in bovine IVF with OPU oocytes and sex-sorted/unsorted spermatozoa

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The combination of ovum pick up (OPU) and *in vitro* fertilisation (IVF) techniques could be an alternative to traditional embryo production. Sex-sorted sperm have been successfully incorporated into IVF in cattle, but these sperm have altered patterns of motility and a reduced lifespan. The objectives of this study were to investigate the effects of reducing the duration of gamete co-incubation time on the performance of bovine IVF with OPU oocytes and sex-sorted/unsorted frozen-thawed semen. In total, 84 OPU sessions were carried out in 18 normal cyclic, dry and non stimulated cows (Holstein Friesian and Schwarzbuntherind breeds). OPU and sex-sorting techniques have been previously described. Oocytes were fixed and stained at 4, 8 and 12 h post insemination (hpi) to evaluate penetration (PEN), monospermy (MON), male pronucleus formation (MPF) and performance (PERF, monospermic oocytes with 2 pronuclei from total matured oocytes). These parameters did not differ between sperm treatments. No interaction between sperm treatment and co-incubation time was observed ($P > 0.05$). Co-incubation time affected fertilization. PEN increased progressively at 4 (9.09 and 25.0%), 8 (44.4 and 55.6%) and 12 (65.4 and 69.6%) hpi for sex-sorted and unsorted sperm, respectively ($P < 0.01$). Differences in MPF and PERF were observed in co-incubation time ($P < 0.01$), with the best rates obtained in 12 hpi with sex-sorted sperm (78.6 and 64.7%, respectively). Previous studies have reported a reduction of *in vitro* fertility of sex-sorted sperm compared with unsorted sperm in cattle, but we did not find differences in performance of bovine IVF with OPU oocytes between sperm treatments. It is concluded that for OPU oocytes, a reduction of gamete co-incubation time during IVF adversely affected PEN, MPF and PERF and, regardless sperm treatment used, best results were obtained for 12 hpi.

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