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A set of conditions that could enhance fertility rates and litter size in Sardi Morrocan sheep after exo-cervical insemination

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Artificial insemination (AI) with fresh semen has been used in sheep breeding programmers around the world. In Morocco, this technique has been limited due to low lambing rates (ranging from 34 to 54%) while performed with exo-cervical AI. The present work aimed to study the effect of ewe ages, rams, rank of ejaculate (first *vs.* second) and extenders (Skim milk *vs.* Duragen) on fertility rates and litter size of Sardi Moroccan Sheep. One hundred ewes have been chosen in the same herd based on their age. Only ewes of 4-tooth (4T) having 18-24 months old (n = 50) and 6-tooth (6T) having 23-36 months old (n = 50) were used. They were synchronized using sponges (20 mg cronolone, Pharmavet, Morocco) and PMSG at fixed dose (300 IU). Semen was collected from five rams (n = 9 ejaculates) using an artificial vagina and diluted with Skim milk (SM) (n = 6 ejaculates) or Duragen (n = 3 ejaculates) (DR) (claimed as long term extender, Magapor S.L., Zaragoza, Spain) and maintained at 15°C. The statistical analyses were performed using the software JMP SAS 11.0.0 (SAS Institute Inc., Cory, NC, USA). Fertility data was assessed by chi square analysis of contingency tables. The liter size was assessed by ANOVA followed by student t test. There was no effect ($P > 0.05$) of age on fertility (78.75% vs. 70.21%) nor on litter size (1.24. vs 1.15). When using semen with high characteristics (a concentration>$2x10^9$ spermatozoa/ml, mass motility>3 and individual motility>70) no difference on fertility rate (74.19% *vs.* 74.14%) and litter size (1.23 ± 0.09 *vs*. 1.21 ± 0.07) has been recorded ($P > 0.05$). In addition, the results revealed that fertility rates were higher with the first ejaculate (81.25%) compared to the second ejaculate (55.56%) in ewes inseminated with SM ($P < 0.05$). No difference was found between ejaculate regarding the litter size ($P > 0.05$). No difference on fertility rates was recorded comparing SM to DR (73.47 *vs.* 75%) ($P > 0.05$). The litter size was significantly higher in ewes inseminated with SM (1.26 ± 0.06) than DR (1.16 ± 0.85) SM ($P < 0.05$). In conclusion, the set of conditions gathered in the present study (4T and 6T as age of ewes, Skimmed milk, duragen) were proven to enhance fertility rate in Sardi Moroccan sheep. The study is in progress and the whole set will be tested on a large number of ewes from different herds.

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Timed embryo transfer program from Charolais heifers to Holstein heifers

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Keywords: charolais heifers, embryo, fixed time embryo transfer.

The objective of this work was to transfer fresh charolais embryos to holstein dairy heifers for profitable beef production. This study describes embryo flushings from charolais heifers and fixed-time embryo transfer to holstein heifers. In this experiment, twelve clinically healthy charolais heifers, 14-16 months old, 500-600 kg body weight were used as donors and clinically healthy holstein heifers 14-16 months old, 350-400 kg body weight were used as recipients. In donors; estrous was synchronised with 5-day Co-Synch + CIDR protocol. In 5-day Co-Synch-CIDR protocol, CIDR (1,38 gr progesteron, Zoetis, Turkey) device was inserted and GnRH (Acegon®, Gonadorelin acetate, Zoetis, Turkey) was administered on day 0. Five days later CIDR was removed and $PGF_{2\alpha}$ (Dinolytic®, dinoprost tromethamine, Zoetis, Turkey) was administered followed by GnRH administration 72 hours later without artificial insemination (AI). Ten days after the 2nd GnRH administration, superovulatory treatment was initiated. Superovulatory treatment consisted of eight FSH (Stimufol; Reprobiol, Soiron-Pepinster, Belgium) injections twice daily (12 hours apart) for four days with decreasing doses (as decribed by pharmaceutic company). During third day of superovulatory protocol, $PGF_{2\alpha}$ was administered twice daily concurrent with FSH injections. Donors were artificially inseminated 12 and 24 hours after the last FSH injection. Conventional frozen charolais semen was used with proven fertility. Seven days after AI, uterus was flushed and embryos were recovered and graded according to the IETS standards. Donors were collected in 9 replicates of 2 to 5 heifers. Embryo recovery rate was 35.7% (84/235) based on flushed embryos with respect to visible corpus luteum (CL) at flushing time. In total 84 embryos were recovered from 28 flushings. In average, three embryos were recovered per donor. Among collected embryos (n = 84), 27% (23/84); 21% (18/84); 36% (31/84); 14% (12/84) were compact morula, early blastocyst, blastocyst, expanded blastocyst respectively. Recipient heifers were synchronised as describied for donors. Seven days later from the 2nd GnRH administration, fresh embryos transfered to recipient heifers as fixed-time embryo transfer program. Due to technical problems only 61 embryos were transferred. Among recipient heifers (n = 61), seven have recieved two embryos. Blood samples were collected 21 days after fixed-time embryo transfer program to determine pregnancies by PAG technique. In general, pregnancy rate was 24,6% (15/61). Pregnancy rate for recipient heifers transferred with double embryos was 14% (1/7). Although inadequate pregnancy rates were obtained following fixed-time embryo transfer program, it could be acceptable without the need of estrous detection in embryo transfer programs.
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