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AI and IATF

Does estrus synchronization based on estrogen-induced pseudopregnancy affect embryonic production and development in gilts?**Mariana Groke Marques¹, Diego F. Leal², Marcilio Nichi², Bruno Bracco Donatelli Muro², Rafaela F. Carnevale², Ricardo Zanella⁴, Carlos H.C. Vianna³**

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The development of estrus synchronization protocols with lower costs and simple application would benefit the swine production system. In pigs, estrogen stimulation from conceptuses plays a fundamental role for the establishment of pregnancy. The administration of exogenous estrogen during the pregnancy recognition (d 12) can be used to extend luteal phase, resulting in pseudopregnancy. The administration of PGF2 α in a pseudo pregnant female will result in the expression of estrus within a given period. Therefore, we have investigated the effect of a single dose of the estradiol cypionate (ECP) to induce pseudopregnancy, followed by the administration of sodium cloprostenol to induce luteolysis, on the embryonic parameters of gilts. On d 12 of the estrous cycle (d 0 = last day of standing heat), 24 gilts (MS115), 220 $\pm$ 5 d old, 145 $\pm$ 3 kg of body weight and 3 estrous cycle were randomly assigned to two experimental groups: non-treated (NT, n = 9) and treated (CYP, n = 15) with a single dose of 10 mg of ECP i.m (SincroCP[®], Ourofino Saúde Animal, SP, Brazil). Estrus detection started on d 17 and were conducted twice a day using a mature boar and back-pressure test. NT gilts were inseminated at onset of natural heat. On d 28 pseudopregnant gilts were treated twice (i.e., 800 and 1400 h) with 263 μ g of sodium cloprostenol i.m (Sincrocio[®], Ourofino Saúde Animal, SP, Brazil). Gilts were inseminated (AI) with refrigerated semen (3 $\times$ 10⁹ sperm cells; >80% motility), from the same boar, at first sign of standing heat and every 24 h until the end of estrus. Five days after the last AI, gilts were euthanized and the reproductive tracts were obtained. Embryos were collected by uterine horn flushing as described by Marques et al, (2019) (Technical Report, Embrapa, 570:1-5, 2019) and classified according the IETS. Number of corpora lutea, total number of embryos and recovery rate of groups (NT and CYP) were compared by the t-test; all other variables were analyzed by the Wilcoxon test using SAS[®] software, significance was considered if P<0.05. Gilts from both groups had similar number of ovulations (NT, 12.5 $\pm$ 0.5; CYP, 14.0 $\pm$ 0.90; P = 0.17). No difference was observed on embryo recovery rate (NT, 77.5% $\pm$ 7.4; CYP, 87.7% $\pm$ 3.5; P = 0.18) and total number of embryos per gilt (NT, 9.75 $\pm$ 1.01; CYP, 12.53 $\pm$ 0.93; P = 0.06). For the analysis of embryo development, the percentage of non-fertilized oocytes (NT, 12.5% $\pm$ 12.39, CYP, 7.69% $\pm$ 7.69; P = 0.38); percentage of fragmented embryos (NT, 0.96% $\pm$ 2.71; CYP, 5.00% $\pm$ 1.57; P = 0.10) and the percentage of viable embryos (NT, 86.53% $\pm$ 11.07; CYP, 84.19% $\pm$ 7.78; P = 0.18) did not differed among groups. In conclusion, estrus synchronization of gilts treated with ECP to induce pseudopregnancy followed by the administration of sodium cloprostenol to induce luteolysis did not show differences on the ovulation rate, embryo production and their development when compared with the physiological estrus.