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Frozen boar semen for fixed-time artificial insemination using different hormonal protocols

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The use of frozen boar semen for artificial insemination (AI) is restricted to the genetic improvement farms. Frozen boar semen is associated with lower conception rates than refrigerated semen. This is mainly due to the short period of sperm viability after the semen thaws in the female genital tract (approximately 4 hours). The use of fixed-time artificial insemination (Fixed-time AI) better synchronizes the time of ovulation and artificial insemination and minimizes the problems associated with short-term viability of frozen sperm. The FTAI protocols commonly used in pigs (with an interval of 72-80 hours between eCG and ovulation inducer) are poorly synchronized, since the amplitude of ovulation is greater than 6 hours (HUHN, Theriogenology, v.46, p.911-24, 1996). An alternative would be to use frozen semen with an interval of 56 hours between hormonal applications. In this case, the amplitude of ovulation would be approximately 3 hours (CANDINI, Brazilian Journal of Veterinary Research and Animal Science, v.41, p.124-130, 2004). Moreover, there is a lack of consensus in the literature as to which ovulation inducer produces better results. This study aims to evaluate the effect of a 56 hours interval between applications of eCG and ovulation inducers (hCG or GnRH) on the fertility of frozen semen. Thirty-two sows in reproduction were divided into three groups. The control group was inseminated 24 and 36 hours after the onset of heat. The hCG treatment group was given 600UI IM eCG at weaning, 500UI IM hCG 56 hours after the eCG, and inseminated 36 and 40 hours later. The GnHR treatment group was given 600UI eCG IM at weaning, 50μg of GnRH IM 56 hours after eCG, and inseminated 36 and 40 hours later. On day 5 after AI, embryos were collected and the fertilization rates (%) and morula (morulas recovered per female) and blastocyst (blastocysts recovered per female) indices reported. Data were analyzed using the chi-square and Fisher´s exact tests (fertilization rate) and one-way ANOVA and Tukey's test (morula and blastocyst rates). There was no significant difference in fertilization rates between experimental groups [84.34% (13/83) for hCG and 86.21% (12/87) for GnRH, $p = 0.74$], but both differed from the control group [100% (0/103), $p < 0.001$]. There was no significant difference between groups in morula rates (4.71 ± 1.14 for the hCG group, 2.62 ± 1.54 for the GnRH group and 7.8 ± 2.33 for the control group). There was likewise no difference in blastocyst rates (1.71 ± 0.89 for the hCG group, 0.69 ± 1 for the GnRH group, and 3.2 ± 1.28 for the control group). We concluded that hormonal synchronization did not affect development of embryos after the morulae stage, but showed lower fertilization levels. This fact may have been due to the difference between the AI protocols used in the females of the control group and females who received hormonal treatment. No difference was observed in the groups using different ovulation inducers (hCG and GnRH).