Effect of Use Pre-Synch + Ovsynch Protocols on the Pregnancy of the Buffalo Rodeo of the Argentinean NEA

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ABSTRACT

A low intensity of homosexual behavior in buffaloes causes difficulties in the heat detection, subsequently impedes the implementation of artificial insemination. In cattle, there are several hormonal treated protocols for synchronizing ovulation followed by fixed-time artificial insemination (FTAI). Although synchronizing ovulation protocols and FTAI were extensively used in cattle, but very few reports were found using this approach in Argentinean rodeo buffaloes. The aim of the research was to evaluate the efficiency of using two different protocols for synchronizing ovulation, followed by FTAI. Conception rates of the animals receiving different hormonally treated regimes were reported. 320 female Argentinean rodeo buffaloes were randomly divided into two treatment groups. In group I: 190 animals were subjected to the Pre-Synch protocol where 150 mg of $PGF_{2\alpha}$ was injectected intramuscularly twelve days prior to the first GnRH injection (50 mg synthetic GnRH) and designated as day 0, followed by IM injection of $PGF2_{2\alpha}$, 7 day later (day7), the second injection of GnRH was administered two days later (day 9). In group 2, 130 animals were treated with standard OvSynch protocol. All the animals received FTAI at 16 h before the last injections of GnRH. Pregnancies were confirmed by ultrasonography 38 days before FTAI. Conception rates for the animals in group I and II were 55.8% and 52.3% respectively with overall conception rate of 54.4%. No statistical differences were found between the treatment groups ($p>0.05$), however numeric differences were observed.

Keywords: Argentinean NEA, buffaloes, Ovsynch, Pre-Synch

INTRODUCTION

The artificial insemination (AI) still isn't sufficiently rooted in Buffalo rodeos because of the difficulties in heat detection and appropriate time to inseminate (Crudeli et al., 2009). One characteristic of buffaloes is their low incidence of homosexual behavior during heat (Baruselli, 1994), which hinders its external observation and forces to use animal marker for the detection. This characteristic, associated at variations in the heat duration, becomes more laborious the heat detection and difficult the use of AI (Baruselli et al., 1996). In cattle, the heat and ovulation synchronization by hormonal methods submitted encouraging results for the use of fixed-time artificial insemination (FTAI) (Pursley et al., 1995).

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Nowadays there protocols that allow the ovulation synchronization to use the FTAI. In the Ovsynch protocol is used, the gonadotropin release hormone, prostaglandin and their analogues. Studding the follicular dynamic during this treatment was verify that after the first application of GnRH occurs the ovulation or the beginning the growth of a new follicular wave, which result in the presence of a dominant follicle after 7 days, the day of $PGF_{2\alpha}$ application; the luteólisis triggered by this makes that all the treated animals ovulate between 24 to 32 hours after the second dose of GnRH (Pursley et al., 1995). The injections of GnRH, in any stage of the estrous cycle, result in a LH peak causing the ovulation of the follicles >9.0 mm or the luteinization of the nonviable follicles, and a new follicular wave appears 2 or 3 days after (Twagiramungu et al., 1995). With the ovulation or luteinization of the dominant follicle, the progesterone levels remain high; thence the $PGF_{2\alpha}$ provide on day 7 induces luteolysis and promotes the ovulation of the follicle of the new wave (Bodensteiner et al., 1996). The second injection of GnRH is recommended 48 hours after the injection of $PGF_{2\alpha}$ for a good synchronization of the ovulation. In Buffalo rodeos of Argentina there are few reports about the use of this protocol (Crudeli et al., 2009).

This research aims study the response of the water buffaloes to the Ovsynch protocol of ovulation synchronization through the use of GnRH and prostaglandins for FTAI, taking into account for this the pregnancy rate.

MATERIALS AND METHODS

An experimental research was evaluated the efficiency of the ovulation synchronization method, through the Pre-Synch method against the traditional Ovsynch, comparing the efficiency of both methods through the pregnancy rate achieved in each.

320 multiparous buffaloes of Mediterranean breed, aged 5 to 12 years old with a good body score and without reproductive problems were used. All the animals were under the same management and feeding system with free access to the water, in the Empedrado department of the Corrientes province, Argentina.

Two groups of animals, one with 190 females for Group I, and 130 for Group II were formed. Subsequently, was assigned to each group the following treatments: Group I: the Pre-Synch protocol which consisted of an intramuscular injection of 150 mg of $PGF_{2\alpha}$ twelve days prior the application of the first dose of GnRH. After this, the animals of both groups received treatment by the Ovsynch method (GnRH/$PGF_{2\alpha}$/GnRH): intramuscular injection of 50 mg of synthetic GnRH (day 0). Intramuscular injection of $PGF_{2\alpha}$ (day 7). Intramuscular injection of 50 mg of synthetic GnRH (day 9). All the animals received FTAI at 16 hours after the last GnRH injection. The pregnancy diagnose by ultrasonography were performed at 38 days after the FTAI. The reproductive stage differences between groups (pregnant and nonpregnant) were performed through the Chi square test, through the InfoStat software InfoStat, student version (Di Rienzo et al., 2011).

RESULTS AND DISCUSSIONS

In the buffaloes the total pregnancy rate was 54.4% (174/320). The pregnancy rate for the animals of Group I was 55.8% (106/190) and for the animals

of Group II was 52.3% (68/130). Differences were not statistically significant between the pregnancy rates obtained with both treatments ($p>0.05$). Nevertheless, there was a numerical difference in favor of Pre-Synch, but this requires more movement of the animals.

Regarding the effectiveness of the protocol given by the ovulation rates, De Araujo Berber et al. (2002) found 86.6 % of ovulation 36.4 hours after the first dose of GnRH and 93.3% of ovulation after the second dose of GnRH, and Baruselli et al. (2003) reported 78.8% of ovulation at 32 hours after the second application of GnRH.

The results found in this research are superior to those obtained by Ramirez and Guarín (2003), which achieved 36% of pregnancy using the Ovsynch protocol for FTAI in buffaloes. Instead, Baruselli (1995), showed that buffaloes treated with this protocol during the favorable season present an average conception rate of 50.2%; with a marked influence of the body condition on this pregnancy percentages, similar results to those found in this research.

Although in this assay was not considered the body score as a variable of study, it's clear that to increase the conception rates must be used animals with a body score >3.5 (scale from 1 to 5) as suggested by Geary et al. (1998) who studied the ovulation synchronization in 220 cows and showed that the conception rates are better in those animals with best body condition, since this greatly influence the ovarian cyclicity controlling the estrous cycle and the ovulation.

The results of the assay allow conclude that the hormonal treatments using $PGF_{2\alpha}$ and GnRH in the two variants used produce satisfactory responses in the ovulation synchronization in multiparous buffaloes in the breeding season.

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