

INDUCTION OF ESTRUS IN BUFFALOES USING OVSYNCH PROGRAM

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ABSTRACT

This study was aimed to determine the efficacy of the Ovsynch protocol for induction of ovulation and pregnancy rate in Egyptian buffaloes. This study was conducted on thirty eight healthy buffalo cows between the first to the sixth parity (3.5-8 years old) in a private farm at Dakhlia province, Egypt during the last half of year 2011. These animals had not been detected in estrus four months or more postpartum. Animals in this study were classified into control group and treatment group. Animals in control group (n=15) received no treatment. Animals in treatment group (n=23) were received 1 ml Gonabreed (Gonadoreline as acetate 100ug/ml) I.M at 0 day of treatment. At 7th day, 2 ml Estrumate (cloprostenol 263ug/ml) was injected I.M for each animal. One ml Gonabreed was injected I.M at 9th day followed by natural service after 12-24 hrs from the last injection. The efficacy of the Ovsynch program in induction of estrus was (91.30%) (21/23). The serum concentration of progesterone after treatment was 3.074 ± 0.076 ng/ml which is highly significant (P value= < 0.0001) than before treatment (0.3428 ± 0.02072). The pregnancy rate in the treated animals was 65.21% (15/23).

Key words: Ovsynch, Buffalo, anestrous.

INTRODUCTION

Buffalo exhibit seasonality in breeding activity and become sexually active in response to a decreasing day length in late summer to early autumn (Zicarelli, 1997). As latitude decreases, calving is more concentrated during the breeding season, providing rapid re-establishment of postpartum ovarian activity and conception (Baruselli, 2001). Therefore,

during the nonbreeding season, buffalo often exhibit a high anestrus incidence, which extends the calving to conception interval and, consequently, reduces reproductive performance (Zicarelli, 2007).

Postpartum anestrus is affected by several factors such as nutrition plane, milk yield, body condition score (BCS) at calving, suckling, parity, calving season and other factors (Barile 2005 and El-Wishy 2007). To maximize the productive life of a buffalo cow, it should be bred within 80-90 days after parturition to produce a calf and start a new lactation every 13-13.5 months (Abdalla, 2003 and El-Wishy, 2007).

In Egyptian buffalo, it has been reported that, using a sequence of GnRH, PGF_{2α}, and GnRH (OvSynch or GPG protocol), it is possible to synchronize ovulation and uses fixed time artificial insemination (TAI). This protocol results in fertility similar to that of cows inseminated at natural estrus (Pursley et al., 1995 and De Rensis et al., 2002) with the additional benefit of a reduced calving-conception interval (Britt and Gaska 1998).

Injection of GnRH in any phase of the estrous cycle results in a peak of LH that promotes the ovulation of follicles >9.0 mm or luteinization of non viable follicles, and a new wave of follicular growth emerges two or three days later (Pursley et al., 1995 and Bodensteiner et al., 1996). With the ovulation or luteinization of the dominant follicles, the levels of progesterone will remain high; therefore PGF_{2α} was given to induce luteolysis. A second dose of GnRH was given 48 h later to induce ovulation (Schmitt et al., 1996)

This study was aimed to determine the efficacy of the OvSynch protocol for synchronization of ovulation and pregnancy rate in Egyptian buffaloes.

MATERIALS AND METHODS

This study was conducted on thirty eight healthy buffalo cows between the first to the sixth parity (3.5-8 years old) in a private farm at Dakhlia province, Egypt during the last half of year 2011. These animals had not been detected in estrus four months or more postpartum. These animals were free from any abnormal palpable structures on their genitalia.

All animals were in healthy condition and kept under strict control measures for internal and external parasitism, as they undergo a periodical deworming and prophylactic vaccination against the endemic diseases. They were supplied daily with a balanced ration and water *ad libitum*. These buffalo cows had BCS ≥ 3 (scale 1 = thin to 5 = fat; Bhalaru et al., 1987).

Animals in this study were classified into control group and treatment group. Animals in control group (n=15) which received no treatment. Animals in treatment group (n=23) were received 1 ml Gonabreed (**Bimeda co. Canada**, Gonadoreline as acetate 100ug/ml) I.M at 0 day of treatment. At 7th day, 2 ml Estrumate (**Schering plough, Germany**, cloprostenol 263ug/ml) was injected I.M for each animal. One ml Gonabreed was injected I.M at 9th day followed by natural service after 12-24 hrs from the last injection.

Rectal examination and blood progesterone analysis were carried out before and after treatment. Before treatment, rectal examination was performed to select the animals with structurless ovaries which confirmed by serum progesterone analysis. After treatment, rectal examination was performed to evaluate the ovarian structures and followed by serum progesterone analysis. Pregnancy diagnosis was carried out two months after natural service and confirmed at 90 days by rectal palpation. Pregnancy rate was calculated for animals that were still pregnant at 90 days.

Statistical analysis: The data were expressed as means \pm SE. The statistical significance of differences was analyzed by student t- test and ANOVA using StatView version 5.0; Abacus Conceptus, Berkeley, CA, USA.

RESULTS

To confirm the efficiency of the program, serum concentration of progesterone before and after treatment was measured. The serum concentration of progesterone after treatment was 3.074 ± 0.076 ng/ml which is significantly higher (P value= < 0.0001) than before treatment (0.3428 ± 0.02072).

Estrus induction rate was used to evaluate the efficacy of the Ovsynch program. The estrus was detected by the external signs of heat including increased oedema of the vulva and vaginal discharge. Moreover, rectal examination was carried out for detection of increased uterine tone and presence of ovarian follicles. Estrus induction rate was 91.30% (21/23) in treatment group compared to untreated group 20.0%(3/15).

Moreover, the reproductive performance was improved as evidenced by the lower number of services per conception (1.2 vs 2) and higher pregnancy rate (65.21% vs 13.34%) in the treatment group than control group, respectively.

DISCUSSION

In this study the effectiveness of the ovsynch program for the induction of estrus in buffaloes was (91.30%) which indicate the possibility of estrus induction in buffalo using ovsynch program. Although the high incidence of estrus, pregnancy rate was 65.21%. These findings were in agreement with that obtained by **Baruselli et al., 1999, De Rensis et al., 2005, Paul et al., 2005 and Chaikhun et al., 2010**. This difference between pregnancy rate and induced estrus could be explained as the second injection of GnRH may induce ovulation of the dominant follicle before complete development and therefore the quality of the follicle, of the oocyte, and/or of the subsequent corpus luteum may be compromised and progesterone plasma concentrations are too low to maintain pregnancy (**Prandi et al., 2007 and Prandi et al., 2008**). Reduced secretion of progesterone below a critical threshold is a cause of embryonic losses in cattle **Mann and Lamming, 1999 and Diskin and Morris, 2008** and a similar explanation has been proposed for buffalo **Campanile et al., 2007, Campanile et al., 2008 and Campanile et al., 2005**. In conclusion, this study demonstrates that it is possible to apply the Ovsynch program and obtain a high estrus induction rate and pregnancy rate in buffalo.

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المخلص العربى

احداث الشبق فى الجاموس باستخدام برنامج الاوفى سينك

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استهدفت هذه الدراسة تقييم برنامج الاوفى سينك فى القدرة على احداث الشياح وحدوث الحمل فى الجاموس المصرى. تم اجراء هذد الدراسه على عدد ٢٨ من اناث الجاموس ما بين الولاده الاولى والخامسه فى احد المزارع الخاصه بمحافظة القهليه خلال النصف الاخير من عام ٢٠١١. هذه الحيوانات لم يظهر عليها الشياح لمدة اربع شهور بعد الولاده. تم تقسيم الحيوانات الى المجموعه الضابطه والتي لم تاخذ اى علاجات والمجموعه المعالجه والتي تم حقنها ٢مل من الجونا بريد فى اليوم الاول ثم ٢ مل استروميت فى اليوم السابع ثم نفس الجرعة من الجونا بريد فى اليوم التاسع والتي يعقبها التلقيح الطبيعى فى خلال ١٢-٢٤ ساعة. اوضحت النتائج ان معدل حدوث الشياح بلغ ٩١,٣٠% مع زيادة فى مستوى البروجستيرون فى الدم بعد العلاج 3.074 ± 0.076 . وقد وصل معدل الحمل الى ٦٥,٢١% من خلال هذه النتائج يتضح ان برنامج الاوفى سينك يؤدى الى تحسن كبير فى معدل حدوث الشياح ومعدل حدوث الحمل.