

# Comparative Efficacy of Ovsynch and Double PG Protocols in Postpartum Anoestrus Graded Murrah Buffaloes (*Bubalus bubalis*)

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## Abstract

This study was conducted to evaluate the efficacy of Ovsynch and double PG protocols in postpartum anoestrous Graded Murrah buffaloes during the period October 2017 to December 2017. Based on history and per rectal palpation twice at ten days interval 30 postpartum anoestrous buffaloes were selected to induce estrus using Ovsynch and double PG protocols. These selected animals were randomly divided into three groups: Group I: Ovsynch protocol (n=10) having smooth ovaries, Group II: Double PG protocol (n=10) the animals that are cyclical and subestrus, Group III control (n=10) normal cyclic without any hormonal intervention. All the animals were initially dewormed with oxclozoxide and supplemented with mineral mixture. Before initiation of treatment, blood samples were collected for estimation of serum calcium and phosphorus. In Group III animals estrous response was recorded as 60 %. Conception rate was higher in Group I (60%) than in Group II (50%) and Group III (33%). Furthermore, no significant difference was recorded in the levels of serum calcium and phosphorus in between the groups.

**Keywords:** Buffalo; Double PG; Ovsynch; Postpartum anoestrous

## Introduction

Dairying is the integral part of agriculture and contributed significantly to the GDP of the country. Breeding of buffaloes throughout the year plays a vital role for maintaining dairy as profitable unit. Inherent reproductive problems exist in buffaloes like, delayed puberty, higher age at first calving, postpartum anoestrous, silent heat, seasonality in breeding and low conception rate Terzano *et al.*, (2012). Postpartum anoestrous in buffaloes is the most prevalent, frustrating and challenging problem encountered by the field veterinarians, which is major constraint that inhibited that reproductive potential at field level Das and Khan, (2010).

Lower levels of nutrients like, macro and micro-minerals are found to be involved in various types of anoestrous in buffaloes Abou-Zeina *et al.*, (2009). Reproductive problems may be precipitated by deficiency of single or combined trace elements and by their imbalances in rations. Alterations in the Luteinizing hormone (LH) pulsatility culminated to prolonged postpartum anoestrous Kumar *et al.*, (2010). Butani *et al.*, (2009) opined that prostaglandin based hormonal protocols had improved the conception rate at an induced estrus.

The present study was designed to compare the efficacy of Ovsynch and Double PG protocols in postpartum anoestrous Graded Murrah buffaloes.

## Materials and Methods

The present study was conducted on postpartum Graded Murrah buffaloes located in and around Gannavarm, Andhra Pradesh during the period October 2017 to December 2017. The animals were fed with green fodder, dry hay and concentrate regularly.

The study comprised of 30 postpartum anoestrous buffaloes (2<sup>nd</sup> to 5<sup>th</sup> parity) that were selected based on history, per-rectal examination and by ultrasonography twice at 10 day interval. Anoestrous buffaloes ranged between 60-90 days postpartum are selected and randomly divided into three groups based upon their ovarian status.

Group I animals (n=10) having smooth ovaries were subjected to ovsynch protocol, Group II animals (n=10) that are cyclical and sub-estrus (that have not shown estrus symptoms) were subjected to double Prostaglandin protocol and Group III animals (n=10) normally cyclic kept as control while day of start of treatment was considered day 0 for all the three groups.

Blood sample was collected with aseptic procedure by jugular vein puncture from each buffalo in a clot activation vacutainer on day 0 of treatment in each group. The blood samples were centrifuged at 3000 rpm for 15 minutes to separate serum for estimation of calcium and phosphorus.

### *Hormone treatment protocol*

Group I animals were subjected to Ovsynch protocol i.e 10 $\mu$ g (2.5 ml) of GnRH analogue I.M. (Buserelin acetate) was administered on day 0 followed by an Intra Muscular injection of 500 $\mu$ g Prostaglandin F<sub>2</sub> $\alpha$  (Cloprostenol) on day 7. A second injection of 10 $\mu$ g of GnRH was administered on day 9. Fixed time artificial insemination was carried out 14 $\pm$ 2 hours after the second dose of GnRH. Group II animals were subjected to Double PG protocol i.e. buffaloes were administered I.M. injection of 500 $\mu$ g Cloprostenol on day 0 of treatment. This was followed by a second injection with the same dose on 11 days after first injection of PGF<sub>2</sub> $\alpha$ . Fixed time artificial insemination was carried out 54 $\pm$ 2 hours after the second dose of cloprostenol. Group III animals were observed for estrus without any hormonal intervention.

Estrus was confirmed by behavioural signs and per rectal examination in Group III animals. Pregnancy diagnosis was carried out 60 days after artificial Insemination by transrectal ultrasonography. The serum calcium and phosphorus was estimated by using OCPC Method and Molybdate U.V method, respectively.

## Results

Intensity of estrus signs was assessed by behavioural signs, physiological changes and by per-rectal examination. Estrus signs were observed in 60% (6/10) of buffaloes in Group III. Whereas conception rate in Group I, Group II and Group III was 60% (6/10), 50% (5/10) and 33.3% (2/6) animals respectively. No significant difference was recorded in the levels of serum calcium and phosphorus in between the groups.

The overall Mean serum Calcium levels at initiation of hormonal treatment was 8.71 $\pm$ 0.12 (7.9 to 9.7) in Ovsynch group, 9.03 $\pm$ 0.29 (8.6 to 9.7) in double PG group and 8.91 $\pm$ 0.22 in control, respectively. Whereas phosphorus levels were recorded as 5.38 $\pm$ 0.25 in ovsynch, 5.46 $\pm$ 0.12 in double PG group and 5.35 $\pm$ 0.28 in control respectively.

## Discussion

Gonadotropin releasing hormone (GnRH), prostaglandins (PGF<sub>2α</sub>) and their different synthetic analogues have been used for estrus synchronization in cattle buffaloes in low breeding season under field conditions. (Khumran *et al.*, 2012).

Estrus induction rate in Group I and II was higher in our study, when compared to other studies (Bhoraniya *et al.*, 2012; Ali *et al.*, 2012) in buffaloes which might be due to differences in feeding and frequency of observation with regards heat detection.

There was no significant difference in the level of calcium and phosphorus between the both groups and non significant variation was recorded between conceived and non-conceived buffaloes. Savalia *et al.* (2013) reported similar findings in postpartum anoestrous buffaloes treated with Ovsynch protocol.

Ovsynch treatment has been successfully used in swamp buffaloes for improved ovulation with acceptable fertility rates, Chaikhun *et al.*, (2010). It reduced the incidence of anestrus in Murrah buffalo from 45% before treatment to 18% after treatment Roy and Prakash, (2009). Similarly, conception rate was more in Ovsynch group (50%) than Double PG group (33.3%) in the present study. Conception rate following Ovsynch protocol was achieved higher in acyclic cows (9%) and buffaloes (0-7%) following Ovsynch protocol (Azawi *et al.*, 2012). Ahlawat *et al.* (2015) reported a higher conception rate of 66.6% in Jaffarabadi buffaloes that were treated with double PGF<sub>2α</sub>.

It is concluded from the present study the ovsynch was a better suited hormonal protocol for acyclic buffaloes while double prostaglandin is more suitable in sub-estrous buffaloes.

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