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**Nekibuddin Ahmed**  
 Veterinary Officer, Animal  
 Resources Development  
 Department, Unakoti, Govt. of  
 Tripura, India.

**Sharmita Doley**  
 Junior Scientist, College of  
 Veterinary Science, AAU,  
 Khanapara, Assam, India.

**Vanlalhriatpuia**  
 Veterinary Practitioner, Aizawl,  
 Mizoram, India.

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# Inclusion of ovulation synchronization strategies for augmentation of fertility in post-partum anestrus crossbred cows

**Nekibuddin Ahmed, Sharmita Doley and Vanlalhriatpuia**

### Abstract

The study was designed to evaluate estrus pattern and fertility following controlled breeding in anestrus crossbred cows. The conception rate following Ovsynch, Ovsynch plus CIDR and G6G treatments was 28.57, 42.86 and 71.43% respectively. In conclusion, G6G could be better than simple Ovsynch and Ovsynch plus CIDR treatments in anestrus crossbred cows in terms of estrus response as well as fertility.

**Keywords:** Ovsynch, CIDR, G6G, anestrus, fertility

### 1. Introduction

Anestrus has been identified as one major problems affecting reproduction efficiency in cattles. Several hormonal protocols have been employed in the treatment of anestrus crossbred cows with limited success. It is, therefore, inevitable to use of Ovsynch protocol to synchronize estrus and/or ovulation with fixed-time artificial insemination (FTAI) in anestrus crossbred cows. Studies suggest that addition of a CIDR increases the fertility of cows that may not respond to the first GnRH of Ovsynch at initiation of Ovsynch in cyclic or acyclic dairy cows <sup>[1]</sup>. However, scientific basis for G6G, a novel modification of Ovsynch is that days 5 to 9 of the estrous cycle are the optimal interval of the estrous cycle to initiate Ovsynch protocol. G6G outperformed traditional Ovsynch by increasing the percentage of cows that ovulated in response to first GnRH of Ovsynch and better conception rate <sup>[2]</sup>. In, this context, the study is designed to evaluate estrus response and fertility following different ovulation synchronization strategies in post-partum anestrus crossbred cows.

### 2. Materials and Methods

A total of 21 apparently healthy post-partum crossbred cows with the history of absence of estrus more than 90 days postpartum and no palpable abnormalities were allotted in the study. All cows were gynaeco-clinically examined for confirmation of anestrus, with smooth ovaries by two per-rectal examinations 7 days apart. Cows were randomly and equally divided in 3 groups *viz.*, Group I (control), received standard Ovsynch protocol <sup>[3]</sup>. Group II, received Ovsynch plus CIDR protocol which included insertion of CIDR device intra-vaginally for 7 days starting from first GnRH injection (day 0) to PGF<sub>2α</sub> injection (day 7) together with administration of Ovsynch protocol and Group III, received standard G6G protocol <sup>[2]</sup>. Estrus response in percentage was calculated as a number of cows expressed estrus. The onset of estrus was calculated in hours from the time of PGF<sub>2α</sub> administration of Ovsynch protocol to the time of the first appearance of estrus signs. Intensity of induced estrus was scored according to the method described by Rao and Rao <sup>[4]</sup> with slight modifications. Conception rate was confirmed by absence of subsequent estrus as well as per rectally on day 60 post artificial insemination. The data was analyzed by using software SPSS<sup>®</sup> version 17.

### 3. Results and Discussion

In the present study, percentage of estrus response, time required for onset of behavioural and physical signs of estrus and estrus intensities to different treatments are presented in Table 1. These findings were in close proximity with the findings of early researcher in post-partum anestrus Kankrej cows <sup>[5]</sup>.

**Correspondence**  
**Nekibuddin Ahmed**  
 Veterinary Officer, Animal  
 Resources Development  
 Department, Unakoti, Govt. of  
 Tripura, India.

**Table 1:** Estrus response and fertility of anestrus crossbred cows following controlled breeding strategies.

Treatment	No. of animal treated	Estrus response (%)	Time for onset of estrus (h)	Estrus intensity (%)			Conception rate (%)
				Intense	Intermediate	Weak	
Ovsynch	7	42.86 <sup>a</sup>	48.80±5.74	16.66	50.00	33.33	28.57 <sup>a</sup>
Ovsynch plus CIDR	7	100.00 <sup>b</sup>	53.25±3.02	28.57	42.86	28.57	42.86 <sup>a</sup>
G6G	7	100.00 <sup>b</sup>	46.40±4.33	28.57	57.14	14.28	71.43 <sup>b</sup>

Values with different superscripts differ significantly ( $P < 0.05$ )

The present findings of conception rate following Ovsynch, Ovsynch plus CIDR and G6G treatments was recorded as 28.57, 42.86 and 71.43 percent respectively, which was in collaboration well with some reports [6].

The higher conception rate in Ovsynch plus CIDR treatment indicated the role of exogenous supplementation of progesterone. As, El-Zarkouny *et al.* [7] reported positive association of pregnancy rates with higher progesterone concentration in the luteal phase of the cycle. Ovsynch plus CIDR protocol is useful in initiating cyclicity in acyclic animals in comparison to Ovsynch alone, and it can serve as one of the better means of estrus/ovulation synchronization and conception in postpartum anestrous Kankrej cows [5].

The scientific idea of incorporating G6G protocol was to initiate Ovsynch treatment on days 5 to 9 of the estrous cycle. Previous studies showed that initiation of Ovsynch on days 5 to 9 of the estrous cycle was key to successful ovulation synchronization treatment. A likely reason for this synchrony was the presence of a functional dominant follicle capable of ovulating in response to the LH surge induced by the first GnRH injection of Ovsynch. Ovsynch initiated on day 6 of estrous cycle capable of responding with a higher percentage of ovulation and formation of corpus luteum (CL). When the PGF<sub>2α</sub> was administered 7 days later, cows that ovulated had CL secreting greater progesterone concentration before artificial insemination had a greater probability of luteolysis and higher pregnancy rate [8].

In conclusion, G6G treatment could be better than Ovsynch and Ovsynch plus CIDR treatments in post-partum anestrus crossbred cows in terms of estrus response as well as fertility.

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