
**Oestrus Synchronisation
Employing Used and New Intravaginal Device (CIDR)
Combined with Oestradiol Benzoate (ODB) in Bali Cattle**

(SINKRONISASI BIRAHİ MENGGUNAKAN PERANGKAT
INTRAVAGINA (CIDR) BEKAS DAN BARU DIKOMBINASIKAN
DENGAN ESTRADIOL BENZOATE (ODB) PADA SAPI BALI)

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ABSTRACT

The present study was performed to evaluate the use of first and the second times application of intravaginal device to synchronise oestrus. Forty, mature Bali cows were divided randomly into two groups, they were raised and fed under field conditions of East Lombok and Mataram. In the first group, intravaginal device was inserted intravaginally for nine days, using controlled internal drugs release (CIDR) with oestradiol benzoate capsule (ODB) inserted in the pitch on the stem of CIDR. The second group was treated same as the first used, but the CIDR used was the second use. From 20 cows in group I, 95% (19) cows showed oestrus behaviour and 85% (17) diagnosed to be pregnant. From 20 cows in group II, 85% (17) cows showed oestrus behaviour and 60% (12) diagnosed to be pregnant. It can be concluded that CIDR can be used twice, however it produced lower pregnancy rates.

Key words: Bali cattle, oestrus induction, used CIDR.

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ABSTRAK

Penelitian ini dilakukan untuk mengetahui penggunaan *controlled internal drugs release* (CIDR) yang digunakan untuk kedua kalinya untuk penyerentakan birahi. Empat puluh ekor sapi Bali betina dewasa dibagi menjadi dua kelompok secara acak. Sapi-sapi tersebut adalah milik petani dengan tatalaksana pemeliharaan sesuai dengan kondisi lapangan Lombok Timur dan Mataram. Sapi grup I diberi CIDR secara intravaginal dengan oestradiol benzoate kapsul (ODB) dimasukkan dalam celah pada batang CIDR. Grup II diberi perlakuan sama dengan grup I, tetapi CIDR yang digunakan adalah yang pernah digunakan. Dari 20 sapi grup I, 95% (19) sapi menunjukkan tingkah laku birahi dan 85% (17) didiagnosis bunting. Dari 20 sapi grup II, 85% (17) sapi menunjukkan tingkah laku birahi dan 60% (12) didiagnosis bunting. Akhirnya dapat disimpulkan bahwa CIDR dapat digunakan dua kali, namun menghasilkan birahi dan kebuntingan yang lebih rendah dibandingkan dengan penggunaan CIDR yang pertama.

Kata kunci: Sapi Bali, induksi birahi, CIDR bekas

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INTRODUCTION

Bali cattle had been exported to Hongkong, Singapore from Nusa Tenggara Barat (NTB) in the year of 1970 to 1980. In 1990 beef cattle production from NTB only suplay inter-island needs, mainly were transferred to Java. In the end of year 2000, unfortunately there was no inter-island transportation of Bali cattle from NTB. As the population of Bali cattle decreased, the price of cattle increased, consequently, the retailer could not get profit and the inter-island trade stopped. As populations decreased, efforts have been done to improve Bali cattle productivity by introducing artificial insemination (Muladno, 1998; Dradjat *et al.*, 1998) and feeding improvement as well as better management (Dradjat *et al.*, 1997; Oka, 2000; Mastika, 2000). As a management technique to improve cattle productivity CIDR (controlled internal drug release) and ODB (oestradiol benzoate) has been developed and available commercially. By employing these regimes cattle could be induced to show oestrous behaviour in a predetermined time and hopefully maximum pregnancy rates could be achieved by insemination. By adopting this synchronisation technique pregnancy could be arranged, birth date could be predicted with uniformity of calf born. This technology facilitates management, however the price of the CIDR is expensive as high as Aust \$ 7. It seems that generally the NTB farmers would not be able to buy it. As CIDR contains of 1,9 gr progesterone and this doses is verry high, as body weight of Bali cattle may reach half of *Bos taurus*, consequently it was speculated that the CIDR may can be inserted intravaginally for 9 days for the second time to produce oestrus and pregnancy.

The present study was performed to evaluate the effect of the first and the second used of CIDR combined with ODB to induce oestrus of Bali cattle.

MATERIALS AND METHODS

A total of 40 Bali cows were used in the present study, they were raised and fed under field condition of East Lombok and Mataram. They were divided randomly into two groups, the first group was treated with intravaginal device inserted intravaginally for nine days (Xu dan Burton, 1995; 1996), using controlled internal drugs release (CIDR type B, Eazi-breed CIDR device contains of 1,9 gr progesterone, Genetics Australia POBox 195, Bacchus Marsh, Victoria 3340) with oestradiol benzoate capsule (ODB capsule, contains of 10 mg Oestradiol benzoate, Genetics Australia POBox 195, Bacchus Marsh, Victoria 3340) inserted in the pitch on the stem of CIDR. The second group was treated same as group I, however the CIDR was used for the second time. Oestrus detection was performed for five consecutive days beginning at the second day until the seventh day following CIDR removal. In order to avoid mis-detection, oestrus detection was performed until late night and early in the morning, with observation completed every six hours and each observation was lasted for 0,5 hour (Sawyer *et al.*, 1986). Insemination was performed by carrying liquid nitrogen tank to insemination areas. Following thawing frozen semen by standard technique, artificial insemination was performed in the field (Dradjat *et al.*, 1998). The cows which showed oestrous behaviour in the morning inseminated in the evening while the cows which showed oestrous behaviour in the evening inseminated in the following morning. Pregnancy

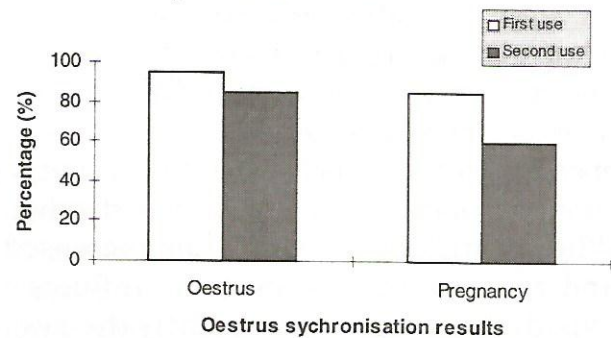
diagnosis was performed by rectal palpation 60 to 90 days following insemination (Entwistle, 1984). Data obtained were analysed using percentage of oestrous behaviour and pregnancy as with new and used CIDR combined with ODB.

RESULTS AND DISCUSSION

It was clearly understood that optimum reproductive performance can be achieved by reaching one year calving interval, as pregnancy terminated by nine months (285 days), consequently only less than 3 months (85 days) left to undertaking effort to get pregnancy (Cummins, 1984). By implementing oestrus synchronisation, oestrus and ovulation can be predicted in predetermined time, hence oestrus detection and insemination can be planned (Smith and Macmillan, 1978). The results of the present study showed that by employing new CIDR with ODB, from 20 cows in group I, 95% (19) cows showed oestrus behaviour and 85% (17) diagnosed to be pregnant. In using used CIDR with ODB, from 20 cows in group II, 85% (17) cows showed oestrus behaviour and 60% (12) diagnosed to be pregnant. The second used of CIDR with ODB produced lower pregnancy rate compared to the use of new CIDR, however the second use of CIDR still produced acceptable pregnancy rates. This results in agreement with Drew, (1978) who reported that the successful oestrus synchronisation at least produced 60% pregnancy rate (Drew, 1978).

Without oestrus synchronisation, oestrus detection would be a main problem for farmers in the developed and developing countries (Sawyer *et al.*, 1986; Hurnik dan King, 1987). This problem arise as cattle are non seasonal polyoestrus animal and may shows

Figure 1. Oestrus exhibition and pregnancy rate following the first and the second CIDR used with oestradiol benzoate for oestrus synchronisation



oestrous behaviour at any time of the year. Consequently, oestrus detection would be year round jobs, laborious and subjected to human error (Sawyer *et al.*, 1986). A successful oestrus synchronisation would lead to predetermined time for insemination. These results indicated that progesterone still released by CIDR in the second used. It seems that progesterone successfully mimics luteal phase of oestrus cycle and following device removal progesterone decreased successfully. The progesterone combined with oestrogen successfully induced oestrus in the present study can be explained that, basically, ovarian activity can be stimulated. It was reported that small size of follicles grows were found at any time during the cycle in wave like pattern (Ginther *et al.*, 1989). This pattern was repeated in every eight to twelve days (Ginther *et al.*, 1989) and was also detected from ten days postpartum or during anoestrus periods (Mc Dougal *et al.*, 1995). It was reported that new follicle wave emerged from four to five days after oestrogen treatment (Bo *et al.*, 1995). Hence, during CIDR treatment with ODB, follicular wave may be initiated. Follicular development wave developed to be estrogenically active, this activity initiated luteolytic sequence (Thatcher *et al.*, 1989). Following CIDR removal in the second

used of CIDR, it seems that progesterone still can be used to mimick luteolytic efect. The luteolytic process was initiated by CIDR removal, which mimicking sharp decrease progesterone during pro-oestrus, where the decrease of progesterone induced negative feed back to LH (Luteinizing hormone). Dominant follicles developed as graffian follicle when the LH surge enough to stimulate increase of oestradiol. When oestradiol concentration increased and reached certain levels it influence hypothalamus and consequently the cows showed oestrous behaviour. Hence, insemination performed following oestrus synchronisation by utilising used CIDR in the present study produced succesful pregnancy rates.

CONCLUSION

Progesterone treatment intravaginally (CIDR) combined with oestradiol benzoate (ODB) successfully induced oestrus. CIDR can be used for the second time and still produced pregnancy lower than its use for first time, but still as high as expected. It can be concluded that CIDR can be used twice, although it produced lower pregnancy rates.

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