International Journal of Scientific Research in Multidisciplinary Studies
Vol.3, Issue.11, pp.1-3, December (2017)

Research Paper
E-ISSN: 2454-9312
P-ISSN: 2454-6143

Comparison of Efficacy of OVSYNCH and CIDR Treatment Methods in Repeat Breeder Dairy Cows

S. Kothandaraman[1*], R. John Christy[2]

[1*]Animal Husbandry, Faculty of Agriculture, Annamalai University, Annamalai Nagar, India
[2]Animal Husbandry, Faculty of Agriculture, Annamalai University, Annamalai Nagar, India

[*]*Corresponding Author: baapoo@gmail.com Tel:+91-9443221344*

Available online at: www.isroset.org

Received: 28/Oct/2017, Revised: 10/Nov/2017, Accepted: 30/Nov/2017, Published: 31/Dec/2017

Abstract --The most critical hurdle faced by the livestock industry is the sub-optimal reproductive efficiency of the dairy herd. Ample efforts are rendered to augment the reproductive efficiency. In this study, we aimed to compare the efficacy of Ovsynch and CIDR (Controlled Internal Drug Release) treatment with fixed time insemination in repeat breeder dairy cows. In present study, we selected 60 repeat breeder cows with no palpable abnormalities. Then, cows were divided into 2 groups of 30 each. Cows of group 1 were treated with Ovsynch while cows of group 2 were treated with CIDR for 9 days. On 8th day, all cows of group 2 were injected with 2ml of PGF2αi/m. CIDR was removed on day 9 and fixed time AI was carried out at 60 and 72 hours thereon. Oestrous manifested by cows was higher in CIDR(93.3%) than Ovsynch(40.0%) treatment method. Conception rate in dairy cows were 15 (46.42%) and 8(33.33%) in CIDR and Ovsynch method, respectively. CIDR based fixed AI was found to be better than Ovsynch method in repeat breeder dairy cows.

Keywords---Comparison of Ovsynch and CIDR, Repeat breeder, Fixed time AI, Conception rate

I. INTRODUCTION

A repeat breeder is a cow that is cycling normally, with no clinical abnormalities, but has failed to conceive after at least three successive inseminations. It is a major infertility problem in cattle breeding leading to large economic loss in dairy industry. The repeat breeding will increase the expenditure due to cost of repeated inseminations, cost of management/treatment of this condition, cost of feeding without production, loss of milk due delayed conception. It has been reported that 10-24% of reproductive cows on dairy farms are repeat breeders [1]. Hormonal protocol, Ovsynch and exogenous sustained release progesterone device like Controlled Internal Drug Release (CIDR) have been used successfully in treatment of repeat breeders. Ovsynch resulted in a conception rate of 21% in repeat breeders [2]. The use of CIDR has proven to be successful in infertility management thereby improving reproductive efficiency [3]. In this context, this study was conducted to compare the efficacy of Ovsynch and CIDR in repeat breeder dairy cows through investigation of their respective conception rates.

Rest of the paper is organized as follows, Section I contains the introduction of importance of prevention of repeat breeders in dairy farming, Section II contain the related work of treatment and control of repeat breeder dairy cows, Section III explains the methodology of the study, Section IV contain results of the study with discussions and Section V concludes research work with future directions.

II. RELATED WORK

In spite of remarkable advances in veterinary medicine, repeat breeding remains the most economically important cause of infertility affecting reproductive efficiency in dairy cows. A repeat breeder cow is one that has normal estrous cycle with no palpable abnormalities of reproductive tract and has been bred/inseminated thrice or more to fertile bull/semen, yet failed to conceive [4].Ovsynch as a reproductive tool which was introduced by Pursley *et al.* worked by controlling follicular development and luteal function based protocol of injections of GnRH and PGF2α [5]. Hormonal protocols like Ovsynch has been used to improve conception rate in repeat breeder cows successfully [6]. Ovsynch has been recommended for their judicious use to combat repeat breeding crossbred cows [7]. Several therapies have been employed in order to improve fertility such as hormones like progesterone in CIDR and PRID forms and administration forms [8]. Researchers administered progesterone daily for estrous control and ovulation for first time and gradually it was improved and finally CIDR was proposed for different application [9]. CIDR device may hold the potential of enhancing the reproductive performance by combating the problem of anoestrous in post-partum cows [10]. Hence, the objective is to compare the efficacy of Ovsynch and CIDR treatment in repeat breeder dairy cows.

III. METHODOLOGY

A total of 60 cows with history of repeat breeding were included for the study. Cows which do not have any palpable abnormalities on gynaecological examination were selected for the study. The animals were of average built (300-400kg) and were reared under routine management systems by the individual livestock owners of Cuddalore district. These animals were randomly and equally divided into two groups (Group 1,2). Group 1 repeat breeding cows (n=30) were treated with Ovsynch and Group 2 repeat breeding cows (n=30) received CIDR device.

Group 1: The Ovsynch treatment consisted intramuscular injection of 10µg GnRH analogue (Gynarich®,Intas Pharmaceuticals Ltd.,Gujarat-380054, India) on 0 day and 500 µg PGF2α analogue after 7 days. Again 10 µg GnRH analogue was administered on day 9 and fixed time insemination was carried out after 18 hours of the second GnRH injection.

Group 2 : CIDR(Triu B® ,Virbac Animal Health India Pvt.Ltd.,Sanpada-400705, India)device was placed intra vaginally for 9 days.Each device comprises of 3 medicated rings(green colour) containing Progesterone IP 186 mg each and one additional ring (pink colour) with Progesterone IP 400 mg. On day 8, all the animals were intramuscularly injected with 2ml of PGF2α. CIDR was removed on day 9 and fixed time insemination was performed at 60 and 72 hours after its removal.

Although fixed time insemination was carried out in both groups, animals were also observed for oestrous behavioural signs and the oestrous expression rate was assessed based on the number of animals exhibited symptoms like mucous discharge, restlessness, frequent bellowing and mounting behaviour. Pregnancy diagnosis was done in both groups by rectal examination on day 60 post insemination and conception rate was calculated.

IV. RESULTS AND DISCUSSION

Table 1. Oestrous response in Ovsynch and CIDR treated cows

Groups	Number of treated cows	Number of cows exhibited oestrus	Oestrous expression rate(%)
Group 1	30	12	40.0
Group 2	30	28	93.3

Table 2.Conception rate in Ovsynch and CIDR treated cows

Groups	Number of treated cows	Number of cows inseminated	Number of cows diagnosed pregnant	Number of non pregnant cows	Conception rate(%)*
Group 1	30	12	4	8	33.33
Group 2	30	28	13	15	46.42

*Conception rate is calculated by dividing the number of pregnant cows by the total number of inseminations

The research was carried out in 60 repeat breeding cows by using Ovsynch in 30 cows and CIDR in other 30 cows. The oestrous expression rate in cows after Ovsynch and CIDR treatment has been shown in Table 1. The number of cows inseminated, became pregnant and conception rate is presented in Table 2. The oestrous expression rate is higher in CIDR method than Ovsynch. The results were almost similar to the findings of Vahid Khodabandehloo *et al.* (2013)[11]. The principle behind the both treatment is different. Briefly, when a CIDR is placed intravaginally and kept *in situ* for 9 days, progesterone depot from CIDR is absorbed from vagina into circulation and as a result progesterone level is increased sufficient enough to exert negative feedback effect on the secretion of GnRH from the hypothalamus and releasing FSH and LH from the anterior pituitary. With the removal of CIDR, progesterone is reduced within 6 hours and reaches to the concentration of the base and as a consequence the negative feedback effect is removed. Therefore, GnRH is secreted and release of FSH and LH begins that leads to follicular growth and formation of dominant follicle and its secretary activities. It is the extended treatment with progesterone device that triggers the ability of the hypothalamus pituitary gonadal axis to generate oestrus/LH surge in response to an increase in endogenous estradiol [12].The higher oestrous expression in CIDR treatment may be attributed to the extended treatment with Progesterone. Whereas in Ovsynch method, Corpus luteum is made to form naturally and made to regress artificially by a shot of PGF2α. Suchitra *et al.* (2016) reported an oestrous response of 83.33% in postpartum cows by CIDR method which is lower than the values obtained in this study [13]. This might be attributed to the condition of the cattle which indirectly suggests that the repeat breeders show higher response to the oestrous expression rate than the postpartum cows which needs further exploration in this area.

In this study with fixed time AI by Ovsynch treatment and CIDR implants, Conception rate in Group 1and Group 2 was calculated to be 33.33 and 46.42 per cent, respectively. Group 1 experiment results concurred with the observations of Ahmed *et al*. (2016) [14]. Conception rate in Group 2 was higher than the results of Vahid Khodabandehloo *et al.* (2013) [11] and Harpreeth et al. (2006) [15] . However, the results obtained was lower than Kuntola Roy and Jeyakumar S (2012) [3] and Honparkhe M S *et al*. (2011) [16]. It is apparent that the oestrous response and Conception rate is high in CIDR treatment than Ovsynch method. It is well understood fact that the priming of reproductive system with adequate amount of circulating progesterone during the preconception period is favourable for better development of graffian follicle that will yield a better developed CL and hence successful subsequent conception [17]. Priming of progesterone is always better in

CIDR than Ovsynch method which might be the most attributable reason for higher conception rate in the former method. Different managemental practises and BCS(Body condition scoring) of the repeat breeder cows might also be referable reasons for the differences in the conception rate[18]. It is concluded that using CIDR-based fixed AI is a better therapeutic strategy for repeat breeder cows than the Ovsynch method.

V. CONCLUSION AND FUTURE SCOPE

The results of the present study have clearly indicated CIDR-based fixed AI as a more effective treatment for repeat breeding than Ovsynch method. CIDR treatment is most effective treatment method [11] in comparison with Heat synch treatment. However, BCS and managemental practises of dairy cows influence the treatment methods in a positive way. Apparently, CIDR implants are expensive than Ovsynch method which invites further research in this area for contriving even a more cost effective program. The results of present study indicate a relatively low first-service conception rate in Ovsynch method. However, the overall conception rates might improve with subsequent oestrus after priming of Progesterone. In conclusion, this research revealed as far as first conception rate is concerned, CIDR protocol is more efficient treatment than the Ovsynch treatment for repeat breeder dairy cows in terms of oestrous expression rate and conception rate as well.

REFERENCES

[1] Kimura, M., T.Nakao,M.Morigoshi and K.Kawata (1987). Luteal phase deficiency as a possible cause of repeat breeding in dairy cows. British Veterinary Journal.,143:560-566.

[2] Kasimanicham,R., J.M.Cornwell and R.L.Nebel (2005).Fertility following fixed-time AI or insemination of observed estrus in Ovsynch and Heatsynch programs in lactating dairy cows. Theriogenology.,63:2550-2559.

[3] Kuntola Roy and S. Jeyakumar (2012). Management of post partumanestrum in crossbred cows. Indian Veterinary Journal. 89(12):108-109.

[4] Roberts, S.J. (1971). Veterinary obstetrics and genital diseases. 2nd ed. New Delhi, CBS Publishers and Distributors. 776

[5] Pursley, J.R., M.O.Mee and M.C.Wiltbank (1995). Synchronization of ovulation in dairy cows using PGF2α and GnRH. Theriogenology. 44:915-923.

[6] Keskin,A ., A.Gumen, G.Y.Mecitoglu, E.Karakaya, U.Tasdemir, Y.Celik and H.Okut (2010). The progesterone based Ovsynch protocol and GnRH treatment after artificial insemination on conception rate in repeat breeder cows. Uludag University journal of faculty of veterinary medicine.29:65-70.

[7] Prajapati, K.A., P.K.Sharma and M.K.Choudhry (2015). Management of Repeat breeding under field condition using Ovsynch protocol in cross bred cows. Journal of KrishiVigyan. 4(1):60-62.

[8] Garverick, A.H and M. Smith (1993). Female Reproductive Physiology and Endocrinology of Cattle. The Veterinary clinics of North America. Food animal practice. 9(2): 223-247.

[9] Peters, A.R. (1985). Hormonal control of the bovine oestrous cycle.1. The natural cycle. British Veterinary Journal.141(6):564-575.

[10] Vijayarajan, A and S.Meenakshisundaram (2013). Reproductive performance of anestrous non-descriptive cows treated with CIDR and PGF2α. Indian Journal of Animal Reproduction. 34:42-43.

[11] VahidKhodabandehloo, Salim MobasherShokorloo, FaedinBodaghi, Mohammad Reza Marsoulioshtolagh and NaridNeisariTabrizi (2013). Evalauation of fertility rate due to CIDR+Heat synch treatment method in anestrous dairy cows. European Journal of Zoological Research,2(5):43-47.

[12] Todoroki and Kaneko (2006). Formation of follicular cysts in cattle and Therapeutic effects of controlled Internal drug release.Journal of Reproduction and Development.52:1-11.

[13] Suchitra, B.R., G.J.Renukardhya,A.Sahadev and M.V.Shivaraju (2016). CIDR and PGF2α for induction of cyclicity in Postpartum Anestrous Crossbred cows. Intas Polivet.17(1):49-51.

[14] Ahmed,N., D.Kathiresan, F.A.Ahmed, K.Lalrintluanga, P.Mayengbam and J.M.Gali (2016). Pattern of induced estrus and conception rate following Ovsynch and Ovsynch based gonadotrophin-releasing hormone treatments initiated on day 6 of estrous cycle in repeat breeding crossbred cows. Veterinary World. 9: 342-45.

[15]Harpreeth Singh, R.A., S.K.Luthra, Khar and Trilok Nanda(2006). Oestrous induction,plasma steroid hormone profiles and fertility response after CIDR and eCG treatment in acyclic sahiwal cows. Asian Australian Journal of Animal Science.19:1566-73.

[16] Honparkhe, M.S., P.S.Ghuman, J.Singh and G.S.Dhaliwal (2011). A CIDR-Based AI Protocol Establishes Pregnancy in Repeat Breeder Dairy Cattle. Indian Journal of Animal Science. 81(4):340-343.

[17] Folman, Y., M.Kaim, Z.Herz and M.Rosenberg (1990). Comparison of methods of synchronization of estrous cycles in Dairy Cows 2:Effects of Progesterone and Parity on Conception. Journal of Dairy Science.73:2817-2825.

[18] El-Shahat, K.H and A.Badr (2011). Comparative study on efficacy of different medicaments on postpartum anestrous in dairy cows. Journal of applied biological sciences.5:59-63.

Authors Profile

Dr. S. Kothandaraman pursued B.V.Sc&AH from Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry and M.V.Sc., from Madras Veterinary College, Chennai. He is currently working as Assistant Professor in Division of Animal Husbandry, Faculty of Agriculture, Annamalai University since 2003. He is a member of Veterinary Council of India. He has published more than 20 research papers in reputed international journals and conferences. His main research work focuses on Veterinary Gynaecology and Assisted Reproductive Techniques. He has more than 14 years of teaching experience and 14 years of research experience.

Dr. R. John Christy pursued B.V.Sc. and M.V.Sc., from Madras Veterinary College, Chennai and Ph.D. from Annamalai University. He is currently working as Assistant Professor in Division of Animal Husbandry, Faculty of Agriculture, Annamalai University since 2001. He is a member of Veterinary Council of India. He has published more than 30 research papers in reputed international journals and conferences. His main research work focuses on Animal Health Economic and Gender Economics. He has more than 16 years of teaching experience and 16 years of research experience.

