Iraqi Journal of Veterinary Sciences

www.vetmedmosul.com

The efficacy of the recycled CIDR on estrus synchronization in postpartum anestrum in buffalo cows

N.Z. Mustafa and M.A. Rahawy

Department of Surgery and Theriogenology, College of Veterinary Medicine, University of Mosul, Mosul, Iraq

Article information

Article history:
Received 20 July, 2023
Accepted 27 October, 2023
Published online 01 February, 2024

Keywords:
Buffalo cow
Reused CIDR device
Progesterone
Pregnancy rate

Correspondence:
M.A. Rahawy
mohammedrahawy@yahoo.com

Abstract

The present study aims to evaluate the efficiency of the reused controlled-internal drug-releasing devices (CIDR) compared with the hormonal method to induce estrus in the postpartum anestrus of Iraqi buffalo's cow. Thirty-two buffalo cows aged at least three years suffering from postpartum anestrus were randomly selected and divided into four groups (eight animals each). Ultrasound was used to assess the ovarian status. Animals with any reproductive defects were excluded. In the first group (G1), a new CIDR device was used for nine days, while in G2 animals, the device of the first group was reused for nine days; while, in the G3 group, the devices were further reused either for nine days (subgroup A) or 18 days (subgroup B, received PGF2α**,** at day 17; GnRH, at day 19). In the fourth group (G4), the animals received an injection of PGF2α (IM, 25 mg) followed by a dose of GnRH (IM, 500 mg) after 72h, without CIDR insertion. Blood samples were collected from the jugular vein pre and post CIDR insertion. Blood samples were utilized for the progesterone level assessment. For estrus and conception rates, animals were bred by fertile buffalo bulls, and pregnancy was detected at day 45 post-mating. Results showed that there was no variation in the rates of estrus induction and conception between the uses of the new CIDR device (G1) and the reused devices (G2 and G3 subgroup A); however, in the subgroup B and G4, only 50% of the treated animals demonstrated estrus. The duration, hormone, estrus, and pregnancy rate results revealed highly significant variations between groups. After the device withdrawal, the progesterone level in G2, G3, and G4 revealed a significant decline relative to G1. In addition, the duration was positively correlated to the progesterone level, estrus, and pregnancy rate. The progesterone level during the first and second services revealed a slight negative correlation with pregnancy. In conclusion, reusing the same CIDR up to three times for estrus synchronization is highly effective inducing estrus with high conception in postpartum anestrus Iraqi buffalo cows. Additionally, it is possible to reuse the CIDR device in 9 days without administration of GnRH in the lactating buffalo cows.

DOI: 10.33899/ijvs.2023.141852.3150, ©Authors, 2024, College of Veterinary Medicine, University of Mosul.
This is an open access article under the CC BY 4.0 license (http://creativecommons.org/licenses/by/4.0/).

Introduction

Reproductive efficacy is a vital key point in commercial herds. To improve the productive productivity of a buffalo herd, buffalo cows should demonstrate estrus within 80-90 days after calving; thus, a calf is produced, and a new lactation period is started every 13-13.5 months (1). Buffalo's reproduction and production are highly affected by postpartum reproductive disorders. The decreased reproductive efficiency in Iraqi buffaloes is especially due to postpartum anestrus, prolonged calving interval, and poor estrus detection (2). Early postpartum disorders manifested by increased days to first estrus, calving interval, open days, and service per conception are extended in diseased animals

more than in healthy animals (3). A survey on reproductive disorders showed that postpartum anestrous is the greatest cause of infertility in Iraqi buffalo cows, with an incidence of 12-18% (4). True anestrus due to inactive ovaries is an essential cause of infertility in buffalo cows, which leads to economic losses in buffaloe herds by declining milk and new calf production (1). The efficacy of the estrus synchronization in buffaloes by CIDR device protocol accompanied with GnRH and prostaglandin F2α mainly depends upon progesterone concentration in the device (5). The CIDR device protocol significantly the induction of estrus and conception rates in postpartum anestrous Iraqi buffalo cows (6). Estrus synchronization using CIDR devices plus GnRH protocol revealed high conception rates in buffalo cows (7). Because of the increased expenses of estrus synchronization programs, there is an increased demand to find other methods to decrease the cost along with the increased reproductive performance (8). The CIDR device programs are recommended for only a single use because of the risk of venereal disease transition. However, the substantial residual progesterone level in the single-used CIDR devices, made reusing more than once possible (9,10). It has been suggested that, in buffaloes, estrus synchronization by using CIDR for nine days, the blood progesterone remains detectable for the next two weeks of insertion. In addition, to decrease the costs, the previously used CIDR devices can be cleaned and re-inserted into the vagina of other buffalo cows (9). It has indicated no variation in estrus synchronizing between the reused and new devices (11,12). The use of CIDR devices in heifers and lactating cows after disinfecting and autoclaving methods before using the CIDR (13).

Therefore, the present study aimed to evaluate the effectiveness of the reused (1-3 times) CIDR device on the reproductive efficiency in postpartum anestrus Iraqi buffalo cows.

Materials and methods

Animals

This study was conducted on Iraqi buffalo cows in Mosul city- Iraq (latitude: 36º 20'N, longitude: 43º 8'E) from the period extended from September 2022 to February 2023. Thirty-two postpartum lactating Iraqi buffalo cows aged 4. 52±0.262 years old with body weight 378.2±2.72 kg were included. The buffalo cows were kept under the same management and nutritional conditions. To eliminate any conflicting influence, animals with a history of cesarean operation, luteal cystic ovaries, pyometra, or other diseases were excluded from the study. Data were recorded for each buffalo cow including breed, number of parturitions, obstetrical problems if present, type of last parturition, retained placenta, vaginal prolapse, uterine prolapse, abortion, number of services, and milk production.

Clinical examinations

Rectal palpation and trans-rectal ultrasonography examination of the female genital system were performed for each buffalo cow, where any buffalo cow with abnormal ovaries, uterus was excluded. Buffalo cows suffering from postpartum anestrous were included at least three months before the last calving (14).

Protocols of treatment

Buffalo cows (n=32) aged at least three years suffering from anestrus at first three months from last calving were randomly chosen and divided into four groups (8 buffalo cows each). Ultrasound was used to assess the ovarian status for the presence of the persistent corpus luteum or inactive ovaries. In addition, it has been used to evaluate the oviducts and uterus to exclude any defect. A new CIDR device (progesterone 1.9g) was used in the first group (G1) for nine days, while in (G2) the devices of the first group were reused for other buffaloe cows for the same period. Animals in the G3 group were subdivided into two groups (4 buffalo cows in each subgroup); subgroup-A received double reused devices for nine days while subgroup-B received PGF2α (IM, 25 mg) 24h before the day of CIDR withdrawal (18 day) and 24h later animals were injected with GnRH (IM, 500 mg). In the fourth group (G4), buffalo cows (n=8) received an injection of PGF2α (IM, 25 mg) followed by a dose of GnRH (IM, 500 mg) after three days of PGF2α injection without the insertion of CIDR. Pre- and post-insertion of the CIDR devices (day 0 of insertion and the ninth day after withdrawal, respectively), blood samples were collected from the jugular vein to determine the blood progesterone level (15,16). Buffalo cows were inseminated naturally with fertile buffalo bulls. Pregnancy diagnosis was applied on day 45 post-mating to estimate the conception rate (17,18).

Results

Results of the estrus synchronization by the reused CIDR device in postpartum anestrus buffaloes are presented in table 1. The analyzed data (estrus and pregnancy rate) between the studied groups exhibited highly significant variation ($P \leq 0.001$) in estrus and pregnancy rate after a natural mating in the G1, G2, and G3A groups 100%, each. At the same time, estrus and pregnancy rates declined in G3-B and G4 (50% each).

Regarding the 1st and second services, the analyzed pregnancy rate data between the studied groups exhibited highly significant variation ($P \leq 0.001$). The chi-square test demonstrated significant variations between groups in estrus duration, hormonal level, estrus, and pregnancy rates (P value 0.000, 0.000, 0.015, and 0.000, respectively) with χ^2 values 64.00, 32.00, 12.308, and 21.333, respectively, among the studied groups. Meanwhile, compared to the G1 and G2, the pregnancy rate from the first insemination declined in both the G3 and G4 groups (Figure 1).

Table 1: Results of CIDR application

Groups	No. Animals	Duration of insert CIDR days	$PGF_2\alpha$	GnRH	Estrus rate	Pregnancy rate
G1	8	9	+ve	-ve	100%**	100**
G2	8	9	+ve	-ve	100%**	100**
G3-A	4	9	+ve	-ve	100%**	100**
G3-B	4	18	+ve	+ve	50%	50
G4	8	-	+ve	+ve	50%	50

** high significant at the P≤0.001 level.

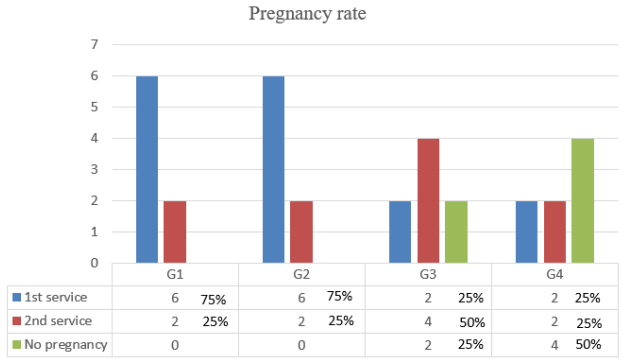

Figure 1: The pregnancy rates among groups according to the required insemination.

Before CIDR insertion, the results showed that the progesterone level significantly declined in the G2, G3, and G4 relative to the G1 group (P value 0.00). Similarly, after the device withdrawal, the G2, G3, and G4 revealed a significant decline in the progesterone level relative to its level in G1 (P value 0.024) (Figure 2).

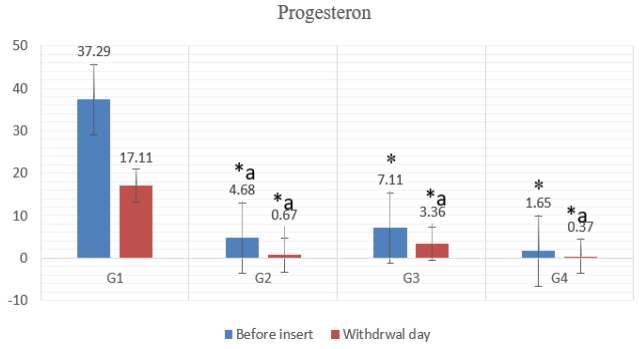

Figure 2: Variation in progesterone levels among experimental groups.

The Pearson correlation test showed that the duration was positively correlated to the hormonal level (r value 0.942), estrus (*r* value 0.584), and the pregnancy rate (r value 0.590, *P* value 0.000). The hormonal level was also positively correlated (*P* value 0.000) to estrus and pregnancy (*r* value 0.620 and 0.745, respectively). In addition, the estrus was positively correlated to pregnancy rate (*P* value 0.000 with *r* value 0.832), as in table 2. The progesterone level during the first and second inseminations revealed a slight negative correlation with pregnancy (*P* value 0.038 with *r* value -0.368), as in table 3.

Table 2: Pearson Correlation Sig. (2-tailed) between the studied parameters in the treatment groups

Correlations	Duration	Hormone	Estrus	Pregnancy
Duration	1			
Hormone	0.942** 0.000	1		
Estrus	0.584** 0.000	0.620** 0.000	1	
Pregnancy	0.590** 0.000	0.745** 0.000	0.832** 0.000	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 3: Pearson Correlation Sig. (2-tailed) of progesterone level with pregnancy rate

Correlations	Progesterone	Pregnancy
Progesterone	1	.
Pregnancy	-0.368* 0.038	1

* Correlation is significant at the 0.05 level (2-tailed).

Discussion

The current study revealed that Iraqi buffalo cows suffering from postpartum anestrus and treated with a new or previously used CIDR device expressed similar reproductive performance, including estrus and pregnancy. A corpus luteum on the ovary causes negative effects on follicular development, and removing the exogenous progesterone hormone source (CIDR) promotes ovarian activity (19). On the other hand, in the postpartum period, the administration of PGF2α causes a sharp decline in progesterone levels, resulting in degeneration of the active luteal tissue; thereby, it blocks the negative feedback of progesterone on the pituitary hormones. In addition, following the withdrawal of

CIDR devices, the rapid drop in the circulating progesterone level would promote the release of GnRH from the hypothalamus. Consequently, the pituitary FSH and LH are released, followed by the resumption of ovarian cyclicity (20). Therefore, releasing GnRH after CIDR device removal can effectively stimulate the pituitary gonadotropins with consequent estrus induction in buffalo cow's postpartum anestrus (21).

A previous study on dairy buffalo cows revealed a positive impact of the exogenous progesterone embedded in the CIDR device on estrus induction and follicular development (22). The unused CIDR device contains progesterone in a concentration of 1.92g, while the residual progesterone concentration after the single use may reach 1.31±0.01 g, and the estimated progesterone release is 0.61g; in the same way, the received second and third used CIDR devices contain residual progesterone of 1.38 and 1.05 ng/ml, respectively (23,24).

In the present study, the ovaries of the presynchronized animals demonstrated insufficient follicular growth and absence of mature follicles with the presence of mature corpora lutea; however, after being synchronized with a new or reused CIDR devices, estrus was detected within 2-3 days (25). In addition, the estrus and pregnancy rates were 100% in the treated groups (G1-G3A). Therefore, high significance of a CIDR device appears to be the presence of a corpus luteum at the end of the estrus synchronization program without the need to complete the program by administration of GnRH hormone at day 11, when the presence of dominant follicle development in the final stage of the program (12). Similar observations of ovarian responses and pregnancy rates were recorded in buffalo cows treated with new or reused CIDR devices (25,26). These results suggested that treating buffalo cows with a new or used CIDR device during the postpartum period provides adequate regulation of follicular growth and improves the final follicular growth by reducing the progesterone level. Moreover, injection of PGF2α before the CIDR removal in estrus synchronization programs improves fertility and pregnancy rates (12,27,28).

This study found that CIDR can be reused effectively up to three times (9 days each) to induce estrus and increase pregnancy rates. So that the progesterone released from both the new or reused CIDR is adequate to induce estrus, this might be attributed to the reduced level of progesterone released from reused CIDR devices, which can induce estrus following the removal of the reused CIDR (13). In this study, after the CIDR removal, the onset of estrus was earlier in buffalo cows treated with the reused CIDR (1-3 times) than in animals with a new CIDR. It has been suggested that the low progesterone released from the reused CIDR might efficiently control ovarian follicular growth, where a similar effect on the induction of estrus and pregnancy rates of the postpartum anestrus buffalo cows was revealed (25,29).

There was a significant variation in the progesterone level between the day of CIDR insertion and the withdrawal possibly due to the administration of PGF2α on the eighth day. The response of postpartum anestrum buffaloes to the new or reused CIDR protocols might predict a high response to estrus and pregnancy (30-32). Furthermore, buffalo cows that responded to CIDR protocols during the postpartum period had progesterone hormone levels≥ 2.0 ng/ml at the time of CIDR insertion (33,34). After the PGF2α injection, the decreased progesterone level (less than 2.0 ng/ml) might be considered a positive responsive sign for the treatment (35,36). However, with low progesterone, the growing follicles might undergo persistent follicle and during the LH surge, the follicle growth will be promoted toward ovulation (13,37).

Using PGF2α- GnRH protocol for estrus synchronization in buffalo cows can promote luteolysis, decrease the progesterone level, and induce estrus (38). However, another study in buffaloe cows noted that using GnRH-PGF2α protocol for estrus synchronization revealed higher estrous observation than other treatments (39). In the present study, administration of PGF2α in buffaloe cows with the presence of corpus luteum caused a decline of corpus luteum diameter, progesterone levels, and a rise in the follicle diameter. suggesting the initiation of a new estrous within 56-72hr. However, in the G4, only 50% of buffalo cows failed to ovulate after administering PGF2α, possibly due to the declined serum progesterone level in the first 24-48 hr. This decline did not reach >1.0 ng/mL after administration, where this result agrees with a previous study (7,40).

Conclusions

The present study verified that the reused CIDR, up to three times, can effectively increase the reproductive performance in the postpartum anestrum buffaloe cows by inducing estrus and increasing the pregnancy rates. Notably, following this protocol can halve the expenses of postpartum anestrus in buffalos.

Acknowledgment

The College of Veterinary Medicine at the University of Mosul greatly aided the authors in improving the quality of their research.

Conflict of interest

The author has no financial or personal ties to groups or individuals who might have improperly influenced the paper's content.

References

1. Perera O, Noakes DE. Buffalo and related species. In: Noakes DE, Parkinson TJ, England GCW, editors. Veterinary reproduction & obstetrics. 10th ed. USA: W.B. Saunders; 2019. 683–692 p.

2. Azawi OI, Ali AJ, Lazim EH. Pathological and anatomical abnormalities affecting buffalo cows reproductive tracts in Mosul. Iraqi J Vet Sci. 2008;22:59-67. DOI: 10.33899/IJVS.2008.5715
3. Rahawy MA. Study on the postpartum disorders and their relationship with the reproductive performance in Iraqi cow-buffaloes. Iraqi J Vet Sci. 2021;35(2):313-317. DOI: 10.33899/IJVS.2020.126771.1387
4. Rahawy MA, Taha MB, Azawi OI. Clinical study of anestrous in Iraqi buffaloes in Nineveh province. Iraqi J Vet Sci. 2006;20:113-124. DOI: 10.33899/IJVS.2006.62471
5. Azawi OI, Ali MD, Oday SA, Salih A, Al-Hadad AS, Mouayad SJ, Hussien AS. Comparative efficacy of different CIDR protocols for the treatment of postpartum anestrous in Iraqi buffaloes. Vet World. 2012;5:201-205. DOI: 10.5455/vetworld.2012.201-205
6. Azawi OI, Ali MD, Oday SA, Salih A, Al-Hadad AS, Mouayad SJ. Treatment of anestrous in Iraqi buffaloes using ovsynch alone or in combination with CIDR. J Adv Vet Res. 2012;2:68-72. [available at]
7. Berber RA, Silva MA, Cruz GD, Takayama NS, Baruselli PS. Effect of estrus synchronization protocols, lactation yield, and body condition score on conception rate in buffaloes. Indian Vet J. 2005;82:45-47. [available at]
8. Carvalho NT, Nichi M, Henriquez CP, Oliveira CA, Baruselli PS. Use of human chorionic gonadotropin (hCG) for fixed-time artificial insemination in buffalo (*Bubalus bubalis*). Anim Reprod. 2007;4:98-102. [available at]
9. Nogueira DM, Lopes Junior ES, Peixoto RD, Christilis M, Martins SR, Monte AD. Using the same CIDR up to three times for estrus synchronization and artificial insemination in dairy goats. Acta Sci Anim Sci. 2011;33:321-325. DOI: 10.4025/actascianimsci.v33i3.10120
10. Cerri RA, Rutgliano HM, Bruno RS, Santos JP. Progesterone (P4) concentrations and ovarian response after insertion of a new or a 7-day used intravaginal P4 insert (IPI) in proestrus lactating cows. J Anim Sci. 2005;83(I):37. DOI: 10.1016/j.anireprosci.2007.12.005
11. Carvalho NT, Nagasaku EM, Vannucci FS, Toledo LM, Baruselli PS. Conception rate according intravaginal progesterone device and hCG or GnRH to induce ovulation in buffalo during the off-breeding season. Ital J Anim Sci. 2007;6:646–648. DOI: 10.4081/ijas.2007.s2.646
12. Monteiro BM, Souza DC, Vasconcellos GM, Correa TB, Vecchio DÁ. Filho MF, Carvalho NT, Baruselli PS. Ovarian responses of dairy buffalo cows to timed artificial insemination protocol, using new or used progesterone devices, during the breeding season (autumn–winter). Anim Sci J. 2016;87:13–20. DOI: 10.1111/asj.12400
13. Chacher MA, Çolak A, Hayirlia A. Efficacy of repeatedly used CIDR device in cattle reproduction: A meta analysis review of progesterone concentration and conception rate. Turk J Vet Anim Sci. 2017;41:692-697. DOI: 10.3906/vet-1706-75
14. Perera BM. Reproductive cycles of buffalo. Anim Reprod Sci. 2011;124:194-199. DOI: 10.1016/j.anireprosci.2010.08.022
15. Hassaneen AS, Ibrahim AM, Yousef NA, Ahmed AE. Combined controlled-internal drug release and ovsynch synchronization protocol does not improve fertility outcome in buffaloes. Adv Anim Vet Sci. 2021;9(12):2027-2035. DOI: 10.17582/journal.aavs/2021/9.12.2027.2035
16. Alali MQ, Rahway MA. Relationship between the leptin, progesterone, body weight and onset of puberty. Iraqi J Vet Sci. 2022;36(4):833-837. DOI: 10.33899/IJVS.2022.131232.1932
17. Singh G, Chandolia R, Dutt R, Saini A, Dalal J, Malik R, Chhikara S. Trans-abdominal ultrasonography during second and third trimester in Murrah buffaloes. Int J Livest Res. 2017;7:174-185. DOI: 10.5455/ijlr.20170426104230
18. Aziz DM, Al-Watar BD. Trans abdominal ultra sonographic determination of pregnancy and fetal viability in buffalo cows. Iraqi J Vet Sci. 2022;36(1):233-238. DOI: 10.33899/ijvs.2021.129858.1694
19. Carvalho NA, Soares JG, Porto Filho RM, Gimenes LU, Souza DC, Nichi M, Sales JS, Baruselli PS. Equine chorionic gonadotropin improves the efficacy of a timed artificial insemination protocol in buffalo during the nonbreeding season. Theriogenol. 2013;79:423–428. DOI: 10.1016/j.theriogenology.2012.10.013
20. Carvalho PD, Wiltbank MC, Fricke PM. Manipulation of progesterone to increase ovulatory response to the first GnRH treatment of an Ovsynch protocol in lactating dairy cows receiving first timed artificial insemination. J Dairy Sci. 2015;98(12):8800–8813. DOI: 10.3168/jds.2015-9968
21. VirmaniI VM, Malik RK, Singh P. Impact of CIDR in combination with different hormones for treatment of anestrus in buffaloes under field condition of Haryana. Haryana Vet. 2014;53(1):28-33. [available at]
22. Mendes JG, Thomé AS, Batista ES, Freitas BG, Guerreiro BM, Vasconcellos GM. Follicular and luteal dynamics of dairy buffaloes that were treated or not with prostaglandin at the beginning of the synchronization protocol for TAI. Anim Reprod. 2014;11:370. [available at]
23. Colazo MG, Kastelic JP, Whittaker PR, Gavaga QA, Wilde R, Mapletoft RJ. Fertility in beef cattle given a new or previously used CIDR insert and estradiol, with or without Progesterone. Anim Reprod Sci. 2004;81:25-34. DOI: 10.1016/j.anireprosci.2003.09.003
24. El-Tarabany MS. The efficiency of new CIDR and once used CIDR to synchronize ovulation in primiparous and multiparous Holstein cows. Anim Reprod Sci. 2016;173:29-34. DOI: 10.1016/j.anireprosci.2016.08.006
25. Carvalho NA, Soares JG, Souza DC, Vannucci FS, Amaral R, Maio JR, Sales JN, Sá Filho MF, Baruselli PS. Different circulating progesterone concentrations during synchronization of ovulation protocol did not affect ovarian follicular and pregnancy responses in seasonal anestrous buffalo cows. Theriogenol. 2014;81:490–495. DOI: 10.1016/j.theriogenology.2013.11.004
26. De Rensis F, Lopez-Gatius F. Protocols for synchronizing estrus and ovulation in buffalo (*Bubalus bubalis*): A review. Theriogenol. 2007;67:209-216. DOI: 10.1016/j.theriogenology.2006.09.039
27. Carvalho JP, Carvalho NT, Reis EL, Nichi M, Souza AH, Baruselli PS. Effect of early luteolysis in progesterone-based timed AI protocols in *Bos indicus*, *Bos indicus* x *Bos taurus*, and *Bos taurus* heifers. Theriogenol. 2008;69:167–175. DOI: 10.1016/j.theriogenology.2007.08.035
28. Pereira MH, Sanches CP, Guida TG, Rodrigues AD, Aragon FL, Veras MB, Borges PT, Wiltbank MC, Vasconcelos JL. Timing of prostaglandin F2α treatment in an estrogen-based protocol for timed artificial insemination or timed embryo transfer in lactating dairy cows. J Dairy Sci. 2013;96:2837–2846. DOI: 10.3168/jds.2012-5840
29. Naseer Z, Ahmad E, Singh J, Ahmad N. Fertility following CIDR based synchronization regimens in anoestrous Nili-Ravi buffaloes. Reprod Domest Anim. 2011;46:814-817. DOI: 10.1111/j.1439-0531.2010.01746.x
30. Chaikhun T, Tharasanit T, Rattanatep J, de Rensis F, Techakumphu M. Fertility of swamp buffalo following the synchronization of ovulation by the sequential administration of GnRH and PGF2alpha combined with fixed-timed artificial insemination. Theriogenol. 2010;74:1371-1376. DOI: 10.1016/j.theriogenology.2010.06.007
31. Kalwar Q, AhmedMemon A, Bhutto MB, Kunbhar HK, AhmedWagan S. Estrus response and fertility rate in Kundhi buffaloes following estrus synchronization in breeding season. J Adv Vet Anim Res. 2015;2:362-365. DOI: 10.5455/javar.2015.b97
32. Murugavel K, Antoine D, Raju MS, Lo´pez-Gatius F. The effect of addition of equine chorionic gonadotropin to a progesterone-based estrous synchronization protocol in buffaloes (*Bubalus bubalis*) under tropical conditions. Theriogenol. 2009;71:1120–1126. DOI: 10.1016/j.theriogenology.2008.12.012
33. Jabeen S, Anwar M, Andrabi SM, Mehmood A, Murtaza S, Shahab M. Determination of ovsynch efficiency for oestrus synchronization by plasma LH and P4 levels in Nili Ravi buffalo during peak and low breeding seasons. Pak Vet J. 2013;33(2):221-224. [available at]
34. HoQue MN, Talukder AK, Akter M, Shamsuddin M. Evaluation of ovsynch protocols for timed artificial insemination in water buffaloes in Bangladesh. Turk J Vet Anim Sci. 2014;38:418–424. DOI: 10.3906/vet-1302-35
35. Das GK, Khan FA. Summer anoestrus in buffaloes- A review. Reprod Domest Anim. 2010;45:483-494. DOI: 10.1111/j.1439-0531.2010.01598.x

36. Karen AM, Darwish SA. Efficacy of ovsynch protocol in cyclic and acyclic Egyptian buffaloes in summer. Anim Reprod Sci. 2010;119:17-23. DOI: 10.1016/j.anireprosci.2009.12.005
37. Colazo MG, Kastelic JP, Davis H, Rutledge MD, Martinez MF, Small JA, Mapletoft RJ. Effects of plasma progesterone concentrations on LH release and ovulation in beef cattle given GnRH. Domest Anim Endocrinol. 2008;34:109-117. DOI: 10.1016/j.domaniend.2006.11.004
38. Paul V, Prakash BS. Efficacy of the ovsyinch protocol for synchronization of ovulation and fixed time artificial inseminator in Murrah buffaloes (BubalisBubalus) Theriogenol. 2005;64:1049–60. DOI: 10.1016/j.theriogenology.2005.02.004
39. Handoko Y J, and Rodiallah M. Reproductive performance of buffalo-cows with various synchronization protocols in Kampar regency of Riau province. Earth Environ Sci. 2019;260:1-6. DOI: 10.1088/1755-1315/260/1/012057
40. Mirmahmoudi R, Prakash BS. The endocrine changes, the timing of ovulation and the efficacy of the double synch protocol in the Murrah buffalo (*Bubalus bubalis*). General Comp Endocrinol. 2012;177:153-159. DOI: 10.1016/j.ygcen.2012.03.004

فعالية إعادة تدوير استخدام اللولب المهبلي لتوحيد الشبق في إناث الجاموس التي تعاني من انعدام الشبق بعد الولادة

نور جان مصطفى زينل و محمد عبد الاله رحاوي

فرع الجراحة وعلم تناسل الحيوان، كلية الطب البيطري، جامعة الموصل، الموصل، العراق

الخلاصة

تهدف الدراسة الحالية الى تقييم كفاءة إعادة استخدام اللولب المهبلي ومقارنة مع الطريقة الهرمونية في إحداث الشبق إناث الجاموس العراقي التي تعاني من انعدام الشبق بعد الولادة. اثنان وثلاثون من إناث الجاموس بعمر لا يقل عن ثلاث سنوات تعاني من انعدام الشبق بعد الولادة اختيرت عشوائيا وقسمت الى أربعة مجاميع (كل مجموعة مكونة من ثمانية إناث). فحصت حالة المبايض والرحم باستخدام جهاز الأمواج فوق الصوتية لاستبعاد أي عيوب تناسلية. المجموعة الأولى تم فيها إدخال اللولب المهبلي الجديد لمدة ٩ أيام بينما المجموعة الثانية تم إعادة استخدام نفس اللولب المهبلي المستخدم بالمجموعة الأولى و لمدة ٩ أيام، أما المجموعة الثالثة تم إعادة استخدام اللولب المهبلي المستخدم لمرتين وقسمت هذه المجموعة الى تحت المجموعة ا ولمدة ٩ أيام ومجموعة الثالثة ب ولمدة ١٨ يوما حيث تم حقن البروستوكلاندين يوم ١٧ وحقن هرمون المحرر للقند يوم ١٩ أما المجموعة الرابعة فهي مجموعة استخدام البرنامج الهرموني حيث تم حقن البروستوكلاندين بجرعة ٢٥ ملغرام بالعضل وبعد ٧٢ ساعة هرمون المحرر للقند بجرعة ٥٠٠ ملغرام بالعضل بدون استخدام اللولب المهبلي، تم سحب عينات الدم من الوريد الوداجي من اجل تقدير مستوى هرمون البروجستيرون قبل وبعد إدخال اللولب المهبلي، تسجيل حدوث الشبق و معدل الحمل بعد اطلاق ثور الجاموس الخصب لستفيد إناث الجاموس وفحص الحمل بعد ٤٥ يوم بعد التسفيد. أظهرت نتائج عدم وجود فرق معنوي بين مجموعة استخدام اللولب المهبلي الجديد ومجاميع إعادة استخدام اللولب المهبلي لمرة و مرتين ولمدة ٩ أيام من حيث إحداث الشبق ومعدل حصول الحمل فيها من دون الحاجة لحقن الهرمون المحفز للقند في اليوم ١١ ، بينما سجل فرق معنوي عالي في المجموعة الثالثة ب والمجموعة الرابعة لتصل نسب إحداث الشبق ومعدل الحمل فيها الى ٥٠%.كما سجل وجود فرق معنوي عالي في مستوى هرمون البروجستيرون إذ انخفاض بعد سحب اللولب المهبلي في المجاميع والثانية والثالثة ا، ب والرابعة مقارنة مع المجموعة الأولى، بالإضافة الى وجود علاقة ارتباط موجبة بين فترة بقاء اللولب ومستوى هرمون البروجستيرون وإحداث الشبق ومعدل الحمل، فيما لوحظ وجود علاقة ارتباط سلبية بين حصول الحمل من التسفيد الأول والتسفيد الثاني مقارنة مع معدل حصول الحمل. نستنتج أن توحيد الشبق بإعادة نفس استخدام اللولب المهبلي ولثلاث مرات يكون بكفاءة عالية في إحداث الشبق وبنسب حمل مرتفعة في إناث الجاموس العراقي التي تعاني من انعدام الشبق بعد الولادة، إضافة الى إمكانية إعادة استخدام اللولب لمدة ٩ أيام ودون الحاجة لحقن الهرمون المحفز للقند في اليوم ١١ من برنامج توحيد الشبق في إناث الجاموس المرضعة.