

REPRODUCTIVE EFFICIENCY AND MILK PRODUCTION OF LACTATING FRIESIAN COWS ADMINSTRATED WITH GnRH DURING DIFFERENT POSTPARTUM PERIODS

Abdel-Khalek, A.E.¹; M.A. El-Harairy¹; A.F.A. Mehrez² and W. F. M. Fouad²

¹Animal Production Dept., Faculty of Agric., Mansoura University.

²Animal Production Research Institute, Agricultural Research Center.

ABSTRACT

The current study aimed at evaluating the effect of GnRH treatment, during different intervals from calving (14, 21 or 28 day-postpartum) on reproductive efficiency, milk production and some hematological parameters of lactating Friesian cows. A total of 35 lactating Friesian cows at 7 day-postpartum (PP), ranging from 4-7 years of age, 2nd - 4th parity and 450-550 kg LBW was divided into four groups. Cows in the 1st group (n=8) were injected with saline solution (0.9 % NaCl) on day 14-PP. However, cows in the 2nd (n=9), 3rd (n=10) and 4th (n=8) groups were injected with GnRH on days 14, 21 and 28, respectively. Cows in all groups were observed for heat signs and were artificially inseminated by frozen semen when they were in heat. Pregnancy was confirmed by rectal palpation on d 60 post first artificial insemination. Blood samples were collected and count of red blood cells (RBC), packed cell volume (PCV %) and haemoglobin concentration (Hb) were performed in whole blood collected for 7 week-PP. The following traits were calculated: postpartum first oestrus interval (PPFOI), treatment to first oestrus interval (TFSI), days open (DO), service period length (SPL), number of services per conception (NSC), calving interval (CI) and conception rate (%). Also, average daily milk yield was recorded during the first 12 wk of lactation period. Results revealed that cows in G2 showed the highest CR (44.5%) within ≤120 day-PP as compared to 37.5% in G1. Within >120 day-PP, cows in G3 showed the highest CR (70%). The effect of GnRH treatment on all reproductive measurements of Friesian cows having ≤120 day-PP was not significant. For Friesian cows having >120 days open, the effect of GnRH treatment on reproductive measurements was significant (P<0.05) only on CI, being longer in G2 (509.4 d) and G4 (514.4 d) than in G1 (461.8 d) and G2 (471.4 d). Within the whole postpartum period, cows in different experimental groups showed inconsistent trend and insignificant differences in all reproductive measurements. Average daily milk yield for 12 wk lactation of cows having ≤120 DO was not significantly affected by GnRH treatment. However, average daily milk yield of cows having >120 DO was lower (P<0.05) in G2 than in G1. Count of RBC and PCV percent were reduced (P<0.05) in G2 as compared to G1, while RBC count decreased (P<0.05) and PCV increased (P<0.05). The differences in all haematological parameters studied in G3 or in Hb concentration of all treated groups were not significant as compared to G1.

The current study could conclude that injection with GnRH during different postpartum periods especially on 14 day-PP may help in acceleration of lactating cows to resume their ovarian activity and increasing conception rate during 120 day-PP.

Keywords: Friesian, GnRH, postpartum, reproduction, milk, haematology.

INTRODUCTION

One of the goals of dairy management programs is to achieve short postpartum period and yielding one calve each year. Delaying the

resumption of postpartum ovarian activity increases days open and postpartum period and decreases longevity of dairy cows.

In female cattle, a complex array of hypothalamus, anterior pituitary and ovaries interactions drive the establishment of ovarian steroidogenic capacity and the development of a dominant follicle to ovulatory competence (Greenwald and Terranova, 1988). Early restoration of normal ovarian function may be limited by deficiencies in hypothalamic or pituitary function resulting in failure of release of pituitary luteinizing hormone (LH) (Fernandes *et al.*, 1978; Kesler *et al.*, 1978a). Hypothalamic gonadotropin-releasing hormone (GnRH) and its synthetic analogs cause a release of LH from the anterior pituitary in the bovine animal (Zolman *et al.*, 1973 and Kahenbach *et al.*, 1974). The release of LH in cows during the early postpartum period and in dairy cows with ovarian follicular cysts is facilitated by GnRH (Manns and Richardson, 1976 and Kesler *et al.*, 1978b). Thus, GnRH might be used to hasten normal cycling in the early postpartum dairy cow. Britt *et al.* (1977) provided evidence that the use of GnRH during the early postpartum period may reduce the incidence of cystic ovarian disease and increase fertility in dairy cows.

Moreover, treatment with GnRH at the time of insemination of cows exhibiting oestrus may elicit an early release of LH capable of inducing ovulation (Lucy and Stevenson, 1986 and Stevenson and Call, 1988) and significantly increased the pregnancy rate in dairy cows (Nakao *et al.* 1983). In this respect, Ullah *et al.* (1996) reported that administration of GnRH to dairy cows at oestrus improved pregnancy rates and increased serum progesterone.

GnRH or its agonists (GnRH) have been used to treat reproductive disorders in cattle. The success of using GnRH to improve the reproductive capacity of buffalo cows (El-Nagar, 2003 and Gabr, 2005) or Friesian cows (Wafa, 2004) was achieved in Egypt. However, hormonal treatment to induce ovulation produced different results according to time of treatment during postpartum.

Therefore, the current study aimed at evaluating the effect of GnRH treatment, during different intervals from calving (14, 21 or 28 day postpartum) on reproductive efficiency, milk production and some haematological parameters of lactating Friesian cows.

MATERIALS AND METHODS

The present study was carried out at Sakha Station of Animal Production Researches, belonging to Animal Production Research Institute, Agricultural Research Center, Ministry of Agriculture in co-operation with Animal Production Department, Faculty of Agriculture, Mansoura University Animal Production during the period from October 2006 to August 2007.

Animals and management:

A total of 35 lactating Friesian cows at 7 day-PP, ranging from 4 to 7 years of age, at 2nd to 4th parity and weighing 450 to 550 kg LBW was used in this study. All experimental cows were healthy and sexually mature and intact genitalia as indicated by rectal palpation prior to treatment. Cows

were fed complete feed diet in groups, according to their body weight, milk production and reproductive status. During the period from May to the end of November, experimental cows were fed on concentrate feed mixture (CFM), maize silage (MS), berseem hay (BH) and rice straw (RS). While during the period from December up to April, animals were fed fresh berseem instead of berseem hay. Feeds were offered twice daily at about 8:00 h and 15:00 h All cows were machine-milked twice daily starting on 4-5 days after calving.

Throughout the lactation period all cows were milked twice daily at 8:00 h and 17:00 h by milking machine. Average daily milk yield of each cow was recorded on one day every week for 12 weeks lactation period. Calves were kept with their dams for three to four days to receive the colostrum.

Experimental design:

The experimental animals were divided into four groups according to their age and live weight. Cows in the 1st group (n=8) were injected with saline solution (0.9 % NaCl) on day 14 postpartum. However, cows in the 2nd (n=9), 3rd (n=10) and 4th group (n=8) were injected with GnRH analogue (Receptal) on days 14, 21 and 28, respectively. Each cow in all treated groups was intramuscularly injected with 2.5 ml Receptal (Each ml receptal contains 0.0042 mg buserelin acetate equivalent to 0.004 mg buserelin, Intervet International B.V. Boxmeer, Holland).

Times of treatment with GnRH at 14, 21 and 21 days postpartum were chosen as described by Britt *et al.* (1974) and Foote and Riek (1999) and follows after the hypothalamic-pituitary-ovarian axis, being sensitive to GnRH and LH release (Butler and Smith, 1989).

Detection of oestrus and insemination:

Cows in all groups were observed for heat signs three times daily at 6:00 h before milking, 12:00 h and 16.00 h after milking. Heat detection was carried out in the semi open shaded yard by the aid of visual observation for behavioral oestrus using a fertile bull for half an hour during each time. Cow observed in heat was artificially inseminated by frozen semen.

Pregnancy diagnosis:

Pregnancy was confirmed by rectal palpation on d 60 post first artificial insemination. Also, conception rate was confirmed on d 24 post first AI by a rise in milk progesterone concentration, being more than 1 ng/ml in blood serum.

Blood sampling:

Blood samples were collected in clean test tubes via the jugular vein from all cows before feeding. Hematological parameters including count of red blood cells (RBC), packed cell volume (PCV %) and haemoglobin concentration were performed in whole blood collected for 7 weeks postpartum. Haemoglobin concentration in whole blood was

conducted using fully digital haematology counter (Laboratories, USA), however, RBC was performed using haemocytometer.

Data recorded:

The following traits were calculated:

Reproductive traits:

- Postpartum first oestrus interval (PPFOI).
- Postpartum first service interval (PPFSI).
- Days open defined as the period from calving to conception service.
- Service period, defined as the period from 1st service to conception.
- Number of services per conception (NSC).
- Calving interval (CI).
- Conception rate (%).

Productive traits:

Average daily milk yield/week was recorded during the first 12 weeks of lactation period.

Statistical analysis:

Data were statistically analyzed as one way design (ANOVA) to evaluate the group differences according to Snedecor and Cochran (1982). The differences between group means were tested using new multiple range test (Duncan, 1955).

RESULTS AND DISCUSSION

Effect of GnRH on conception rate:

In this study, cows in all groups were inseminated during postpartum period (PP) more than 120 days until conception of all cows, then conception rate (CR) was recorded for cows within <120 and >120 day-PP. Results presented in Table (1) revealed that within ≤120 day-PP, CR increased in G2 (44.5%), similar in G4 (37.5%) and decreased in G3 (30%) as compared to the control group (G1, 37.5%). Within >120 day-PP, CR was higher (70%) in G3 similar in G4 (62.5%) and lower in G2 (55.5%) than that in G1 (62.5%).

Table (1): Conception rate (CR %) of Friesian cows in the experimental groups within 120 or >120 day-PP

Item	G1 (Control)		G2 (14 day-PP)		G3 (21 day-PP)		G4 (28 day-PP)	
	N= 8	%	N=9	%	N=10	%	N=8	%
Within ≤120 day-PP:								
CR %	3	37.5	4	44.5	3	30	3	37.5
Within >120 day-PP:								
CR %	5	62.5	5	55.5	7	70	5	62.5
Within the whole postpartum period:								
CR %	8	100	9	100	10	100	8	100

The highest CR of G2 with <120 day-PP as compared to the control and other treated groups may indicate a beneficial effect of treating cows with GnRH only on day 14 pp on CR as compared to the other groups. While treating cows on day 14 or 28-PP did not affect CR. The CR varied depending on the postpartum time of insemination. In Friesian dairy cows it was 45.5 and 53.1% before day 60 postpartum and 60-90 day-PP, respectively (Farrage *et al.*, 1986).

The CR after the first service in Friesian cows was 42.1% (Al-Gohary, 1991), 51.4% (Mohamed, 1997), 41.7 and 60% in primiparous and multiparous cows, respectively (Abdel-Khalek, 2003) and 22.2% (Abd El-Razek *et al.* (2005).

As affected positively by GnRH treatment, Aboul-Ela and El-Keraby (1986) reported that the first service CR was 81.3 and 54.8%, reached to 86.4 and 65% after the third service in treated and control Friesian cows, respectively. Also, first service CR was 28.7 and 10.5% (McLeod and Williams (1991), 43 and 14% (Mee *et al.*, 1993) or 28.6 and 17.7% (Ullah *et al.*, 1996). Moreover, De Jarnette and Marshall (2003) found that CR in Holstein cows treated with GnRH averaged 84%. In recent studies on Egyptian buffaloes, the first service CR was 60 and 10 % in animals treated with two doses of GnRH (15 day postpartum interval) and control animals, respectively (EI-Nagar, 2003). Moreover, several authors found that injecting dairy cows with various doses of GnRH between day 10 and 18-PP resulted in an improvement of various reproductive parameters such DO and NSC (Nash *et al.*, 1980; Boiti *et al.*, 1982; Ball and Lamming, 1983; Lee *et al.*, 1983 and Cavestany and Foote, 1985; Nasir *et al.*,1990).

On the other hand, negative effect of GnRH was found on CR, being 10.5 and 28.7% (McLeod and Williams, 1991), 48.1 and 63.5% (Stevenson *et al.*, 1996) in cows treated with GnRH and control, respectively. The first service pregnancy rates were 34.6 and 30% in dairy cows treated with GnRH and controls, respectively (Mee *et al.* (1990).

Effect of GnRH on reproductive efficiency:

Cows in each experimental group were divided according to their days open (DO) into two sub-groups, the first having ≤ 120 and second having >120 day-PP, then reproductive measurements of sub-groups were calculated.

Data in Table (2) show that the effect of GnRH treatment on all reproductive measurements of Friesian cows having ≤ 120 day-PP was not significant, although cows in G2 showed the shortest interval from calving (PPFOI) or from treatment (TFOI) to postpartum first oestrus, and the greatest number of services per conception (NSC) as compared to the other groups. While the control cows showed the shortest DO, service period length (SPL) and calving interval (CI).

For Friesian cows having >120 DO, the effect of GnRH treatment on reproductive measurements was significant ($P < 0.05$) only on CI, being significantly ($P < 0.05$) longer in G2 (509.4 d) and G4 (514.4 d) than in the control (G1, 461.8 d), but did not differ significantly in G3 (471.4 d) from that

in control (G1, 461.8 d). However, cows in G3 showed the shortest PFFOI and TFOI, as well as the lowest NSC (Table 2).

Table (2): Reproductive measurements of Friesian cows in experimental groups within 120 or >120 day-PP.

Reproductive measure	G1 (Control)	G2 (14 day-PP)	G3 (21 day-PP)	G4 (28 day-PP)
Cows having DO ≤120 days:				
PPFOI (d)	56.33±21.0	48.25±6.40	68.00±11.6	62.66±7.53
TFOI (d)	56.33±21.0	34.25±6.43	47.00±11.6	34.66±7.53
NSC	1.330±0.33	2.250±0.47	1.666±0.33	1.330±0.33
DO	62.66±17.9	82.00±14.4	89.33±15.9	80.00±10.9
SPL (d)	6.660±6.66	33.75±15.8	26.00±13.0	17.00±17.0
CI (d)	345.0±14.4	362.7±13.8	368.6±13.2	363.3±8.81
Cows having DO >120 days:				
PPFOI (d)	111.4±21.3	111.8±20.3	106.4±15.9	109.0±21.7
TFOI (d)	111.4±21.3	99.60±20.9	85.40±15.9	81.00±21.7
NSC	3.000±0.44	4.000±0.63	2.710±0.60	3.800±0.96
DO	178.2±16.1	220.4±19.5	190.0±18.8	224.0±33.8
SPL (d)	67.20±16.5	106.4±19.9	79.70±31.5	115.2±39.6
CI (d)	461.8±13.5 ^b	509.4±18.9 ^a	471.4±17.4 ^b	514.4±33.2 ^a
All cows:				
PPFOI (d)	90.75±17.6	83.55±15.7	94.90±12.7	91.62±15.7
TFOI (d)	90.75±17.6	70.55±16.1	73.90±12.7	63.62±15.7
NSC	2.370±0.41	3.220±0.49	2.400±0.45	2.870±0.74
DO	134.8±23.9	158.8±27.0	159.8±20.4	170.0±33.4
SPL (d)	44.50±15.0	74.11±17.7	63.60±23.3	78.37±30.2
CI (d)	418.0±23.3	443.5±12.4	440.6±20.0	457.7±34.1

a and b: Means within the same row with different superscripts are significantly different at P<0.05.

PPFOI: Postpartum first oestrus interval TFOI: Treatment to first oestrus interval

NSC: Number of services per conception DO: Days open SPL: Service period length

CI: Calving interval.

Within the completely postpartum period, cows in different experimental groups showed inconsistent trend and insignificant differences in all reproductive measurements. However, cows in the control group showed the shortest NSC, DO, SPL and CI as compared to the other treated groups (Table 2).

The present results indicated that GnRH treatment of Friesian cows on different days during postpartum period had no beneficial effects on general reproductive measurements. However, some effects were observed on decreasing PFFOI of cows having <120 DO treated with GnRH on day14-PP and NSC of those having >120 DO treated with GnRH on 21-PP. These findings may be associated with improving uterine involution by GnRH treatment at early postpartum period. Postpartum administration of GnRH has been reported to improve reproductive performance when administered on a herd basis (Britt *et al.*, 1977). The effect of using GnRH in the early postpartum period of cows with retained fetal membranes. GnRH given to cows with retained fetal membranes between 10 and 12

day-PP had improved uterine and cervical involution, less ovarian cysts and abnormal vaginal discharge, and reduced days open and services per conception compared with untreated retained fetal membrane cows (Bostedt *et al.*, 1980).

In accordance with the present results, Leslie (1981) reported that cows treated with 200 mg GnRH between 8 and 14 day-PP did not differ from the controls with respect to reproductive performance, or rate of culling for infertility.

On the other hand, several authors with injecting dairy cows with various doses of GnRH between day 10 and 18-PP resulted in an improvement of various reproductive parameters such DO and NSC (Nash *et al.*, 1980; Boiti *et al.*, 1982; Ball and Lamming, 1983; Lee *et al.*, 1983 and Cavestany and Foote, 1985).

In the present study, cows treated with GnRH on 28 day-PP showed the lowest reproductive measurements. Some authors showed that GnRH given before 30 day-PP was not associated with a significant change in days open, overall conception rate or postpartum first oestrus interval (Kinsel and Etherington, 1998). In addition, Langly and O'Farrell. (1979) found that GnRH treatment at 14 day-PP did not have a positive influence on reproductive performance in Irish herds. Additionally, Kesler *et al.* (1978b) and Kinsel and Etherington (1998) reported no significant differences in reproductive performance or culling rate between cows treated with GnRH at 2 to 20 day-PP and untreated control ones.

Effect of GnRH on milk yield:

Average daily milk yield for 12 weeks lactation (Table 3) of cows having DO ≤ 120 days was not significantly affected by GnRH treatment. However, average daily milk yield of cows having DO > 120 days was significantly ($P < 0.05$) affected by GnRH treatment, being lower only for G2 than in the control group.

Table (3): Average daily milk yield (kg) during 12 weeks lactation of Friesian cows having DO of ≤ 120 or > 120 days in different experimental groups.

Item	G1 Control	G2 14 day-PP	G3 21 day-PP	G4 28 day-PP
Cows with ≤ 120 DO	10.29 \pm 0.54	10.65 \pm 0.44	10.48 \pm 0.40	9.81 \pm 0.50
Cows with > 120 DO	9.62 \pm 0.40 ^{ab}	9.09 \pm 0.38 ^b	10.24 \pm 0.30 ^a	9.91 \pm 0.34 ^{ab}
All cows	9.87 \pm 0.32	10.22 \pm 0.31	10.31 \pm 0.24	9.87 \pm 0.28

a and b: Means within the same row with different superscripts are significantly different at $P < 0.05$.

It is of interest to note that average daily milk yield was slightly higher in cows having DO ≤ 120 days than those with > 120 days. Average daily milk yield of all cows was not significantly affected by GnRH treatment (Table 3).

Average daily milk yield of cows with DO of < 120 or > 120 days and of all cows showed inconsistent trend of changes throughout 12 weeks

lactation. Average daily milk yield showed slight increase in treated and control cows having <120 DO by increasing lactation week, while those having >120 DO and all cows showed marked reduction in daily milk yield at the 8th week of lactation (Fig. 1).

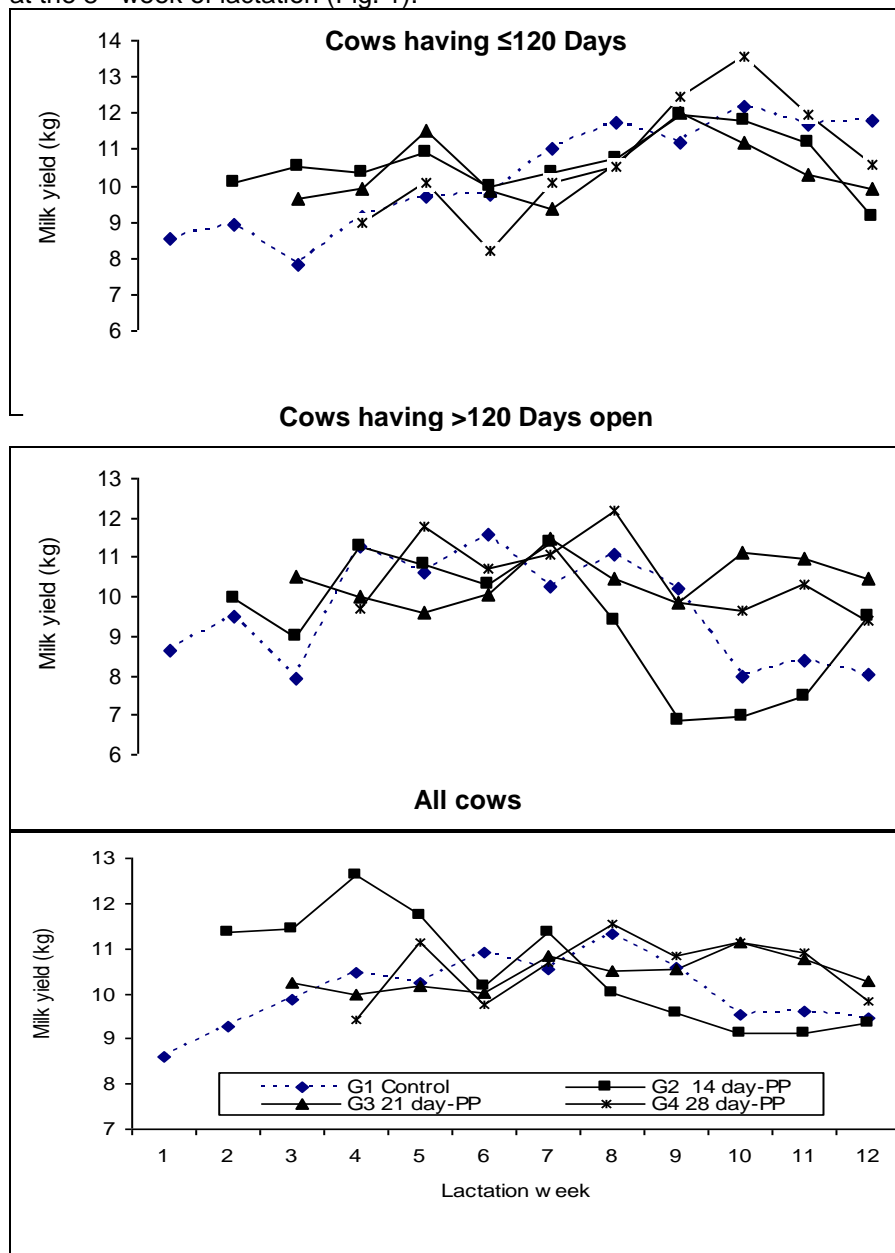


Fig. (1): Average daily milk yield of Friesian cows having ≤ 120 or >120 days open in different experimental groups throughout 12 weeks lactation.

In contrast to the present results, Wafa (2004) showed that magnitude of increase in milk yield of Friesian cows treated with GnRH at calving and 14 day-PP by about 21.4% as compared to the control yield.

Haematological parameters:

Data of haematological parameters studied were affected significantly ($P<0.05$) by GnRH treatment (Table 4). Count of RBC and PCV percent significantly ($P<0.05$) reduced in cows of G2 treated with GnRH on day 14 postpartum as compared to the control. While, treating cows in G4 with GnRH on day 28 postpartum resulted in significant ($P<0.05$) decrease in RBC count and significant ($P<0.05$) increase in PCV percent. On the other hand, the differences in all haematological parameters studied of cows in G3 treated with GnRH on day 21 postpartum or in haemoglobin concentration of all treated groups were not significant as compared to the control (G1).

It is worthy noting that RBC count of all cows showed consistent trend of changes throughout 7 weeks postpartum, being the highest in G3, followed by G4 and G2, respectively, but all treated groups were lower than the control group. This may indicate somewhat effect of GnRH treatment on reducing RBC count, especially in G2 treated on 14 day postpartum (Fig. 2 A).

During the first 7 weeks postpartum, PCV percent was almost higher in G4 and G3, respectively, and lower in G2 as compared to the control (G1, Fig. 2 B). However, haemoglobin concentration was almost the highest in G3 and nearly similar in G2 and G3 as compared to the control during 7 weeks postpartum (Fig. 2 C).

Table (4): Average haematological parameters of Friesian cows in different experimental groups during the 1st seven weeks postpartum.

Haematological parameter	G1 Control	G2 14 day-PP	G3 21 day-PP	G4 28 day-PP
RBC ($\times 10^6/\text{mm}^3$)	7.32 \pm 0.20 ^a	5.71 \pm 0.07 ^c	7.19 \pm 0.15 ^a	6.41 \pm 0.19 ^b
PCV (%)	35.4 \pm 0.36 ^{bc}	34.9 \pm 0.37 ^c	36.7 \pm 0.69 ^{ab}	37.7 \pm 0.44 ^a
Hb (mg/dl)	9.00 \pm 0.15 ^{ab}	8.85 \pm 0.15 ^b	10.16 \pm 0.09 ^a	8.96 \pm 0.16 ^b

a, b and c: Means within the same row with different superscripts are significantly different at $P<0.05$.

Based on the trend of change in haematological parameters, the present study indicated pronounced changes in count of RBC, PCV percent and haemoglobin concentration. Unfortunately, no information are available in the literature on the effect of GnRH treatment on haematological parameters.

However, the present values of all haematological parameters studied are within the normal range of Friesian cows (Metwally *et al.*, 1999). The current study could conclude that injection with GnRH during different postpartum periods especially on 14 day-PP may help in acceleration of lactating cows to resume their ovarian activity and increasing conception rate during 120 day-PP.

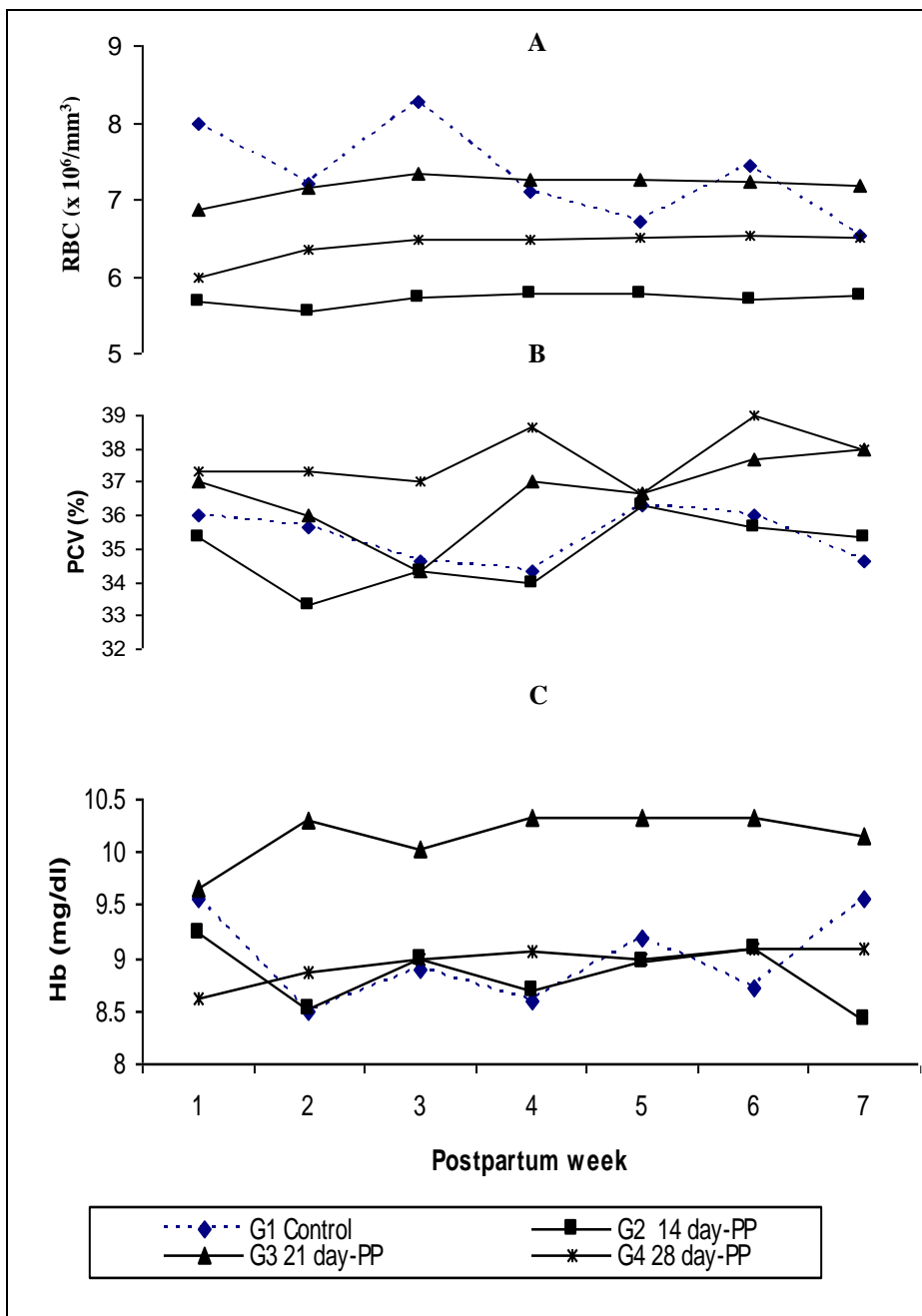


Fig. (2): Haematological parameters of Friesian cows in different experimental groups throughout 7 weeks postpartum.

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**الكفاءة التناسلية وأنتاج اللبن لأبقار الفريزيان الحلابة المعاملة بالهرمون المنشط
للهرمونات الجونادوتروفينية أثناء فترات مختلفة بعد الولادة**
عبد الخالق السيد عبد الخالق^١، مصطفى عبد الحليم الحرايرى^١، علاء الدين فؤاد عبد
المجيد محرز^٢ و وائل فكرى محمد فؤاد^٢.
^١ قسم الانتاج الحيوانى- كلية الزراعة- جامعة المنصورة
^٢ معهد بحوث الانتاج الحيوانى- مركز البحوث الزراعية- وزارة الزراعة- مصر

تهدف هذه الدراسة الى تقييم تاثير المعاملة بالهرمون المحرر للجونادوتروفيينات خلال فترات مختلفة بعد الولادة (١٤، ٢١ أو ٢٨ يوم بعد الولادة) على الكفاءة التناسلية و انتاج اللبن و بعض الصفات الهيماتولوجية لأبقار الفريزيان الحلابة.

تم تقسيم ٣٥ بقرة فريزيان حلابة بعد ٧ أيام من الولادة و تتراوح اعمارهم من ٤-٧ سنوات و من الموسم الثانى الى الموسم الرابع و تتراوح اوزانهم من ٤٥٠-٥٥٠ كجم وزن الجسم الحى الى ٤ مجموعات الأبقار فى المجموعة الأولى (٨ بقرات) تم حقنهم بمحلول ملهى (٠,٩% كلوريد صوديوم) فى اليوم ١٤ من الولادة.

الأبقار فى المجموعة الثانية (٩ بقرات)، المجموعة الثالثة (١٠ بقرات) و المجموعة الرابعة (٨ بقرات) تم حقنهم بالهرمون المحرر للجونادوتروفيينات فى الأيام ١٤، ٢١ و ٢٨ يوم من الولادة على التوالي. تم مراقبة علامات الشياح فى الأبقار فى كل مجموعة و التلقيح الصناعى بسائل منوى مجمد. تم تقدير الحمل عن طريق جس من المستقيم فى اليوم ٦٠ بعد التلقيحة الأولى. تم تجميع عينات الدم و تم تقدير عدد كرات الدم الحمراء، حجم الخلايا المضغوطة و تركيز الهيموجلوبين، تمت هذه التجميعات و التقديرات لمدة ٧ اسابيع.

تم تقدير الخصائص التالية:

الفترة من الولادة حتى اول شياح، الفترة من المعاملة حتى اول شياح، فترة التلقيح المخصب، طول فترة الاخصاب، عدد التلقيحات اللازمة للأخصاب، طول فترة الولادة و نسبة الخصوبة. ايضا تم تسجيل متوسط الأنتاج اليومى من اللبن خلال ١٢ اسبوع من بداية فترة الحليب.

اشارت النتائج الى أن الأبقار فى المجموعة الثانية اعطت اعلى معدل خصوبة (٤٤,٥%) خلال الفترة اقل من ١٢٠ يوم من الولادة بالمقارنة مع المجموعة الأولى (٣٧,٥%). اما خلال الأبقار ذات فترة تلقيح مخصب اكبر من ١٢٠ يوم كانت الأبقار فى المجموعة الثالثة اظهرت اعلى معدل خصوبة (٧٠%).

كان تاثير المعاملة بالهرمون المحرر للجونادوتروفيينات على جميع القياسات التناسلية لأبقار الفريزيان الحلابة التى ذات فترة تلقيح مخصب اقل من ١٢٠ يوم غير معنوى، اما بالنسبة لتاثير المعاملة بالهرمون المحرر للجونادوتروفيينات على الأبقار الفريزيان ذات فترة التلقيح المخصب اكبر من ١٢٠ يوم على القياسات التناسلية كان لا يوجد معنوية (p<0.05) الا فى طول فترة الولادة فقط، كانت اطول فى المجموعة الثانية (٥٠٩,٤ يوم) و المجموعة الرابعة (٥١٤,٤ يوم) عنه فى المجموعة الأولى (٤٤٦,١ يوم) و المجموعة الثانية (٤٧١,٤ يوم).

خلال فترة ما بعد الولادة، الأبقار فى مجموعات التجربة المختلفة اظهرت اتجاه غير ثابت و عدم وجود فروق معنوية فى كل القياسات التناسلية. متوسط الأنتاج اليومى للبن لمدة ١٢ اسبوع من بداية فترة الحليب للأبقار ذات فترة تلقيح مخصب اقل من ١٢٠ يوم كانت غير متاثرة معنوية بالمعاملة.

مع ذلك متوسط الأنتاج اليومى من اللبن للأبقار ذات فترة تلقيح مخصب اكبر من ١٢٠ يوم كانت اقل فى المجموعة الثانية عنها فى المجموعة الأولى.

عدد كرات الدم الحمراء و نسبة حجم الخلايا المضغوطة قلت فى المجموعة الثانية بالمقارنة مع المجموعة الأولى، بينما عدد كرات الدم الحمراء انخفض و زادت نسبة حجم الخلايا المضغوطة. الأختلافات فى كل الدراسات الهيماتولوجية فى المجموعة الثالثة او فى تركيز الهيموجلوبين فى كل المجموعات المعاملة كانت غير معنوية بالمقارنة مع المجموعة الأولى.

تستنتج هذه الدراسة ان الهرمون المحرر للجونادوتروفيينات خلال الفترات المختلفة بعد الولادة و خاصة فى اليوم ١٤ بعد الولادة يمكن ان يساعد فى اسراع الأبقار الحلابة لمعاودتهم للنشاط المبيضى و زيادة معدل الخصوبة خلال ١٢٠ يوم من الولادة