عنوان الرسالة:
دراسات فسيولوجية على الأغذام المصرية

اسم الباحث: نهال متولى شبل الهنداوي

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الملخص العربي

يعتبر شهر مايو الموسم الأقل تناسلاً للنهاج في مصر، وذلك لأسباب فسيولوجية معروفة. يتحور هدف البحث الحالي حول إمكانية التغلب على هذه الأسباب وحدود إخصاب في هذا الشهر وذلك محاولة لزيادة معدل الانتاج الحيواني من الأغنام المصرية.

أجريت هذه الدراسة خلال الفترة من 22 إبريل 2011 إلى يناير 2012 بهدف زيادة معدل الانتاج الحملان لكل نعجة سنوياً من خلال زيادة عدد الولادات لكل نعجة باستخدام المعاملات الهرمونية للتحكم في النشاط المبيضي، مثل المعاملة بالجونيادروفين والبروستاجلاندين، والإسفنجات المهبلية، وتأثير مصل دم الفرس الحامل (PMSG) والتيروزين على الاستجابة للشياع، وفترة بدأ الشياع، وفترة الشياع، ونسبة التوأمية، وتركيز هرمون البروجسترون خلال فترة الشياع.

أجريت هذه الدراسة على 50 نعجة رحماني النوع من قطيع أغنام بمزرعة خاصة بمحافظة الغربية يتراوح عمرها من 2-7 سنوات، ومتوسط وزنها 67.4 كجم. تم تقسيم الأغنام إلى خمسة مجموعات تحتوي كل مجموعة على 10 نعاج (أربعة مجموعات للمعاملة ومجموعة واحدة ضابطة) لدراسة إمكانية التبكم في إحداث النشاط الشبيقي والمبيضي بالمعالجة الهرمونية خلال فترة خارج الموسم، ومن ثم إحداث التزامن الشبيقي والمبيضي بغرض تحسين الخصوبة وزيادة عدد الولادات في الموسم الواحد.
SUMMARY

The current work was carried out at a private farm of sheep production at Gharbeya Governorate, Egypt, during the transit period of breeding season from 22 April 2010 to January, 2011.

The present study aimed to increase lamb production per ewe per year through increasing number of lambing per by investigation the effect of progesterone and progestagens analogue, prostaglandin analogue, gondotrophine analogue, L-Tyrosine on synchronization estrus and ovulation of ewes in non breeding season. to estrus response, onset and duration of estrus, lambing rate, litter size, serum progesterone concentration for estrus detection. The study was carried out 50 Rahmani ewes with average live body weight of 46.16±0.13 kg and ranging between 3-7 years old were used in this study to induce oestrous and ovarian activity by hormonal treatment during anoestrus for the purpose of improving fertility and multiple lambing.

Ewes in the experiment were divided into five similar treatment groups according to age, body weight and physiological condition as follows:

The first group (T1):

In this group, ewes were intramuscularly injected (Day 0) with 1 ml GnRH analogue (Receptal, Intervet International B.V. Boxmeer-Holland)
followed 5 days later by intramuscular injection with 0.7 ml PGF$_{2\alpha}$ (Estrumate). A second dose of 1 ml GnRH analogue was given on day 7, and artificial insemination of treated ewes was carried out 24 h later with fresh diluted semen.

**The second group (T2):**

In this group, ewes were treated with 45 mg Cronolone vaginal impregnated sponges (Flugestone acetate, FGA; Intervet International B.V. Boxmeer-Holland). The sponge was inserted (Day 0) and remained intravaginal for 10 days. Each ewe was intramuscularly injected with 400 IU PMSG (FOLLIGON, Intervet International B.V. Boxmeer-Holland) and 0.7 ml PGF$_{2\alpha}$ (Estrumate, Coopers Animal Health LTD, Berkhamsted-England) 24 h before sponge withdrawal (Day 9) during the non-breeding season. All ewes were artificially inseminated with fresh diluted semen at 48 h of sponge withdrawal.

**The third group (T3):**

In this group, ewes were treated with 45 mg Cronolone vaginal impregnated sponges (Flugestone acetate, FGA; Intervet International B.V. Boxmeer-Holland). The sponge was inserted (Day 0) and remained intravaginal for 10 days. Each ewe was intramuscularly injected with 1 ml GnRH analogue (Receptal, Intervet International B.V. Boxmeer-Holland) 24 h before sponge withdrawal (Day 9) and 0.7 ml PGF$_{2\alpha}$ on the day of sponge withdrawal (Day 10) during the non-breeding season. All ewes were artificially inseminated with fresh diluted semen at 48 h of sponge withdrawal.

**The fourth group (T4):**

In this group, ewes were treated with L-tyrosine (Theriogon- ADwIA), at the start of the experimental period, by receiving each ewe an oral dose from L-tyrosine (10 mg/kg live body weight) and artificial insemination of treated ewes was carried out for ewes in heat within 72 h later with fresh diluted semen.

**The fifth group (Control, C):**

Ewes represented the control group, which were allowed for natural mating. The control ewes were exposed to fertile ram from the contemporary to that of treatment groups start time up to the end of the breeding season (end of May breeding season or for a period covering 2 cycles.

*The results of the present work could be summarized as follows:*

- Results show that ewes in G2 exhibited the highest oestrous activity as compared to those in other treated groups. Ewes in G2 significantly (P<0.05) showed the highest oestrous response (70%) as compared to those in G1 and G4 (40%) and in G3 (50%). Such trend was associated with insignificant differences in onset and duration of oestrus between ewes in G2 and other ewes in G1, G3 and G4. It is of interest to note that ewes in all treated groups showed normal duration of oestrus, ranging between 25.5 and 33.6 h, reflecting unchanged oestrous duration of ewes.
Laparoscopy examination post the 2nd GnRH injection (on day 7) of ewes in G1, 48 h after removal sponges in both G2 and G3, and randomly in the control group (G5) revealed that no CLs were found on the ovarian surface (right and left) of ewes in G1, G2 and G3 versus 0.25 CLs with 0.33 mm in diameter (one CL for one animal) on the right ovary in control group. There were marked differences in number and diameter of follicles on the right and left ovaries. Ewes in G2 showed the greatest number of follicles (1 follicle) with the largest diameter (0.58 mm) on the right ovaries compared with other groups. Meanwhile, ewes in (G1) showed the greatest number of follicles (1 follicle) with the largest follicular diameter (0.58 mm) on the left ovaries as compared to other groups, but ewes in the control groups showed the greatest number of follicles (0.75 follicle) with the largest follicular diameter (0.42 mm) on the right ovaries.

Treatment period, results showed that tyrosine treatment showed the shortest period, because 40% of ewes in this treatment exhibited oestrus within 48 h of treatment versus 12 days in G2 and G3, while treatment of ewes in G1 lasted 8 days.

Results show that gestation period length showed slight differences among ewes in different treatment groups, being the longest in G1 (156.0 days) and the shortest in G4 (151.0 days). However, it was 152.0 and 153.0 days in G2 and G3, respectively.

Results show that period from treatment to lambing was affected significantly (P<0.05) by treatment, being significantly (P<0.05) the shortest for G4 (152.75 days), moderate in G1 G2 and G3 (164.0-165.60 days) and the longest in G5 (control, 169.5 days). This difference was mainly attributed to treatment period rather than gestation period length. Also, treatment showed marked effect on lambing date and interval of ewes in different experimental period. It is of interest to note that ewes in all treatment groups showed shorter lambing interval (3-5 days than those in the control group (G5, 17 days). Such effect indicated an positive effect of treatments on concentration of lambing within 3-5 days and reducing labor in the farm. Also, incidence of early lambing in treatment groups within the 1st week of October facilitate weaning of lambs and early resumption of ovarian activity and conception of ewes in the following breeding season (January season).

Results show that Lambing rate, litter size and fecundity rate were significantly (P<0.05) the highest in G2 as compared to treatment groups and control one, being 70%, 1.57/ewe and 110%, respectively. Unfortunately, ewes in G1 and G4 showed similar lambing rate of the control group (G5) with significantly (P<0.05) lower litter size (1.0 and 1.25/ewe) and fecundity rate (40 and 50%) than the control group.
(1.5/ewe and 60%), respectively. However, the best results of G2 were followed by those of G3, which showed higher lambing rate, litter size and fecundity rate (50%, 1.40/ewe and 70%) than the control group (G5), but the differences were not significant.

Results revealed that the all births of ewes in G1 were in single types, showing significantly (P<0.05) the highest percentage of single, followed by ewes in G4 and G3 (75 and 60%, respectively), while ewes in G2 and G5 (control) showed the lowest percentages of single lambs (42.8 and 50%, respectively. However, an opposite trend was observed for twin lambs in treatment groups and control one.

Results revealed that ewes in G2 and G3 produced lambs with sex ratio similar to the control group (G5), being around 50:50 males to females. However, ewes in G1 produced significantly (P<0.05) more ram lambs (75%) and those in G4 produced significantly (P<0.05) more ewe lambs (60%) than that of the control group (50%). The obtained results also showed significant (P<0.05) differences in LBW of female and male lambs. The heaviest LBW of female and male lambs was recorded in G5 (control group) and did not differ significantly (P<0.05) than those produced by ewes in G1.

Results show that Progesterone profile:

(i) In the first group P4 profile during treatment period, both pregnant and non-pregnant ewes showed P4 level nearly similar trend of change in P4 level up to PGF2 injection, but P4 level was higher in pregnant than in non-pregnant ewes, in particular post 1st GnRH injection. After 24 h (one day post PGF2α injection), P4 level showed sharp reduction in pregnant ewe, being lower than 1 ng/ml, which indicate incidence of complete CL regression. On the same line, P4 level slightly reduced in non-pregnant ewe, being about 2 ng/ml, which may mention that non-pregnant ewe did not respond to PGF injection. Post-2nd GnRH injection, P4 level in pregnant and non-pregnant ewes showed similar trend to that observed post-PGF2α injection. Level of P4 reduced post 2nd GnRH injection may suggest increasing LH surge leading to induction of ovulation on day of AI in pregnant ewe, but this case not found in non-pregnant one.

(ii) In the second group both pregnant and non-pregnant ewes showed nearly similar trend of change in P4 level during the period of sponge insertion; P4 level was above 2 ng/ml during this period in pregnant and non-pregnant ewes. Thereafter, P4 level slightly decreased post PMSG+PGF2α injection, reaching the minimum level (0.25 ng/ml) in pregnant ewe, while it showed an opposite trend in non-pregnant ewe up to AI.