

DIFFERENT OESTRUS INDUCTION METHODS IN AWASSI EWES DURING THE OUT OF BREEDING SEASON

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ABSTRACT

The aim of this study was induce oestrus during anoestrus season and compare the efficiency of (FGA) sponges in combination with either (PMSG) or cloprostenol in inducing and synchronizing the oestrus cycle in Iraqi ewes .A total of 40 ewes used in this experiment . All ewes treated with a vaginal sponge containing 20 mg fluorogestone acetate (FGA) inserted into the vagina of the ewes for 14 days. All animals were divided into four groups randomly, each group contained 10 ewes. Group1 was a control group received (FGA+ normal saline), group 2 received (FGA+PGF2 α) , group 3 received (FGA+PMSG) , group 4 received (FGA+PMSG+PGF2 α). Statistical analysis of estrus response reveals significant differences ($P<0.05$) between control group and treated groups (group 1, 70%; group 2, 100%; group3, 100%) respectively. Pregnancy, Lambing rate and litter size were not significant differences between the treatment groups and the control group ($p<0.05$). These result indicate that (FGA +PGF2 α ; FGA +PMSG ; FGA+PMSG+PGF2 α) were better than control group in oestrus response , in spite of significant differences was no found in pregnancy rate , lambing rate and litter size.

INTRODUCTION

Estrus synchronization of livestock can be developed by treatments in the stage of corpus leuteum or follicolization of estrus cycle. Estrus synchronization is very important for ewes reproduction management improvement (1). Sheep are seasonal polyestrous animals dependent on seasons in terms of features of breeding (2,3). Breeding season of sheep shows regional changes (4). Many authors reported that the most breeds of sheep are sexually inactive during spring and early summer

(5,6). Many studies indicated the important use of hormonal regimes for induction of estrus during sexual inactivity period to reduce this period by using sponges impregnated with progesterone provide estrus synchronization by extending the luteal phase during the treatment period in ewes (7,8). Intravaginal sponges containing progesterone are one of the most commonly applied treatments for estrus synchronization in small ruminants during the breeding and non breeding seasons. Sponges are usually inserted over periods of 12 to 14 days and are used together with PMSG, particularly out of season, at the time of sponge withdrawal or 48h prior to sponge removal (9). It has been reported that PMSG can increase pregnancy and twinning rates in breeds characterized by low litter size (10). However, there are many factors influencing the effect of PMSG (11), and season(12). Intravaginal sponges impregnated with progesterone or its synthetic analogues , namely medroxy progesterone acetate (MAP) and fluorogestone acetate (FGA) are usually inserted over periods of 6 to 14 day and used in conjunction with PMSG particularly for out of season , and sometimes prostaglandin injected at time of sponge removal or 48h prior to sponge removal(13,14,15) . Prostaglandin and its synthetic analoges is the luteolytic factor in ewes, as in other ruminants and the use of prostaglandin F2 α or one of its analoges causes luteolysis in sheep having a functional corpus luteum at the time of treatment (16). Synchronization and estrus infusion out of reproduction season creates suitable economical and managerial opportunities for producers (17, 18). The aim of this study was to induce oestrus during anoestrus season and compare the efficiency of (FGA) sponges in combination with either (PMSG) or cloprostenol in inducing and synchronizing the oestrus cycle in Awasi ewes.

MATERIAL AND METHOD

This study was conducted on forty Awasi ewes in addition, 6 rams of proven fertility were used in a private flock at Sug –AL-Shugk city / Thi-Qar province during July - 2013 . During this period most ewes suffer from seasonal anoestrus, their ages ranged from 2-4 years and weighing 35 to 45 kg. The ewes were grazed daily for 6-8 h on a pasture in addition, they were received 1, 5 – 2 kg of mixture feed during the entire period of study. The experimental ewes were divided into 4 groups randomly. The hormonal treatment comprised of intravaginal sponges impregnated with 20mg FGA (Chronogest, Intervet) inserted for 14 days (control group) intravaginal FGA sponges plus intramuscular injection of 2ml sterile saline solution (FGA,n=10) ;The second group was treated with intrvaginal FGA sponges plus intramuscular injection of 75mcg = 1ml of cloprostenol (luteosyl syva – spain) (FGA/PGF2 α ; n=10) ;The third group was treated with intravaginal FGA sponges plus intramuscular injection of 500 IU PMSG (Intervet , Holland) (FGA / PMSG , n= 10) ; and the forth group was treated with intravaginal FGA sponges plus intramuscular injection of 500 IU PMSG and 75mcg = 1ml of cloprostenol (FGA /PMSG /PGF2 α ; n = 10) on the 12th day . Estrous was monitored every 6h from 12 to 120 h following progesterone sponge withdrawal .The ewes were inseminate after appear sign of oestrus. The pregnancy of ewes was determined after 3 months time of mounting depended to abdominal distention and then waiting until time of

parturition after that litter size were recorded , and other parameters were measured as following :

Oestrus response: number of ewes showing oestrus / total ewes treated in each group \times 100 (19).

Pregnancy rate: number of pregnant ewes / number of mated ewes in each group \times 100.

Lambing rate: number of ewes lambing / number of pregnant ewes in each group \times 100. (20).

Litter size: number of total lambs / number of lambing ewes.

Estrus response and reproductive performance were analyzed using the spss 10.0.1 software was used for all statistical analyses (21). Differences were considered significant at level of $p < 0.05$



(Figure 3): show sponge withdrawal by hand

RESULTS

Table 1: All treated groups shows significant increased in oestrus response percent when compared with control group ($p < 0.05$). While Pregnancy rate and lambing rate were not significantly differences between control group and three treated groups ($p < 0.05$).

Table 2: shows no significant differences recorded between these groups in litter size and number of lambs ($p < 0.05$). This study appeared three treated groups with PGF 2α and PMSG gave twins and triplet birth contrast with control group gave only single birth, this differences did not reach the significant ($p < 0.05$).

Table 1. Reproductive performance of ewes after different estrus synchronization treatments.

Treatment groups	N	Oestrus response %	Pregnancy rate%	Lambing rate%
FGA	10	70 (7/ 10)	10 (7 /7)	100 (7/7)
FGA + PGF 2α	10	100 (10 /10)	100(10/10)	100 (10/10)
FGA +PMSG	10	100 (10 /10)	100(10/10)	100 (10/10)
FGA +PMSG + PGF 2α	10	100 (10 /10)	100(10/10)	100 (10/10)
Statically analysis		$\chi^2=9.73$ P<0.05 = S	$\chi^2=0.085$ P>0.05= NS	$\chi^2=0.085$ P>0.05= NS

S= Significant : NS= No significant

Table 2: Number of lambs

Treatment groups	N	Single	Twins	Triples	Total	Litter Size
FGA	10	7	-	-	7	1 (7/10)
FGA + PGF2α	10	8	2	-	12	1.2 (12/10)
FGA + PMSG	10	8	2		12	1.2 (12/10)
FGA + PMSG +PGF2α	10	8	1	1	13	1.3 (13/10)
Statically analysis						$x^2=4.631$ P >0.05 =NS

S= Significant

:

NS=No significant



(Figure4): Show single lamb



(Figure5): show triples lamb

DISCUSSION

The present study appeared found significant differences ($P<0.05$) between control group and treated groups in estrus response, these differences may be attributed to using PMSG and $PGF2\alpha$ because of gonadotropins stimulate ovarian follicular growth of cyclic or acyclic females (22). These results were similar to the previous finding of (23). In the present study, pregnancy and lambing rates were similar between treatment groups and control group, the results of pregnancy and lambing agreed with (24) but higher than that of (25) in all groups in pregnancy rate, the discrepancy in the results reported by different researches on pregnancy and response rate can be explained by the differences in body condition, treatment programs, breed and management systems. Twining rate in experiment of (26) that synchronized Awassi ewes for 14d with sponge containing 40mg of FGA and superovulated by 500IU of PMSG injection were 46% higher than the result of current study obtained by using 500IU PMSG in group 3, 4 this differences because used double dose of FGA. In this study litter size were lower than (27) reported 1.33 and 1.39 litter sizes for 400 and 500 IU PMSG in Chio×Kivircik ewes these differences may be because number of ewes in the current study were fewer and this study carried out during seasonal anestrus . In conclusion, the findings of the present research indicate that (FGA + $PGF2\alpha$; FGA +PMSG; FGA+PMSG+ $PGF2\alpha$) were better than control group in oestrus response and number of lambs because of gave twins and a triplet

طرق أحداث الشبق المختلفة في الأغنام العواسية خلال فترة انعدام الشبق الفصلي

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الخلاصة

الهدف من الدراسة الحالية هو تنظيم وأحداث الشبق خلال فترة انعدام الشبق الفصلي في النعاج العراقية باستخدام الاسفنجيات المهبلية المشبعة بمادة فلوروجستون اسيتيت 20ملغرام وبعض الهرمونات لرفع الكفاءة التناسلية في النعاج العراقية خلال تلك الفترة. تضمنت الدراسة 40 نعجة وقد تم تقسيمها الى اربع مجاميع ، ضمت كل مجموعة 10نعاج وكان التقسيم بموجب البرنامج الهرموني . فقد اعطيت المجموعة الاولى(مجموعة السيطرة) اسفنجيات مهبلية مشبعة بمادة فلوروجستون اسيتيت لمدة 14يوم ثم سحبت وحقت 2مل ماء مقطر في يوم الازاله .اما المجموعة الثانية فقد اعطيت اسفنجيات مهبلية لنفس الفترة وتم حقنها هورمون كلوبروستينول

قبل الازاله بيومين. اما المجموعه الثالثه فقد اعطيت اسفنجات مهلبه لنفس الفتره وتم حقنها بهورمون مصل الفرس الحامل 500 وحده دوليه بالعضله في يوم ازالة الاسفنجات . اما بالنسبه للمجموعه الرابعه فقد اعطيت اسفنجات مهلبه لنفس الفتره وحقنت بهورمون كلوبروستينول 1مل يعادل 75ملغرام عضليا قبل الازاله بيومين وحقنت هورمون مصل الفرس الحامل 500 وحده عالميه عضليا في يوم ازالة الاسفنجات . اظهرت نتائج التحليل الاحصائي يوجد اختلاف معنوي في الاستجابه للشبق بين مجموعه السيطره والمجاميع الاخرى المعامله عند ($P < 0.05$) . بينما لا توجد اختلافات معنويه بين المجاميع في معدل الحمل والولادات وعدد المواليد. هذه النتائج تشير الى ان المجموعه الثانيه والثالثه والرابعه هي الافضل من المجموعه الاولى (مجموعه السيطره) في الاستجابه للشبق وعدد الحملان على الرغم من انه لا توجد اختلافات معنويه في معدل الحمل والولادات وعدد المواليد

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