# Reproductive performance improvement in Iraqi buffaloes by using different hormonal regimes

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## Abstract

The present study was performed on 153 Iraqi cow buffaloes, suffered from ovarian inactivity after 60 days from calving, in Babylon province in period from November 2012 to August 2013. The affected animals were divided into four groups randomly according to the hormonal treatment regime, 48 cow buffalo treated with 1000 I.U/I.M of PMSG in one does in day 60 postpartum, which represents the 1st group, while the 2nd group include 45 cow buffalo treated with 0.021mg/I.M of GnRH (Receptal) in one does in day 60 postpartum, but the 3 rd group (36 cow buffaloes) treated with hCG 1500 I.U/I.M in a single dose also after 60 days postpartum, while 4th group (24 cow buffalo) was represented the control group(without treatment). The response animals for different hormonal treatment were 87.2%, 80%, 69.4% and 54.1% for the 1st, 2nd, 3rd and 4th group respectively. The 1st group which treated with PMSG give higher significant differences ($p<0.01$) compared with other groups, also the 2nd group (treated with GnRH) record significant differences ($p<0.01$) compared with 3rd and 4th group. The duration of response also record higher significant differences ($p< 0.01$) between 1st and 2nd group compared with 3rd and 4th group, while the number of services per conception was no different between all groups, but the pregnancy rate record superior significant differences ($p<0.01$) for the 1st group compared with other groups and reached to 85% but the 4th group (control group) record low ratio compared with treated groups. Finally the days open was recorded superior significant differences between 1st and 2nd group compared with 3rd and 4th group, also 4th group record long postpartum period (175.82± 13.56 days). They concluded in this study that the hormonal treatment still an important method to treated the ovarian inactivity and this fact depends on the many reproductive parameters which involve the rate of response animals, duration of response, number of services per conception, pregnancy rate and days open.

**Key words: Buffalo, PMSG, GnRH, hCG , ovarian inactivity.**

# تحسين الكفاءة التناسلية في الجاموس العراقي باستخدام أنظمة هرمونية مختلفة

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## الخلاصة

تم إجراء هذه الدراسة على 153 جاموسة عراقية تعاني من حالة خمول المبايض بعد 60 يوم من ولاداتها وذلك ضمن الفترة الممتدة من تشرين الثاني 2012 وحتى شهر اب 2013 , وذلك في محافظة بابل . وقد تم تقسيمها إلى أربع مجاميع طبقا لنوع العلاج الهرموني المستخدم . وقد ضمت المجموعة الأولى 48 جاموسة عولجت من خلال حقنها بجرعة واحدة من هرمون مصل الفرس الحامل وبمقدار 1000 وحدة دولية / في العضلة في اليوم 60 بعد الولادة , فيما ضمت المجموعة الثانية 45 جاموسة وقد حقنت بجرعة واحدة من الهرمون المحفز لهرمونات القند وبمقدار 0.021 ملغم في العضلة في اليوم 60 بعد الولادة أيضا" , إما المجموعة الثالثة 36 جاموسة فقد حقنت بجرعة واحدة من الهرمون المشيمي البشري بمقدار 1500 وحدة دولية في العضلة في اليوم 60 بعد الولادة , بينما كانت المجموعة الرابعة والتي ضمت 24 جاموسة هي مجموعة سيطرة حيث لم تعالج هرمونيا .سجلت الدراسة نسبة استجابة للعلاج وصلت إلى 87.2% , 80% , 69.4% و54.1% للمجاميع الأولى و الثانية والثالثة والرابع على التوالي وكانت المجموعة الأولى أعطت أفضلية وبمستوى $p<0.01$ عن باقي المجاميع الأخرى , إما فترة الاستجابة للعلاجات فقد سجلت المجموعتين الأولى والثانية أفضلية على المجموعتين الثالثة والرابعة. إما عدد التلقيحات الأزمة للإخصاب فلم تسجل أي فرق إحصائي بين المجاميع المختلفة , فيما كانت نسبة الحمل في المجموعة الأولى لها الأفضلية الواضحة عن المجاميع الأخرى وكذالك كانت هنالك أفضلية للمجموعة الثانية مما علية في المجموعتين الثالثة والرابعة .وأخيرا فان معيار الأيام المفتوحة قد سجل فرقا معنويا بمستوى $p<0.01$ لصالح المجموعتين الأولى والثانية مقارنتا بالمجموعة الثالثة والرابعة . وعلية نستنتج من الدراسة الحالية إن حالة خمول المبايض تحتاج إلى تداخل علاجي ( هرموني ) من خلال الحقيقة التي تعتمد على الكثير من المعاير

التكاثرية والتي تشمل نسبة الاستجابة , فترة الاستجابة , نسبة الحمل , معدل الأيام المفتوحة والتي تحسنت كثيرا باستخدام تلك العلاجات مقارنتا مع تلك الحيوانات والتي تركت دون تداخل علاجي .

**الكلمات المفتاحيه : جاموس , هرمون مصل الفرس الحامل , الهرمون المحفز لهرمونات القند , الهرمون المشيمي البشري , خمول المبايض .**

## Introduction

Buffaloes are polyestrous continuous species and show estrous all year around, however a seasonal pattern has been reported from different countries of the world (1),(2). Such characteristic related as a seasonal polyestrous is more related to ambient temperature, photoperiod and feed supply. In addition with the possibility of the use of hormonal control of estrus cycle, seasonal pattern can be overcome and they can bred through the synchronization of the estrous cycle in the year around (3). Reproductive problems such as delayed puberty, ovarian inactivity are the main obstacles for improving this species (4), (5), (6), (7). Many authors reported that the administration of hormones include PMSG, GnRH, Progesterone or hCG during early postpartum period has conception (8),(9). The effect of ovarian inactivity is including increase period of first estrus postpartum, number of services per conception, pregnancy rate and days open (7),(10),(11),(12) ,(13). The purposes of this study were to evaluate different hormonal regimes for treatment ovarian inactivity and the effects on reproductive parameters (response animal, services per conception , pregnancy rate, days open) to improvement the reproductive performance in Iraqi buffaloes.

## Materials and methods

This study was performed on 153 cow buffaloes between 3-7 years old in Babylon province and these animals suffered from ovarian inactivity after 60 days postpartum during the period from 2012-2013. These animals were divided randomly into four groups, 1st group include 48 buffaloes treated by single dose of PMSG* 1000 I.U/I.M/Animal in the day 60 postpartum, 2nd group (45 buffaloes) treated with a single dose of GnRH** 0.021mg/I.M/ Animal in the day 60 postpartum, 3rd group (36 buffaloes) treated with 1500 I.U/I.M/ Animal from hCG*** in single dose in the day 60 postpartum also and 4th group ( 24 buffaloes) without treatment and considered as a control group. Response of animals and duration of response as well as the number of services per conception, pregnancy rate and days open were recorded. Statistical analysis for data of this study includes Mean, Standard error, Chi-Square and F-test to (14). * Intervet-Internatioal B .V. Boxmeer-Holland. ** Intervet-International B.V. Boxmeer – Holland. *** Yougie – dong JK san- Si, Jonbuk- do, Korea.

## Results and discussion

The result showed in table-1- that the response cow buffaloes in 1st group which injected with 1000 I.U/I.M of PMSG recorded 87.2% with higher significant difference ($p<0.01$) compared with 2nd , 3rd and 4th groups (80%, 69.4% and 54.1% respectively), these findings agreement with (15), (16) , while the duration of response was recorded 7.34±2.16 days, 7.34±2.25 days , 9.72± 3.01 days and 76.56± 10.92 days in the 1st, 2nd, 3rd and 4th groups respectively and the 1st and 2nd groups recorded significant differences higher $p< 0.01$ compared with 3rd and 4th groups and these results were agreement with many authors recorded. 4-7 days (17),(18) also (19) recorded 65-80 days iv buffaloes without treatment after 60 days postpartum. the number of services per conception in different groups are presented in table-2-, however all treated groups and untreated group (control groups) recorded on significant differences between ($p<0.01$) and the number was 1.81±0.12, 1.62± 0.24, 1.68±0.22 and 1.93±044 in1st,2nd , 3rd and 4th groups respectively , however the findings supported by (20) which recorded 1.36 ± 0.08 in overall status ( control and treated groups of buffaloes ). While the pregnancy rate showed in table -2- record superior significant differences ($p<0.01$) for the 1st group compared with other groups and this results agreement with. (21) which reported overall conception rate was batter in PMSG (77.87% ) group than GnRH ( 29-64 %).Finally the service period (days open) was recorded higher significant differences in

1st and 2nd groups compared with 3rd and 4th groups and these information supported by many authors (22),(13) it was concluded that they using hormonal treatment include PMSG, GnRH and hCG was very effective for treatment ovarian inactivity in Iraqi buffaloes and improvement reproductive performance compared with treated animal and success to induce days open and increased pregnancy rates.

**Table-1-: Different methods of treatment, response and duration of response in Iraqi buffaloes.**

| Group | No. of animals | Type of treatment | Animals response NO % | Duration M ± SE |
|---|---|---|---|---|
| G 1 | 48 | (Folligon) (PMSG) eCG 1000 I.U/I.M | 41 87.2 a | 7.34±2.16 a |
| G2 | 45 | GnRH(Receptal) 0.021 MG /I M | 36 80 b | 7.34 ±2.25 a |
| G3 | 36 | HCG (I.V.F) 1500 I.U /I.M | 25 69.4 c | 9.72 ±3.01 b |
| G4 | 24 | Without treatment | 13 54.1 d | 76.56±10.92 c |
| TOTAL | 153 | | Treat animal 102/129 a 79.06 % | |
| | | | Control 13/24 b 54.1% | |

Different letters mean sig. differences (P < 0.01)

**Table -2- Showed the NO. of services / conception and days open in Iraqi buffaloes .**

| Group | No. of animals | No .of services per conception M ± SE | Pregnancy Rate No % | Days open M±SE |
|---|---|---|---|---|
| G1 | 41 | 1.81±0.12 a | 35 85.3a | 98.21 ±6.35 a |
| G2 | 36 | 1.62±0.24 a | 28 77.7 b | 101.52±7.26 a |
| G3 | 25 | 1.68± 0.22 a | 16 64 c | 107.34±6.42 b |
| G4 | 13 | 1.93±0.44 a | 8 61.5 c | 175.82±13.56 c |
| TOTAL | 115 | ---------- | | ---------- |

Different letter mean sig. differences (p<0.01).

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