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Comparative Study of Some Intrauterine Treatment Regimes on Bacterial Causes of Repeat Breeders in Iraqi Buffaloes.

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ABSTRACT

The present study was undertaken to examine the efficacy of different treatment regime using Nigella Sativa, Quercus Infectoria, oxytetracycline and Lugol's Iodine on conception rate of repeat-breeding Iraqi buffaloes. Data were collected from 44 Iraqi buffaloes with repeat breeding in AL-Thahab AL-Abied village in Baghdad province and AL-Qasim village in AL-Hilla city from 2014-2015. All buffalo cows were characterized as repeat breeding of more than three natural services with regular oestrous cycles with-out any signs of pregnancy. Buffaloes were randomly assigned to four treatment groups of 11 cows each. Buffaloes in group 1 were treated with 50ml Lugol's Iodine 1% intrauterine(IU),in group2 buffaloes received 4gm20% oxytetracycline, buffaloes in group 3 treated with 3gm of extract of Quercus Infectoria IU andgroup 4 received 5gm of Nigella Sativa extract IU. All buffaloes were mated during oestrus and pregnancy status was diagnosed by palpation of uterine contents at day 45. Pregnancy rates in treatments 1 to 4 were 81.8, 72.7, 63.6 and 81.8%, respectively. It could be concluded that the use of Nigella sativa and Lugol's iodine increased the pregnancy rate and reduced days open compared with other groups.

KEYWORDS buffalo, repeat breeder, Nigella sativa, Quercus infectoria.

Introduction

A major problem faced by buffalo breeders and farmers include poor reproductive efficiency and prolonged inter-calving intervals (Jaunadine, 1990; Singh *et al*. 2000).The inadequate treatment or use of ineffective antibiotics leads to chronic low endometritis and subsequent repeat breeding problems. (Singh, 2003). Repeat breeding is a multifactorial problem and major cause of infertility in cow andbuffalo. It causes great economic loss to the dairy industry. The incidence of repeat breeding has been reported from 6.0- 30.6% in buffaloes (Gupta *et.al,* 2005). Uterine infection is a cause of early embryonic mortality and failure of conception rate. The nonspecific bacterial infection of the reproductive tract in buffalo is considered the main cause of repeat breeding syndrome (Al-Hamedawi et al, 2012). To treat the repeat breeding proper selection of antibiotic to prevent the resistance of organism against the antibiotics and elimination of infection as fast as possible is essential(Warriach et al, 2008).Crude extracts and seed constituents of Nigella sativa, in particular thymoquinone, have been reported to possess a number of pharmacological properties (Ali and Blunden, 2003), like anti inflammatory (Salem, 2005), The anti-microbial effects of Nigella sativa seeds against different pathogenic microbes were investigated. The diethyl ether extract was found to cause concentration dependent inhibition of Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli and a pathogenic yeast Candida albicans(Hanafy and Hatem, 1991). Nigella sativa methanol and chloroform seed extracts as well as its essential oil have dose dependent antibacterial activities on the Gram-positive and Gram-negative organisms.(Hosseinzadeh et al 2007). The galls of Quercus infectoria have also been pharmacologically documented to possess antiviral (Fatima et al 2001) antibacterial (Digraki et al 1999) antifungal (Redwane et al 2002) larvicidal (Kaur et al 2004) and anti-inflammatory (Ikram and Nowshad 1977) activities.Basri and Fan (2005) showed that water and acetone extracts from galls of Quercus infectoria have a high potential antibacterial activity, which seemed to depend on the presence of tannins. The antimicrobial action of tannins may be related to their ability to inactivate microbial adhesions, enzymes, and cell envelope transport proteins (Cowan, 1999; Fredalina, 2005).Therefore, the present study was undertaken to Compare different treatment regimes including the use of Nigella Sativa and Quercus Infectoria extracts to treat repeat breeder buffaloes.

Materials and Methods

This study was conducted on 44 Iraqi buffaloes in AL-Thahab AL-Abied village in Baghdad province and AL-Qasim village in AL-Hilla city from 2014-2015,divided randomly after a survey of their reproductive history and a clinical diagnosis,into four treatment groups of 11 cows each. Buffaloes in group 1 were treated with 50ml Lugol's Iodine 1% intrauterine(IU), in group 2 buffaloes received 4gm 20% oxytetracycline, buffaloes in group 3 treated with 3gm of extract of Quercus Infectoria IU and group 4 received 5gm of Nigella Sativa extract IU. All buffaloes were mated naturally at least two times after oestrus detection with buffalo bulls of proven fertility. Pregnancy status was diagnosed by palpation of uterine contents 45 days after mating. Close observations by owners to record any buffalo retained to estrous from mating to time of pregnancy diagnosis.

Results and Discussion

The results shows (table 1) a relation between nature of parturition, parity and sex of new born with the incidence of repeat breeder. There was a significant differences (P<0.01) between normal parturition and dystocia in all groups, animals with dystocia shows repeat breeder incidence of 63.6% in total compared with normal parturition 36.4% and this result is in agreement with (Azawi et al, 2007) which recorded that Postpartum uterine infections results from uterine contamination with bacteria during parturition.Also there was a significant differences (P<0.01) between Multipara and Primipara with higher incidence of dystocia in Multipara (54.5%) than in Primipara (45.5%) and this result is in agreement with (Singh etal. 2000; Gupta et.al, 2005) who recorded a high inci-

dence of repeat breeder in multiparous buffaloes due to high incidence of bacterial infection they concluded that among the total 55 bacterial isolates, *E. coli* was appeared to be the most frequently isolated bacteria from all cows included in the study regardless the number of previous deliveries,however, the highest number of isolates was recovered from multiparous cows.Sex of new born play a role in repeat breeder incidence, buffaloes that delivered males shows a significant differences (P<0.01) (56.8%) with female deliveries (43.2%), and this agree with Purohit et al (2011) who recordeda higher percentage of calving difficulty in male births than in female births for all ages of cows which may lead to repeat breeder. (Table-2-) shows that the percentage response were (81.8, 72.7, 81.8, 63.6)% for1st,2nd,3rd and 4th groups respectively this results is in agreement with (Al-Hamedawi et al, 2012) who recorded high response to treatment and it was higher than 70% of conceptions and pregnant animals compare with the control group ,it also shows the importance of treatments to reduce the open days which cause a great economic loss in case of prolong days. Open days were (109.26±16.52, 121.35±13.62,112.23±15.29, 128.45±14.57) for all groups respectively, there was a significantdifference (p<0.01) between 1stand 3rd group and the 2nd &4th group, that was in agreement with (Al-Yasiri, 2009) who recorded a significant differences (P<0.01) in open days when treated repeat breeder with Metricure, oxytetracycline and lugols iodine, concluding that treatment with Lugol's Iodine gives the best results as compared with antibiotics therapy, and with (Al-Sa'aidi et al, 2009) who concluded that daily oral administration of alcoholic extract of Nigellasativalead to clear improvement of male rats fertility, also with (Hanafy and Hatem, 1991; Muhtasib et al, 2006) who showed that The aqueous and oil extracts of the seeds have been shown to possess antioxidant, anti inflammatory, anticancer, analgesic and antimicrobial activities. There was a significant difference (p<0.01) between 1stand 3rd group and the 2nd & 4th group in percentage response and pregnancy rate, this results is in agreement with (Azawi et al, 2007; Alyasiri, 2009; Al-Hamedawi et al 2012) who showed high pregnancy rate after treatment of repeat breeder with oxytetracycline and lugols with significant differences (P<0.01) between antibiotic and lugols that the high rate is for lugols treatment. While there was nosignificant difference (p<0.01) between 1st& 3rd groups, there was a significantdifference between 2nd &4th groups in percentage response and pregnancy rate this is in agreement with **(**Basri and Fan, 2005; Fredalia, 2005; Umachigi et al 2008;Suhaila, 2009; Leela and Satirapipathkul, 2011) who observed that the alcohol extracts of Quercusinfectoriawas found to be more active againstall bacteria studied during their work except E. Coli which was the common bacteria infected the repeat breeder buffaloes of our study. We concluded thatNigella sativa and Lugol's Iodine was very effective in treatment of repeat breeder in Iraqi buffaloes compared with oxytetracycline and Quercus infectoria,alsoNigella sativa and Lugol's iodine increased the pregnancy rate and reduced days open compared with other groups.

Table-1-
The relationship between sex of new born, parity and nature of parturition of Iraqi buffaloes suffered from repeat breeder.

Groups	No. of animals	Nature of parturition Dystocia normal	Parity Multipara primipara	Sex of newborns Malefemale
G1	11	7 4 63.6% 36.4%	6 5 54.5% 45.5%	7 4 63.6% 36.4%
G2	11	6 5 54.5% 45.5%	7 4 63.6% 36.4%	5 6 45.5% 54.5%
G3	11	7 4 63.6% 36.4%	5 6 45.5% 54.5%	6 5 54.5% 45.5%
G4	11	8 3 72.7% 27.3%	6 5 54.5% 45.5%	7 4 63.6% 36.4%
total	44	28 16 63.6% **a** 36.4%**b**	24 20 54.5% **a**45.5%**b**	25 19 56.8%**a**43.2%**b**

Different letters mean significant differences (P< 0.01).No.= Number, M= Mean, SE= Standard Error

Table -2-
Revealed the type of treatment, responsive animals, No. of services perconception, pregnancy rate and days open.

Groups	No. of animals	Type of treatment	Responsive animals No. %	No. of services / conception M± SE	Pregnancy rate No. %	Days open M± SE
G1	11	Lugol's iodine 1% IU	9 81.8 **a**	1.92± 0.02 **a**	9 81.8 **a**	109.26±16.52 **a**
G2	11	Oxytetra-cycline 20%/ 4gm IU	8 72.7 **b**	2.10± 0.25 **a**	8 72.7 **b**	121.35±13.62 **b**
G3	11	Nigella sativa 5gm/IU	9 81.8 **a**	1.73± 0.04 **a**	9 81.8 **a**	112.23±15.29 **a**
G4	11	Quercus infectoria 3gm /IU	7 63.6 **c**	2.26± 1.04 **a**	7 63.6 **c**	128.45±14.57 **b**
total	44	---------- -----	32 72.7	----------	32 72.7	----------

Different letters mean significant differences P< 0.01. No.= Number, M= Mean, SE= Standard Error

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