

## A TRIAL TO IMPROVE THE FERTILIZING CAPACITY OF BOVINE FROZEN SEMEN

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**ABSTRACT:** A total of 65 cows and 72 buffalo-cows were admitted to the clinic for A.I.purposes. All cows and buffalo-cows were divided into five groups; an i.u. infusion of oxytetracyclin-Hcl (Gr.1) each one was allowed and Betadine (Gr.2) before and after insemination as well as an i.m. injection of oxytocin immediately before insemination (Gr.3); an immediate insemination after thawing for 30 sec at 37 C (Gr.4) and an insemination after 30 min. incubation at 37 C (Gr.5). The highest conception rate was observed in oxytetracyclin- treated cows (83.33%) and oxytocin-injected buffalo-cows (71.43). The lowest conception rate was noticed in cows (45.45%) and buffalo-cows (40.00%) immediately inseminated after 30 sec thawing at 37c. The number of inseminations per conception did not differ significantly among and within species under investigation.

### INTRODUCTION

The success of A.I. program depends mainly on the reproductive potential of the female.It is influenced by season (Pasha et.al.,1986;Barkawi et.al.,1993;Barker et. Al.1994;El-Minoufy et al.,1984),health of the uterus after treatment with either antibiotic(El-Naggar,1983 ;Misra and Mishra,1987 ;

Zair,1991) or chemotherapy (Shubin, and Kryukova,1982

;Roberts,1986;Koujan et al.,1995); the sperm-ovum synchronization (Zoller et al.,1989;Oversheet et al.,1980;Burns et al.,1997)and thawingof the frozen semen(Ahmed,1984;Bhalde et al.,1991;Tyseer et al;1996).The present study aimed at studying the sequels of using antibiotics or chemotherapeutics on the clinically unobserved endometritis,oxytocin on the sperm-ovum synchronization and the long-term incubation of the thawed frozen semen on the fertility rate in cattle and buffalo-cows.

## MATERIAL AND METHODS

A total of 65 cows and 72 buffalo-cows belonging to small farmers in Minofia Governorate were used in this study. All these animals were admitted into the clinic for the purpose of artificial insemination. According to the clinical examination, animals were classified as follows:

1-A total of 25 cows and 23 buffalo-cows with clinically unobserved endometritis (1<sup>st</sup> degree endometritis) with only slight turbidity of the cervical mucus. These animals were divided into two groups each of which received the following treatment:

Gr.(1) of 12 cows and 11 buffalo-cows treated by the interrutrine infusion of 20 ml oxytetracyclin Hcl® for 3 doses with 3 days apart and 24 hr after insemination.

Gr.(2) of 13 cows and 12 buffalo-cows treated by the intrauterine infusion of 100 ml Betadine® 0.5% solution for two doses and 20 ml 24 hr after insemination.

Animals of both groups were inseminated by frozen semen thawed for 30 sec in thermos flask with wormed water adjusted at 37C.

2-A total of 40 clinically normal cows and 49 buffalo-cows received the following treatments:

Gr.(3) 15 cows and 14 buffalo-cows each of which was injected i.m with 10 i.u. oxytocin®

immediately before insemination with frozen semen thawed at 37C for 30 sec.

Gr.(4) of 11 cows and 10 buffalo-cows only inseminated with frozen semen thawed at 37C 30sec without oxytocin treatment.

Gr.(5) of 14 cows and 25 buffalo-cows inseminated by frozen semen thawed at 37C and incubated in thermostatically controlled thermos flask for 30 minutes before insemination. The obtained data were statically analyzed, where appropriate, according to Denenberg (1976).

## RESULTS

As shown from table (1), the conception rate was much higher in cattle (70.77%) when compared to that in buffalo-cows (59.72%). The conception rate appeared higher in cows and buffalo-cows treated with oxytetracyclin Hcl® (83.33% and 63.60% respectively.) than those treated by Betadin® (76.92% and 58.33%, respectively.) after clinically unobserved endometritis. When the frozen semen was thawed at 37C for 30 sec, the conception rate was significantly (<P0.01) higher in cows and buffalo-cows injected with oxytocin immediately before insemination (73.33% and 71.43% respectively.) than the non injected group (45.45% and 40.00, resp.) When cows and buffalo-cows were inseminated after 30 minuts incubation of the

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thawed frozen semen in thermos flask with worm water adjusted at 37C ,the conception rate was apparently increased (71.43% and 60.00%, respectively.) comparing to those inseminated immediately after thawing at 37c for 30 sec.(table,1).

In an overall mean (table 2 ),there was a non significant(<P0.01) increase in the number of inseminations required per

conception in buffalo-cows (2.13±0.14) when compared to that in cows (2.02±0.12). It was slightly higher in cows and buffalo-cows inseminated with thawed -frozen semen after 30 minutes incupation (2.10±0.28 and 2.23±0.30,rep.)than those immediately inseminated after 30 sec. Thawing at 37C (2.00±0.14 and 2.10±0.16, respectively.).

**Table (1) : The conception rate of cows and buffalo-cows received different treatments**

Treatment	Cows			Buffalo-cows		
	Total	Preg.	CR%	Total	Preg.	CR%
1)Oxytet.HCL	12	10	83.33	11	07	63.64
2)Betadine	13	10	76.92	12	07	58.33
3)With Oxytocin	15	11	73.33	14	10	71.43
4)without oxytocin	11	0.5	45.45	10	04	40.00
5)30 min.incubation1	14	10	71.43	25	15	60.00
Total	65	46	70.77	72	43	59.72

**Table( 2) :Number of inseminations per conception for cows and buffalo-cows inseminated with frozen thawed for30 sec. or incubated for 30 min. at 37C.**

Insemination	Cows		Buffalo-cows	
	No.	Mean±S.E	No.	Mean ±S.E
After 0.5 min.thawing	51	2.00± 0.14 <sup>a</sup>	47	2.10±0.16 <sup>a</sup>
After 30 min.incubation	14	2.10±0.28 <sup>a</sup>	25	2.23±0.30 <sup>a</sup>
Overall mean	65	2.02±0.12 <sup>a</sup>	72	2.13±0.14 <sup>a</sup>

Values with the same letters within the same column and the same row differed non-significantly (<P0.01).

## DISCUSSION

It has been found that the interuterine infusion of antibiotics after insemination resulted in a higher conception rate (Kodagali, et al.,1976;Bretzalaft,1987; Sheldon and Noaks,1998) a finding which was emphasized by that observed in the present study. Similar results were obtained when either lugol's iodine (Gupta et al., 1983 ; Zair 1991) or betadine (Koujan et al., 1995) were used. These results indicated that the routinely intrauterine infusion of small doses of either antibiotics or chemotherapeutics up to 24 hrs after insemination (Zair ,1991)is so beneficial to control the clinically unobserved endometritis and to improve the conception rate in cows and buffalo-cows when oxytocin was injected ,at different doses (Hassan,1993; Sosa,1998) a prominent increase was observed in the conception rate ,a finding which was confirmed as shown in the present study .This finding might be attributed to the role of oxytocin itself or with PGF2 in increasing the utrine contractility and thus the sperm-ovum synchronization (Zollers et al.,1989; Jennen et al.1991).In the same time , the present study revealed that the conception rate in cows and buffalo-cows apparently increased when inseminated with thawed-frozen semen incubated at 37C for 30 minuts,a finding which came in

agreement with that reported perviously (Roa,1992 ; Zair,1991).However,increasing the holding time (Kim and Kim,1978) or temperature (Monterroso et al.,1995)might have a harmful effect on the conception rate .This may be du to the suggested negative correlation between the holding time and temperature and percentages of the post-thawing motilityand intact acrosome of spermatozoa ((El-Azab,et al.,1997;Tyseer,et al., 1996 ) . Therefore,it can be concluded that,inorder to improve the conception rate with low number of inseminations per conception, cows and buffalo-cows should be given an intrauterine infusion of antibiotics or chemotherapeutics to treat the clinically unobserved endometritis; an injection of oxytocin to inhance the sperm-ovum synchronization and an insemination with thawed frozen semen after 30 minuts incubation in thermostatically controlled thermos flask at 37C to speed up the sperm activity and penetrating ability for fertilization.

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