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**STUDIES ON
THE EFFICACY OF INTRA - UTERINE
ADMINISTRATION OF ANTIBIOTICS TO IMPROVE
BREEDING EFFICIENCY IN COWS**

By
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THESIS

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of the requirement for the degree

MASTER OF VETERINARY SCIENCE

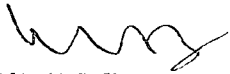
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MANNUTHY , TRICHUR

1978

DECLARATION

I hereby declare that the thesis entitled "STUDIES ON THE EFFICACY OF INTRA-UTERINE ADMINISTRATION OF ANTI-BIOTICS TO IMPROVE BREEDING EFFICIENCY IN COWS" is a bona fide record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title of any other University or Society.


RAMADAS K.


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CERTIFICATE

Certified that the thesis entitled "THE EFFICACY OF INTRA UTERINE ADMINISTRATION OF ANTIBIOTIC TO IMPROVE BREEDING EFFICIENCY IN COWS" is a record of research work done independently by Sri.K.Ramadas under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associate-ship to him.

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INTRODUCTION

INTRODUCTION

The Cattle wealth in the State of Kerala is yoked to the task of providing the requirements of animal proteins to a relatively larger human population on a proportionately smaller area than its counterparts in the rest of the country. With the minimum possible land for pasture and fodder production, the cattle population of the state strikes at 2.3 millions of which the breedable animals come to about 1.2 millions. Since the per capita milk production of the cow is very low, the gap between the availability and requirements of milk and milk products continues to remain very wide. The recent survey on the position of supply and demand of animal protein revealed that as against the annual requirement of about 2.3 million tonnes of milk, only 0.42 million tonnes are presently available. The reason for this deplorable position has been identified and efforts are afoot to improve the production potential of the indigenous cattle by better breeding and management practices. Cattle improvement programme lays emphasis on upgrading the local cows with high yielding exotic breeds with the ultimate object of evolving a dairy type of animal suitable for the agro-climatic conditions of the state. For this purpose, a massive cross breeding programme launched

by the Government is being implemented by several Government agencies. It has been estimated that about 4 lakhs of cows are inseminated annually with quality semen resulting in the production of 1.25 lakhs of calves.

It needs no elaboration that the production potential of cows depends mainly on their reproductive efficiency. The total milk production from a cow depends on the number of freshenings during her life time. In order to get the maximum calf crop from a cow its reproductive health has to be maintained properly. The optimum quantitative level of reproductive efficiency has been spelled out as a calf every 12-13 months from every cow. This target, however is not achieved under field conditions due to a variety of reasons among which failure of conception is the most important, impeding the progress of artificial insemination work. The average rate of conception for artificial insemination in the State strikes somewhere near 40 percent (Animal Husbandry Department, 1976) denoting that the efforts are not rewarded with commensurate results. Economic loss on account of failure of breeding in cattle is enormous. According to Roberts (1971) delay in conception of a single cow amounted to a loss of 20 - 30 dollars per month. It is imperative, therefore, that measures to improve economic returns from cattle rearing should start with measures to improve fertility of the stock. A comprehensive study carried out on the causes

and magnitude of prevalence of repeaters revealed that the infection of uterus with non-specific bacteria constituted 63.14 percent of repeat breeding in cows (Namboodiripad et al. 1976). Investigations on the bacterial flora of uterus of the normal and sterile cows indicated that even organisms normally inhabiting the tract, could endanger conception by producing unfavourable uterine environment (Roberts, 1971; Raghavan et al., 1971; Arthur, 1975).

Several attempts have been made in the past to study the beneficial effect of intra-uterine antibiotic therapy to improve the conception rate in cows (Lindley, 1954; Kettner, 1954; Roldan 1955; Stula et al. 1958; Smith, 1959; Jagannathan and Maheswaran 1961; Bahrs, 1962; Achnelt and Konemann 1963; Tesi 1964; Jainuddin 1965; Khan and Luktuke 1967; Namboodiripad and Mathai, 1970; Namboodiripad and Raja, 1976). However, all these studies were carried out on animals that failed to conceive on repeated inseminations, thus allowing a larger margin of time lag between attempts to breed and effective conception.

Beneficial effects on breeding the mares after establishing the non infective state of uterus after parturition have been recorded (Proctor, 1953, 1962; Bruner 1963; Ellsworth 1966). Intra-uterine administration of

antibiotics immediately after calving to ward off uterine infection has been tried on a limited scale in cows. (Hinze, 1959; De Bois 1961; Gibbons and Kiesel, 1964). However, the results obtained are not conclusive.

The present work was taken up to study the effectiveness of antibiotic administration during the first heat itself without waiting for the animals to be declared as repeaters with a view to recommend a routine easily adoptable measure in the field to increase conception rate and thereby improve reproductive efficiency of cows.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

There is consensus of opinion that uterine infections generally associated with tardy involution of uterus and chronic endometritis lead to delayed conception with increased number of services (Roberts, 1971). It has been established beyond doubt that infection of the reproductive organs with non-specific organisms constituted the most important diagnosed cause of impaired fertility in cattle (Azizudin, 1954; Rasbech, 1956 and Roberts, 1956). Frank and O'Bery (1962) observed that conception rate in many herds remained low even after elimination or control of specific genital diseases and attributed this to non-specific "low grade infections".

Albrechtsen (1917) was the first to emphasise the importance of bacterial infection to cause infertility in cattle. This opinion has since been supported by others (William, 1943 and Easley et al. 1951). Asdell (1955) observed that non-specific organisms in the female tract might be associated with high incidence of prenatal death. Asdell (1958) reported that bacteria that were known to be relatively harmless might extend a synergistic action causing sufficient damage to the endometrium to produce early embryonic death or even abortion. According to Sakala et al. (1961) E-coli infection in cattle produced

low conception rate probably due to the spermicidal effects of the metabolic products of the organisms. Hirta et al. (1966) revealed that mycoplasma produced infertility in cattle by producing chronic endometritis. Hafez (1968) opined that unfavourable environment caused by bacteria resulted in implantation failure.

In an exhaustive study on the bacterial flora of the reproductive tract of Hereford cows, Esley et al. (1951) isolated *Staphylococcus* from 28 percent of normal animals. Dedie (1955) described *Corynebacterium*, *Erysipelothrix* and *Pseudomonas* as the common bacteria present in the genital organs of cows. Dawson (1960) stated that *Staphylococci*, *Streptococci*, *Coliform*, *Pseudomonas*, *Diphtheroids* and *Proteus* formed major isolates in infertile cows. Namboodiripad et al. (1976) conducted a bacteriological study of uterine samples from 26 repeaters and isolated *Proteus* from 7, *Pseudomonas* from 7, *E-coli* from 4 and *Staphylococci* from 6 animals. The organisms are believed to have gain^{ed} access to the uterine cavity from the caudal portion of genital tract by way of cervix at service or be present from the time of previous parturition. But it was only when the individual's resistance was overcome or excessive load of infection occurred that the condition reached disease proportion (Roberts, 1971).

Attempts to counteract uterine infection with different antibacterial agents in various combinations are in vogue since many years. Most of the work, however, has been confined to repeat breeding animals. Chambers (1948) reported the successful use of antibiotics in treating infertile cows. The beneficial effect of intrauterine administration of antibiotics was reported by Easley et al. (1951). Lindley (1954) reported that 65 percent of 20 infertile cows conceived when treated with intra-uterine injection of antibiotics b the day following service. It was further reported that streptomycin and penicillin infused one or two days following service had increased the conception rate of cows that were hard to breed. Kettner (1954) found that the conception rate substantially improved by intra-uterine administration of 6 percent aureomycin ointment within one to two days after insemination. Roldan (1955) found that uterine irrigation with a combination of penicillin and dihydrostreptomycin in distilled water after artificial insemination settled 73 percent of cows with endometritis and irregular sexual cycle. Stula et al. (1958), obtained 70 percent conception rate in clinically normal repeaters when uterus was irrigated with 10 ml of Terramycin after insemination. Intra-uterine therapy with penicillin and streptomycin after insemination settled 33 out of 40 repeaters (Luktuke et al. 1959).

Smith (1959) claimed that intra-uterine infusion of aqueous solution of embryostat (calcium - oxytetracycline - glucose complex) was of immense value in treating infertile cows due to non-specific uterine infection. Jagannathan and Maheswaran (1961) observed that a combination of oxytetracycline and polymixin given intra-uterine after artificial insemination produced considerable improvement in conception rate in repeaters. Bahrs (1962) reported that treatment with preparation containing penicillin, sulphanilamide and chloramphenicol with or without Vitamin A produced 54 percent conception rate as against 22 percent in untreated controls. Studies of Persson (1962) revealed that administration of an ointment containing penicillin and streptomycin was a handy and cheap way of treating repeat breeder cows. In cows returning to heat after insemination, the conception rate was 72 percent after this treatment as against 60 percent in controls. Achnelt and Konemann (1963) reported that the conception rate in cows improved after intra-uterine treatment with Benzathine penicillin and sulphanilamide combined with either Chloramphenicol alone or chloramphenicol and Vitamin A. Tesi (1964) reported that intra-uterine administration of penicillin and streptomycin was very effective in improving conception rate in repeat breeders. Jainuddin (1965) viewed that intra-uterine infusion of antibiotics would provide favourable environment for the developing embryo by controlling infection. Khan and

Luktuke (1967) established the beneficial effect of intra-uterine antibiotic treatment in repeaters. Namboodiripad and Mathai (1970) observed a significant improvement in conception rate in repeaters when treated with streptomycin-penicillin and omnamycin. Namboodiripad et al. (1976) revealed that intra-uterine therapy with specific antibiotics selected on the basis of invitro sensitivity of the isolates was found to be highly effective.

Different views have been expressed regarding the timing of intra-uterine treatment with antibiotics. Lindley (1954) advised antibiotic treatment 1-2 days after insemination. Roldan (1955) reported 48 hours after service as the best time for antibiotic treatment. Smith (1959) preferred embryo-stat to be infused at the time of insemination. Alchnelt and Konemann (1963) observed that optimum time for antibiotic treatment was 24 hours after inseminations. Namboodiripad and Mathai (1970) and Namboodiripad et al. (1976) also obtained good results when antibiotic treatment was carried out 24 hours after insemination.

Attempts to ensure successful breeding of mares, especially after foaling, emphasise the need for bacteriological study of genitalia to eliminate infection. Proctor (1953, 1962) showed that cervical material of mares should be cultured and antibiotic sensitivity of isolates established before treating and breeding. Bruner (1953, 1963) suggested

that mares should be bred after foaling only after determining the known infective status of uterus at first oestrus. Ellsworth (1966) stated that normal healthy mares seldom showed infective status of cervix or uterus on bacteriological sampling at oestrus.

Preventive measures to ward off uterine infections in cows have not been successful. Hinze (1959) demonstrated intra-uterine administration of oxytetracycline or neomycin placed into the uterus immediately after parturition was of no value to control infection of the endometrium. DeBois (1961) also reported that uterine infusion of antibiotics in the post partum period were not advantageous. Gibbons and Kiesel (1964) showed that infusing the cows' uteri with 100 mgm of oxytetracycline immediately after calving was of no value in controlling endometritis and thereby improving fertility.

MATERIAL AND METHODS

MATERIAL AND METHODS

Four hundred and seven cows and 193 heifers inseminated at artificial insemination centre, Trichur attached to the Kerala Agricultural University during the period from September, 1976 to August 1977 formed the material for the study. The cows were in the age group of three and half to seven years and were not bred since last calving. The age of the heifers varied from 2½ years to 4 years and were all un-bred. All the animals included in the study were healthy and were free from any obvious genital diseases. The animals were inseminated at mid to late heat.

The animals were randomly divided into three groups viz. two experimental (treated) and one control. The first group of 166 cows and 56 heifers was given one vial of *Dicrysticin-S dissolved in 30 ml of distilled water intra-uterine 24 hours after insemination. The second group of 47 cows and 31 heifers was treated with **Mastalone-U in the same way.

* - Dicrysticin-S (Sarabhai Chemicals Ltd.) Small dose vial containing -

- (i) Procaine Penicillin - 3 lakh I.U.
- (ii) Penicillin G Sodium - 1 lakh I.U.
- (iii) Streptomycin - 0.5 g

** - Mastalone-U (Pfizer Ltd) containing -

- (i) Oxytetracycline Hydrochloride - 200 mg
- (ii) Oleandomycin Phosphate - 100 mg
- (iii) Neomycin Sulphate - 100 mg
- (iv) Prednisolone - 5 mg
- (v) Chlorpheniramine - 100 mg

The control group of animals did not receive any treatment either before or after insemination. The division of animals in the various groups are furnished in chart I.

Chart I. Particulars of animals used for study

600 animals

Control 300		Experimental 300		
Heifers 106	Cows 194	Dicrysticin Group 222		Mastalone-U Group 78
	Heifer 56	Cows 166	Heifer 31	Cows 47

Insemination and intra-uterine administration were performed observing strict principles of hygiene and sterilisation. The animals of all the groups which failed to conceive and brought for second insemination within 18-25 days were treated with either of the above antibiotics after insemination. All the animals were followed up between 45 and 60 days of insemination for pregnancy. Data collected were tabulated and analysed according to Snedecor and Cochran (1967).

RESULTS

RESULTS

Results of the study conducted to assess the effect of post service intra-uterine administration of antibiotics to improve the conception rate in cows are presented in Table 1 to 5.

It could be seen from table 1 that 104 cows out of 300 in the control group conceived at first insemination (34.60%). In the experimental group of 300 animals which received post service antibiotic, 154 conceived giving a conception rate of 51.33 percent. The variation in the conception rate between the two groups was found to be highly significant. It was further observed that administration of antibiotics produced 16.73 percent increase in the conception rate.

Out of 196 animals in the control group and 145 animals in the experimental group which failed to conceive at the first insemination, 113 and 57 were respectively re-inseminated followed by intra-uterine antibiotic treatment. Of these 60 animals of control group and 40 of the experimental group conceived giving a conception rate of 53.09 percent and 70.13 percent respectively. (Table 2).

Conception rates of animals treated with Dicrysticin-S and Mastalone-U are presented in table 3. It was revealed that 222 animals treated with Dicrysticin-S, 121 (54.50%) conceived. The percentage of conception of the animals which received

Mastalone-U was noted to be 42.30 percent (33 out of 78). The analysis of the data revealed that the variation in the conception rate among the two treated groups was not significant.

The percentage of conception of the heifers at first insemination in the control and experimental groups was observed to be 23.50 and 45.98 respectively with an overall conception rate of 33.67 percent. (Table 4). In cows, the conception rates at the first insemination in the control and experimental groups were 40.72 percent and 53.52 percent respectively with an overall conception rate of 47.42 percent. The variation in the overall conception rates of heifers and cows at first insemination was found to be significant.

The data when grouped according to the lactational status of the animals revealed that out of 322 lactating animals of both control and experimental groups, 172 conceived at first insemination giving an overall conception rate of 53.41 percent (Table 5). The overall conception rate of dry animals at first insemination was found to be 30.93 percent (86 out of 278). The difference in the conception rate of lactating and dry animals at first insemination was noted to be highly significant.

Table 1. Effect of antibiotic treatment on the conception rate at first insemination.

Particulars	No. inseminated	No. pregnant	Percentage of conception
Control	300	104	34.60
Experimental	300	154	51.33
Total	600	258	43.00
Chi-square	11.99**		

** The variation in conception rate between control and experimental groups is highly significant.

Table 2. Percentage of conception in second insemination

Name of anti- biotic	Control			Experimental			Total		
	No.in- semi- nated	No.preg- nant	Percen- tage of consum- ption	No.in- semi- nated	No.preg- nant	Percen- tage of consum- ption	No.in- semi- nated	No.pre- gnant	Per- centage of consum- ption
Dicrysticin-S	95	48	50.52	41	35	85.36	136	83	61.03
Mastalone-U	18	12	66.66	16	5	31.25	34	17	50.00
Total	113	60	53.09	57	40	70.13	170	100	58.82

Table 3. Comparison of the effect of Dicrysticin-S and Mastalone-U on the conception rate

Particulars	Treated with		Control	Total
	Dicrysti- cin-S	Mastalone-U		
No. inseminated	222	78	300	600
No. conceived	121	33	104	258
Percentage of conception	54.50	42.30	34.60	43.00

Note: There is no significant difference in the conception rate between the two antibiotics

COMPARISON OF THE EFFECT OF DICRYSTICIN_S AND
MASTALONE_U ON THE CONCEPTION RATE

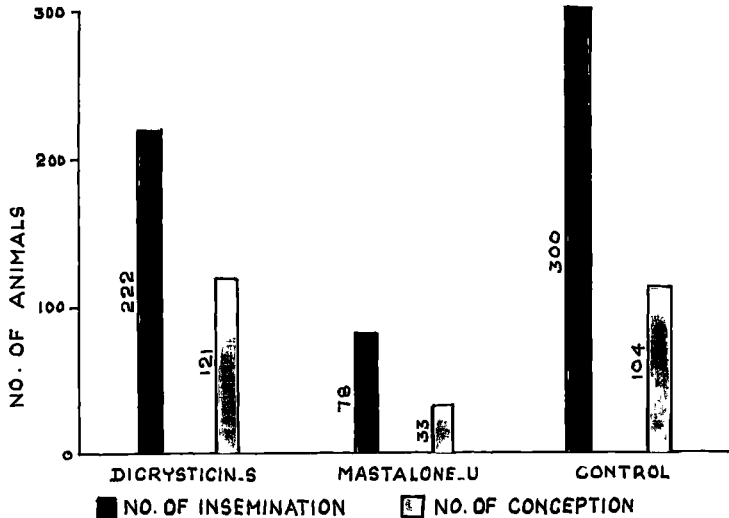


Table 4. Conception rate in heifers and cows

Particulars	Experimental			Control			Total		
	No.inse- minated	No.preg- nant	Percen- tage of concep- tion	No.inse- minated	No.preg- nant	Percen- tage of concep- tion	No.inse- minated	No.pre- gnant	Percen- tage of concep- tion
Heifer	87	40	45.98	106	25	23.50	193	65	33.67
Cow	213	114	53.52	194	79	40.72	407	193	47.42
Total	300	154	51.33	300	104	34.60	600	258	43.00

Chi-squar 18.696**

** The conception rate is significantly low in heifers

CONCEPTION RATE IN HEIFERS AND COWS

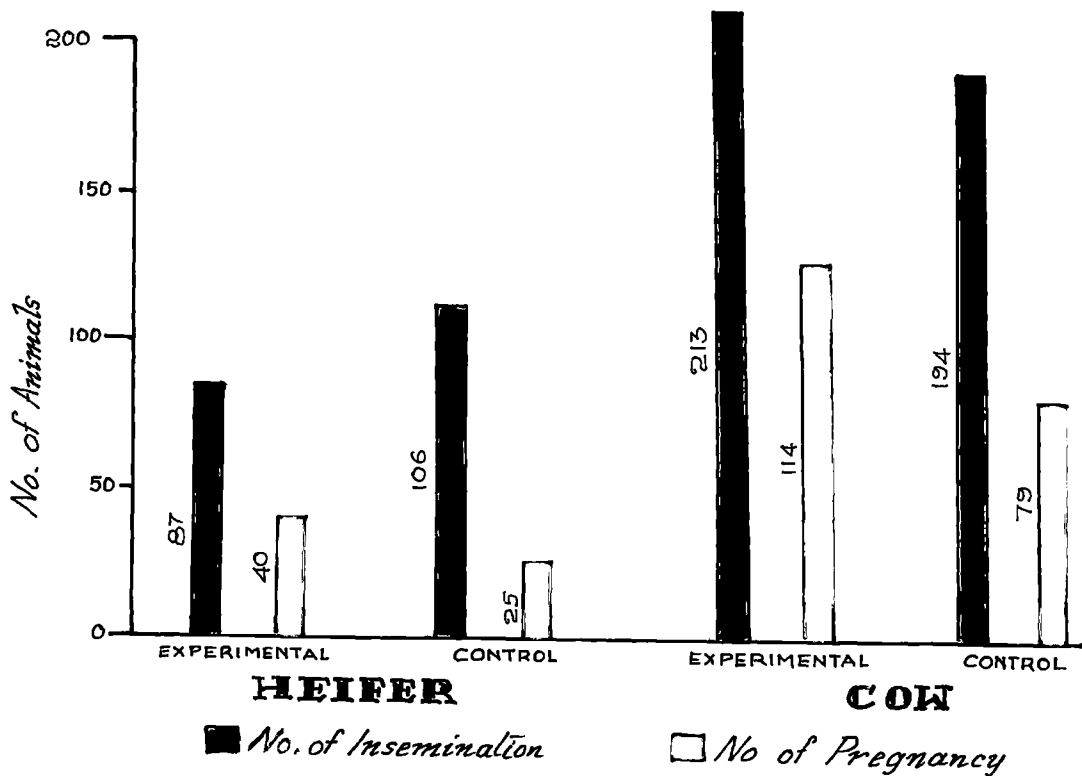


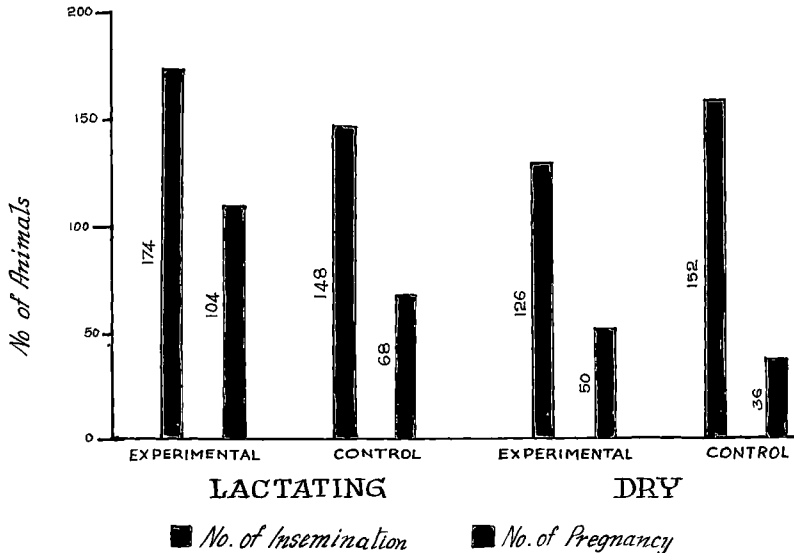
Table 5. Conception rate in lactating and dry cows

Particulars	Experimental			Control			Total		
	No.inse- minated	No.preg- nant	Percen- tage of concep- tion	No.inse- minated	No.preg- nant	percen- tage of concep- tion	No.in- semi- nated	No.pre- gnant	Percen- tage of concep- tion
Lactating	174	104	59.77	148	68	45.95	322	172	53.41
Dry	126	50	39.68	152	36	23.68	278	86	30.93
Total	300	154	51.33	300	104	34.60	600	258	43.00

Chi-square 20.19 **

** The conception rate is significantly higher in lactating cows.

CONCEPTION RATE IN LACTATING AND DRY COWS.



DISCUSSION

DISCUSSION

It is generally accepted that unfavourable uterine environment caused by a variety of non-specific organisms constitutes one of the major causes of impaired fertility in cows. Attempts to counteract the infection with different types of antibacterial agents in various combinations are in vogue since many years. The beneficial effect of intra-uterine antibiotic therapy in repeat breeding cows has been proved earlier (Vigue et al. 1959; Luktuke and Roy, 1967; Namboodiripad and Mathai 1970). It has been reported that uterine infection gaining access at parturition, breeding or clinical intra-uterine manipulations would remain latent in the post-partum period and precipitate disease conditions (Arthur, 1975). It will be beneficial if these infective agents are controlled by timely appropriate treatment before they produce sufficient damage to the endometrium resulting in failure of conception. From the economic point of view considerable amount of time and money could be saved if the cows are settled at the first insemination itself. The present work had this object in view.

Perusal of the data revealed that the conception rate of animals subjected to intra-uterine antibiotic therapy after insemination was 51.33 percent compared to 34.60 percent in the non treated control group. The rate of conception of the animals in the treated group was significantly higher than



that in the control group. Intra-uterine antibiotic therapy has brought out 16.75 percent increase in the conception rate in cows. The rate of conception of animals in the control group is comparable to that obtained for artificial insemination under field conditions in Kerala (Surendran, 1973; Nair, 1975, 1976). The increase in conception rate of the experimental animals observed during the course of the present study, obviates the definite advantage of post insemination antibiotic therapy at first breeding itself.

Ample evidences are on record to testify the successful breeding of repeater cows by post service antibiotic treatment (Vigue et al. 1959; Smith 1959; Jagannathan and Maheswaran 1961; Bahrs, 1962; Achnelt and Konemann 1963; Tesi 1964; Jainuddin 1965; Khan and Luktuke 1967; Namboodiripad and Mathai, 1970; Namboodiripad and Raja, 1976). Namboodiripad et al. (1976) suggested intra-uterine antibiotic treatment after cultural study of uterine contents and determination of specific susceptibility of isolates to different antibacterial agents. The enhanced conception rate in the problem breeders has been attributed to combating the infective status of uterus and thereby providing favourable environment for the embryo (Jainuddin, 1965). Studies in the past, denote the possibility of latent uterine infection being carried from post-partum as occult or inapparent endometritis acting as most common cause for failure of conception (Roberts, 1971; Arthur, 1975). However preventive measures to ward off uterine infection during the post-partum period by antibiotic administration

have not been successful (Hinze, 1959; DeBois, 1961). The present findings indicate the possibility of counteracting probable latent infection of uterus at the first oestrus. The cows in all the groups that failed to settle and brought for artificial insemination within 18-25 days were given intra-uterine antibiotic treatment after insemination. The overall conception rate for the second insemination of the animals in the experimental group was found to be 70.13 percent as against 53.09 percent for those in the control group. This increase in the conception at the second insemination might be attributed to the fact that the animals with mild infection settled more easily on continuing the therapy. Observation similar to this has been made earlier in repeaters. According to Namboodiripad and Mathai (1970) and Namboodiripad et al. (1976) continued therapy in recurrent oestruses would be sometimes required in 'hard-to-settle cows'.

The conception rate of animals treated with Dicrysticin was found to be 54.50 percent while that in Mastalone-U treated animals was 42.30 percent. However, the difference in the conception rate between the two groups was not statistically significant, thus conferring no specific advantage of one antibiotic combination over the other. On the basis of susceptibility studies of uterine isolates from repeater cows, Namboodiripad et al. (1976) observed that broad spectrum antibiotics or antibiotic combinations having wide antibacterial spectrum could be used for intra-uterine therapy. Present findings endorse this view.

The combined average of conception rate in heifers of all the groups was only 33.67 percent while the same was found to be 47.42 percent in cows. This difference in the conception rate between heifers and cows was observed to be significant. This is in keeping with the earlier reports of Ahmed and Tantowi (1959), Hafez (1968) and Roberts (1971) who observed higher number of services per conception in heifers than in cows. Morrow (1969), Morrow et al. (1970) Namboodiripad (1976) and Namboodiripad and Raja (1976) reported that the frequency of occurrence of ovulatory disturbances was very high in heifers. The comparatively low conception rate presently observed in heifers might be attributed to factors other than bacterial infection for which antibiotic administration cannot be an answer.

The conception rate varied according to the lactational status of the animals both in the experimental and control groups. The overall conception rate in lactating and dry cows was noted to be 53.48 percent and 30.93 percent respectively. The difference in the conception rate between the two groups was found to be highly significant. Roberts (1971) expressed the need to maintain the cows' on positive energy balance' for obtaining optimum reproductive efficiency. Dry cows being unproductive, are usually maintained on a low plane of nutrition upsetting the normal rhythm of reproduction.

The results of the present observations lead to the inference that antibiotic therapy after insemination is beneficial

for the overall improvement of the conception rate in cattle. It is inferred that post service intra-uterine administration of antibiotics at the first breeding without waiting for the animals to be declared as repeaters could be a practical routine measure to increase conception rate and thereby improve reproductive efficiency of cattle under field conditions. Increase in conception rate has definite technical advantage to the professional and imminent economic gains to the farmers. It is more so when the cost of therapy advocated is nominal in comparison to the enormous cost on feeding and prolonged maintenance of cows necessitated by delay in conception. The present observations, therefore, merit further detailed study on larger samples in the field for accepting as routine practice.

SUMMARY

SUMMARY

A study was undertaken to assess the efficacy of post-service intra-uterine administration of antibiotics at the first breeding to increase the conception rate and thereby improve the reproductive efficiency of cows.

Four hundred and seven cows and 193 heifers inseminated at artificial insemination centre, Trichur attached to the Kerala Agricultural University during the period from September, 1976 to August, 1977 formed the material for the study. The cows ^{were} in the age group of 3½ to 7 years and were not bred since last calving. The heifers were all unbred and ranged in age from 2½ years to 4 years. All the animals were healthy and were free from obvious genital diseases. The animals were inseminated at mid to late heat. The animals were randomly divided into three groups viz: two experimental and one control. The first group of 166 cows and 56 heifers was given one vial of Dicrysticin (Sarabhai Chemicals Ltd. containing penicillin and streptomycin) in 30 ml of distilled water intra-uterine, 24 hours after insemination. The second group of 47 cows and 31 heifers was treated with Mastalone-U (Pfizer Ltd. - a combination of oxytetracycline, oleandomycin, Neomycin, Prednisolone and Chlorpheniramine) in the same way. The control group of animals (300) did not receive any treatment either before or after insemination. The animals of all groups which failed to conceive and brought for second insemination within 18-25 days were treated with either of the above antibiotics after insemination. All the animals were followed up between 45 and 60 days of insemination.

The conception rate of animals treated with intra-uterine antibiotics 24 hours after insemination was significantly more (51.33%) than that in the untreated control group (34.6%). The conception rate during the second insemination of the experimental and control groups was found to be 70.13 percent and 53.09 percent respectively with an overall conception rate of 59.82 percent. The increase in conception rate in the second insemination might be attributed to the fact that the animals with milk infection settled more easily on continuing the therapy.

The percentage of conception of the animals treated with Dicrysticin and Mastalone-U was noted to be 54.50 and 42.31 percent respectively. However, there was no significant difference in the rate of conception between the two treated groups, thus conferring no specific advantage of one antibiotic combination over the other. The combined average of conception rate in heifers of all groups (33.67%) was significantly lower than that of cows (47.42%). The overall conception rate in lactating and dry cows was observed to be 53.41 percent and 30.93 percent respectively. The difference in the conception rate between lactating and dry animals was significant.

To sum up, it may be stated that antibiotic infusion of uterus 24 hours after insemination could be considered as a routine measure under field conditions for the overall improvement of breeding efficiency of cows.

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**STUDIES ON
THE EFFICACY OF INTRA - UTERINE
ADMINISTRATION OF ANTIBIOTICS TO IMPROVE
BREEDING EFFICIENCY IN COWS**

By

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ABSTRACT OF A THESIS

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ABSTRACT

The object of the study was to investigate the usefulness of intra-uterine antibiotic therapy at the very first breeding in bovines so as to improve the chances of conception. The experiment was conducted on animals brought for insemination at the artificial insemination centre, Trichur attached to the Kerala Agricultural University, Mannuthy. The animals were divided into two experimental groups and one control group. The first group of 166 cows and 56 heifers was given one vial each of Dicrysticin-S in 30 ml of distilled water after 24 hours of insemination. The second group of 47 cows and 31 heifers was treated with Mastalone-U in the same way. The control group of animals (300) did not receive any treatment either before or after insemination. The conception rate of the animals treated with antibiotics was significantly higher than that in control group. Dicrysticin-S and Mastalone-U did not show any specific advantage over the other in improving the conception rate. The rate of conception increased on repeating the therapy at the subsequent heat. The overall conception rate in heifers was significantly lower than that in cows. Also the conception rate in dry animals was lower than that of lactating ones.

To sum up, it may be stated that antibiotic infusion of uterus 24 hours after insemination could be considered as a routine measure under field condition for the overall improvement of breeding efficiency in cows.