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RESEARCH ARTICLE

THERAPEUTIC EFFICACY OF ANTIBIOTICS FOR BOVINE ENDOMETRITIS AND ITS IMPACT ON MILK PRODUCTION

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ABSTRACT

Twenty seven endometritic cows were divided into three groups to evaluate the comparative efficacy of intra-uterine Lenovo-AP and systemic antibiotic INTACEF Tazo 3375mg in endometritis of crossbred cows. Significant differences observed between the pre- and post-treatments mean values of TLC, Lymphocyte, Neutrophil, TEC and Hb in the cows of treatment groups. Milk yield was increased significantly in both the treated groups after completion of treatment. The conception rate was 88.90%, 66.70% and 11.10% in Lenovo-AP, INTACEF Tazo treated and control group, respectively. IU Lenovo-AP performed better in resolving endometritis than INTACEF Tazo and increase in milk yield level without any change in nutrition and managemental practices may be considered as an indicator of recovery of treatment.

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INTRODUCTION

Endometritis is a localized inflammatory condition associated with chronic uterine infection with pathogenic bacteria and has both direct and indirect negative impacts on overall dairy herd performance and profitability by decreased milk yield, prolonged inter calving period, conception failure etc. (Gilbert *et al*., 2005). Endometritis also affect the haemopoietic system (Sarma *et al*., 2012) leading to a state of anemia and ultimately decrease in milk production. The present study was undertaken to compare the efficacy between intra uterine treatment with Lenovo-AP (Levofloxacin, Ornidazole and Alpha tocopherol) and systemically used INTACEF Tazo 3375mg (Cetriaxone and Tazobactum) and tofind out the impact of treatments on milk yield and conception rate.

MATERIALS AND METHODS

Twenty-seven crossbred cows with conception failure history were diagnosed to have endometritis and post-treatment evaluation at subsequent oestrus was done by clinic-gynaecological examination. The cows were randomly divided into three groups (n=9) namely G_1, G_2 and G_3. The G_1 cows were treated with Lenovo-AP (Levofloxacin, Ornidazole and Alpha tocopherol) I.U. @30ml/cow daily for three consecutive days. The cows in G_2 were treated with INTACEF Tazo 3375mg (Cetriaxone and Tazobactum) IV daily for seven days. Group G_3 was kept as control without any treatment. Milk production in each cow on the day before the initiation of treatment and the average yield for 20 days from the day of conception of treatment was recorded. The RBC, Hb, TLC, Neutrophil and Lymphocye values were recorded in venous blood at pre- and post-treatment subsequent to oestrus with the help automated haematology analyzer. Pregnancy was confirmed by transrectal examination after 50 days of A.I. Data generated were analyzed statistically.

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RESULTS AND DISCUSSION

The mean TLC level at pre-treatment was towards the higher side of the normal range (Benjamin, 1985), which reduced significantly ($P< 0.01$) after treatment both in G_1 (5.78± 0.32) and G_2 (6.12± 0.45). However, no significant difference could be found between these two groups but differed significantly from G_3. A state of neutrophilia prevailed at pre-treatment estimation in all the groups indicating bacterial infection which reversed significantly ($P< 0.01$) towards normal level in G_1 (23.89± 1.08) and G_2 (30.34± 2.25) depicting recovering from the infection. The mean values in G_1 and G_2 differed significantly ($P< 0.01$) from the values in G_3 (52.56± 2.21) but there was no significant difference between them.

Lymphopenia was observed at pre-treatment estimation in all the groups. After treatment there was significant (P< 0.01) increase in lymphocyte count in G_1 (57.56± 1.46) and G_2 (55.12±1.69) towards the normal physiologic value (Benjamin, *loc cit*) and differed significantly (P< 0.01) from G_3 (37.00± 3.32). However, the values in G_1 and G_2 differed non-significantly. A distinct state of anaemia was evident from the pre-treatment mean values of Hb level in all the G_1 (5.67± 0.53), G_2 (5.89± 0.35) and G_3 (5.78±0.46) groups. After treatment significant (P< 0.01) increase was observed in G_1 (10.89± 0.72) and G_2 (10.00± 0.63) which differed significantly (P< 0.01) from the G_3. But there was no significant (P< 0.01) difference between G_1 and G_2. The pre-treatment Total erythrocyte count (Table 3) revealed a state of pancytopaenia in all the three groups and there was significant (P< 0.01) improvement towards the higher side of the normal value in G_1 (6.34±0.45) and G_2 (6.23± 1.40) after treatment with a significant (P< 0.01) difference from G3 (3.56± 0.45). The pre-treatment pancytopaenia and anaemia might be due to increased lyses if RBC by pathogen activated microphages, suppressed bone marrow response, reduced erythropoiesis (Weiss and Janver, 1983). Further, there was sequestration of iron from the circulation by the activated macrophages and decreased iron absorption from the gut due to reduced synthesis of transferring (Thrall, 2004).

Thus, a relative iron deficiency state in serum prevailed leading to lower Hb level with pancytopaenia affecting normal metabolic activity of the body influencing reproduction and milk yield. The average milk production in both G_1 (8.53± 0.55) and G_2 (7.73± 0.65) increased significantly (P< 0.01) after treatment. Moreover, the per cent increase of milk yield in G_1 (29.66± 5.42%) and G_2 (20.65± 1.81%) differed significantly (P< 0.01) from G_3 (6.49± 1.98). It is estimated that 400-500 ltrs of blood need to be circulated through the udder for 1 ltr of milk production (Benerjee, 1990) which could be met with the lower TEC and Hb levels in the cows before treatment leading to decreased milk production in endometritic condition. The conception rate calculated in G_1, G_2 and G_3 was 88.90%, 66.70% and 11.10%, respectively.

It was observed that the recovery and conception rate coincided with the regained blood values and increased milk yield. Moreover, though the mean post-treatment values and the per cent differences from all the parameters in G_1 and G_2 differed non-significantly, the Lenovo-AP exhibited better result. This may be due to combined antibacterial, antiprotozoal and antioxidant properties of the product. Therefore, inference could be drawn that i) IU Lenovo-AP was better in resolving endometritis than INTACEF Tazo and ii)increase in milk yield level without any change in nutrition and managemental practices may be considered as an index of recovery or sensitivity of treatment under field condition.

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