

**EVALUATION OF DIFFERENT THERAPEUTIC PROTOCOLS
IN THE TREATMENT OF ANAPLASMOSIS IN CATTLE**

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CERTIFICATE

This is to certify that the thesis entitled "EVALUATION OF DIFFERENT THERAPEUTIC PROTOCOLS IN THE TREATMENT OF ANAPLASMOSIS IN CATTLE" submitted in partial fulfillment of the requirements for the Degree of MASTER OF VETERINARY SCIENCE in Veterinary Clinical Medicine, Ethics and Jurisprudence to the Tamil Nadu Veterinary and Animal Sciences University, Chennai- 51 is a record of bonafide research work carried out by Mr. SAWALKAR RAJENDRANATH SOMANATH under my supervision and guidance and that no part of the thesis has been submitted for the award of any other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

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ABSTRACT

EVALUATION OF DIFFERENT THERAPEUTIC PROTOCOLS IN THE TREATMENT OF ANAPLASMOSIS IN CATTLE

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The present study was undertaken to study the prevalence and clinicopathological changes in anaplasmosis in cattle. Further various diagnostic tests to diagnose anaplasmosis were compared for their effectiveness. Anaplasmosis affected cattle were put on three different treatment protocols to arrive at an effective therapeutic regimen. The study comprised of fifteen apparently healthy cattle and hundred and forty three clinical cases. For the treatment trial, forty five cattle were divided into three groups of 15 animals each viz. Group I - Oxytetracycline HCl, Group II - Oxytetracycline HCl (LA-200) and Group III - Enrofloxacin.

All suspected animals were subjected to detailed clinical examination. The blood samples were collected before and after the treatment from jugular vein and subjected to haematology, serum biochemistry, first step PCR and nested PCR. Treatment was undertaken with three different treatment protocols. Responses to treatment were recorded based on the remission of clinical signs, haematology, serum biochemistry profile, blood smear examination and grade of parasitaemia.

In the present study, incidence of anaplasmosis in cattle was 3.12 per cent. The highest incidence was noticed in Jersey crossbred cattle. Maximum numbers of cases were from the age group of five to eight years and the occurrence of diseases was mainly during southwest monsoon season. More females were affected compared to male cattle. The predominant clinical signs viz. pyrexia, anorexia, laboured breathing, tachycardia, reduction in milk yield, pale conjunctival mucosa, cessation of rumination and diarrhoea were observed.

Haemogram of the affected animals revealed significant anemia. The severity of anemia was related with the degree of parasitaemia. The degree of anemia was significantly higher in higher grade of parasitaemia. In the lower parasitaemia group leukocytosis was observed while in the higher parasitaemia group leucopenia was observed. The platelet counts were significantly decreased in both lower and higher parasitaemia groups

Hypoalbuminemia recorded during this study could be due to certain degree of liver dysfunction. Hyperbilirubinemia observed in the present study could be attributed to excessive destruction of RBCs.

Pre and post treatment samples were found to be positive by nested PCR. Nested PCR proved to be highly sensitive, useful for species differentiation and to detect very low parasitaemia which could not be detected by blood smear examination. The 16S ribosomal RNA was used for sequencing and the sequencing data of our local *A. marginale* showed 97 per cent homology with sequences of other *A. marginale* available in the Genbank.

The therapeutic efficacy was found to be 86.67 percent for oxytetracycline HCl, 73.33 percent for oxytetracycline HCl (LA-200) and 40 percent for enrofloxacin

The following conclusions were drawn from the study.

1. *A. marginale* was the only species causing anaplasmosis in cattle at Chennai
2. Anaemic picture was the predominant haematological observation
3. The degree of anaemia could be correlated to the parasitaemia
4. Nested-PCR proved to be a highly sensitive test to detect very low parasitaemia which otherwise could not be detected by blood smear examination
5. Oxytertracycline HCl intravenously @ 22mg/kg for 7 days is better.

Key words: Anaplasmosis, Clinical signs, Diagnosis, PCR, Treatment, Oxytetracycline, Enrofloxacin.