A REPORT ON THE INCIDENCE OF ANAPLASMA OVIS INFECTION IN SHEEP

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ABSTRACT
This study was carried out to investigate the incidence of Anaplasma ovis infection in sheep population of Kancheepuram and Chennai districts of Tamil Nadu. A total of 464 whole blood sample and blood smears were prepared from small holder sheep units and processed for examination. On Giemsa stained blood smear examination, it was observed that the overall prevalence rate of Anaplasma ovis infection was 9.2%. On haematological examination, it was observed that a progressive decrease in haemoglobin concentration (5±1.24 g/dl) and packed cell volume (13±1.26%) in infected animals.

Keywords: Anaplasma Ovis, Incidence, Sheep, Tamil Nadu

INTRODUCTION
Ovine anaplasmosis caused by intraerythrocytic rickettsial organism, Anaplasma ovis is mainly affecting adult sheep (Martin, 2000). It is generally a benign rickettsiosis of sheep and goats. It is transmitted cyclically by ixodid ticks of the genera Rhipicephalus, Haemaphysalis, and Hyalomma spp. In addition, iatrogenic and mechanical transmission by insects is also possible. Among sheep A. ovis is the most widely recognized and pathogenic species causing serious effects in affected animals (Kumar et al., 2010). Microscopically, the organism appears as solid dots on the margins of RBC. It usually causes sub-acute or chronic disease but sometimes acute disease is observed in older animals. The disease is characterized by fever, severe anaemia, jaundice, brownish urine, loss of appetite, dullness or depression, rapid deterioration of physical condition muscular tremors, constipation, pale mucous membrane and labored breathing. In acute cases, 10 to 20% of the RBCs can be infected (Manickam, 1987). During routine laboratory diagnosis in acutely infected animal is based on the microscopic examination of peripheral blood smears. Serological tests even though developed, lack the required specificity and sensitivity for a reliable diagnosis (Aubry and Geale, 2011). The present study was designed to investigate the incidence of Anaplasma ovis infection in sheep population from northern districts of Tamil Nadu.

MATERIALS AND METHODS
The present study was conducted in different sheep population in and around Kancheepuram district of Northern Tamil Nadu and some adjoining areas of Chennai. Sheep Blood samples were collected from small holder units and processed for haematological examination. Before collection of blood, the area of the ear tip was thoroughly clipped and wiped with methanol. The blood smears were prepared on clean, grease free glass slides, air dried and labeled with a lead pencil. Smears were stained with the standard procedure of Giemsa staining. A total of 464 thin blood smears (340 from Kancheepuram and 124 from Chennai) were prepared for the prevalence studies of anaplasmosis. Approximately, 5ml of blood was drawn from Jugular vein in vacutainers test tube that contained disodium ethylene diamine tetra acetic acid (Disod. EDTA) was used for determining the following haematological parameters: packed cell volume (PCV%), haemoglobin concentration (Hb g/dl) total erythrocytes count (RBCs x 10⁷/µl), total leukocytic count (WBCs x 10⁹/µl) and calculated mean corpuscular volume (MCV/fl), Mean corpuscular haemoglobin (MCH/pg) and mean corpuscular haemoglobin concentration (MCHC g/dl). Blood smears were examined microscopically. Approximately 12,500 RBCs (50 fields) per slide were observed. Morphologically, A ovis were observed as solid dots on RBCs. For comparing the prevalence of anaplasmosis in blood smears, chi square test was applied.
RESULTS AND DISCUSSION
A total of 464 whole blood samples and smears (340 from Kancheepuram and 124 from Chennai districts of Tamil Nadu) were collected from suspected sheep showing a clinical picture of high fever, pale mucous membrane, and lacrimation. On Giemsa stained blood smear examination, it was observed that out of 464 sheep 43 were found positive for A ovis infection with a prevalence rate of 9.2%. Therefore, 24 sheep out of 340 smears from Kancheepuram (7%) and 8 out of 124 from Chennai (6%) were prevalence percentage in these districts. Organisms in blood smears appeared as spherical dot like bodies located in periphery of the infected RBCs. Blood picture also revealed anisocytosis, basophilic stippling, macrocytic normochromic type of anaemia. On haematological examination, it was observed that a significant progressive decrease in haemoglobin concentration (5±1.24 g/dl), packed cell volume (13±1.26%), RBC counts (27±1.24 x10^6/cumm) and total leukocyte counts (6.24±1.42x10^3/cumm) in the affected animals. An increase in mean corpuscular volume (34.30±5.36 fl), decrease in mean corpuscular haemoglobin (05.30±2.13 pg) and mean corpuscular haemoglobin concentration (22.45±2.34 g/dl) were also observed in infected animals. Based on this study, it was concluded that the overall incidence of infection was found to 9.2% and sheep above 2 years of age were highly susceptible for the infection. When compared to present findings, the earlier studies revealed low prevalence rate of anaplasmosis in northern districts of Tamil Nadu (Srinivasan et al., 1995; Ramprabhu et al., 1999). Further, concurrent haemoprototzoan and rickettsial infection was reported in and around Chennai (Rao et al., 1991). Anaplasmosis is considered as one of top ten economically important rickettsial diseases affecting ruminants in India (PDADMAS Annual Report, 2005-06). The prevalence of the anaplasmosis in clinically normal animals indicates subclinical infections or carrier status of these vectors borne disease. Though the carrier animals does not exhibit any symptoms; they remain patent to the vectors and remain silent source of other susceptible animals (Kieser et al., 1990).

REFERENCES
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