

# HAEMATO-BIOCHEMICAL CHANGES IN CANINE BABESIOSIS

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Dogs suffering from babesiosis caused by *Babesia gibsoni* were included in the present study. Various haematobiochemical parameters viz RBC, Hb, PCV, MCV, MCH, MCHC, ESR, TLC, DLC, total platelet count, BUN, Creatinine, total bilirubin, direct bilirubin, SGPT, total protein, albumin, globulin, A:G ratio and CRP of affected dogs were studied.

**Keywords:** *Babesia gibsoni*

## Introduction

Canine babesiosis is an important intraerythrocytic protozoan parasitic disease transmitted by ticks *Rhipicephalus sanguineus* and *Haemaphysalis bispinosa*. Main etiological agents for canine babesiosis were *Babesia canis*, *Babesia gibsoni*. *Babesia gibsoni* was first reported in hounds and jackals by Patton in India (Patton, 1910). *Babesia gibsoni* is a small pleomorphic organism, comparatively less pathogenic than *Babesia canis* with increased form of chronic infection followed by carrier status. *Babesia gibsoni* is small, usually oval or annular in shape, and less than 3µm in length, thus appearing less than one-eighth of the diameter of the host erythrocyte. Limited work has been done on the haemato-biochemical changes in canine babesiosis. Therefore present work was conducted to study the haemato-biochemical changes in canine babesiosis.

## Materials and Methods

Six dogs brought to Teaching Veterinary Clinical Complex, Mannuthy, Kerala suffering from *Babesia gibsoni* infection were included in the present study. Approximately 6 ml of blood was collected on day 0 through cephalic or recurrent tarsal vein puncture for haematobiochemical estimations. Haematobiochemical parameters viz RBC, Hb, PCV, MCV, MCH, MCHC, ESR, TLC, DLC, total platelet count, BUN,

Creatinine, total bilirubin, direct bilirubin, SGPT, total protein, albumin, globulin, A:G ratio and CRP of affected dogs were studied. Haemogram and leucogram and platelet counts using standard technique as described by Feldman *et al.* (2000). Serum values were measured spectrophotometrically with standard diagnostic kits by using semiautomatic blood analyser Erba Mannheim Chem-5 Plus V2, Transasia Biomedicals Ltd, Mumbai.

## Results

The mean values of haemogram includes total RBC count [million/cmm], Hb [g/dl], PCV [%], MCH [pg], MCV [fl], MCHC [%] and ESR [mm/hr] were  $4.67 \pm 0.99$ ,  $11.67 \pm 2.20$ ,  $36.73 \pm 6.73$ ,  $25.12 \pm 1.65$ ,  $80.83 \pm 3.86$  and  $31.13 \pm 1.10$  respectively. The mean values of leucogram includes total leucocyte [count/cmm], neutrophils [%], lymphocytes [%], eosinophils [%] and total platelet [count/cmm] were  $14025 \pm 1634.00$ ,  $63.33 \pm 3.88$ ,  $33.50 \pm 4.39$  and  $3.33 \pm 0.98$ ,  $152166.67 \pm 41883.50$  respectively. The mean values of BUN [mg/dl], Creatinine [mg/dl], total bilirubin [mg/dl], direct bilirubin [mg/dl], SGPT [IU/L], total protein [g/dl], albumin [g/dl], globulin [g/dl], A:G ratio and CRP [mg/L] were  $26.6 \pm 3.77$ ,  $1.25 \pm 0.11$ ,  $0.98 \pm 0.11$ ,  $0.31 \pm 0.01$ ,  $51.86 \pm 11.9$ ,  $6.72 \pm 0.33$ ,  $2.59 \pm 0.25$ ,  $4.02 \pm 0.26$ ,  $0.51 \pm 0.11$  and  $4.46 \pm 0.48$  respectively.

## Discussion

The mean values of erythrocyte count, haemoglobin and PCV, were reduced in dogs suffered from babesiosis as compared to healthy control indicating macrocytic anaemia in dogs. Meinkoth *et al.* (2002) also observed similar findings and this might be due to direct mechanical disruption caused by the parasite as it leaves the red blood cell, along with intravascular haemolysis and immune mediated or non-immune mediated destruction of red blood cells. Mild lymphocytosis noticed and it might be due to development of antibodies against chronic infection.

Thrombocytopenia observed in canine babesiosis might be due to immune mediated destruction of thrombocytes or splenic sequestration or coagulatory consumption of platelets from haemolytic or vascular injury (Solano - Gallego and Baneth 2011).

Hypoproteinemia and hyperglobulinemia were observed in this study. This is in accordance with Vijayalakshmi *et al.* (2014) who observed same findings in complicated canine babesiosis caused by *B. gibsoni*. This might be due to involvement of liver or kidney.

The mean values of total and direct bilirubin were increased in dogs suffered from babesiosis as compared to healthy controls. Elevated bilirubin level might be due to increased erythrolysis induced by parasites associated with the infection as opined by Rafaj *et al.* (2007).

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