

## **1. EFFECT OF FASCIOLIASIS ON HEMATOLOGICAL, SERUM BIOCHEMICAL AND HISTOPATHOLOGICAL CHANGES IN SHEEP**

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### **ABSTRACT**

Hematological, serum biochemical and histopathological changes were investigated in twenty five months old Farafra sheep. Animals were divided into 4 equal groups (A, B, C and D). Sheep in group A kept without treatment as control, while animals in groups B, C and D were orally infected with 100, 200 and 400 viable metacercariae of *F. gigantica*, respectively. During the experimental period the infected sheep lost weight 2- 6 weeks post- infection, then gained less weight by the end of the experiment. The hematological study showed a significant decrease ( $P<0.05$ ) in red blood cell (RBC) counts, hemoglobin (Hb) concentration, percentage of packed cell volume (PCV %) and monocytes counts in sheep infected with *F. gigantica* compared to the control. Moreover, white blood cell (WBC) counts, eosinophil and neutrophil counts were significantly higher ( $P< 0.05$ ) in infected groups than the control. The decrease in PCV levels and the increase of WBCs counts in sheep with high infective dose of metacercariae were more than the other infected groups. In addition, the biochemical investigations revealed a significant decrease in serum total protein and albumin levels in infected sheep groups compared to control group. The significant hypoproteinaemia and hypoalbuminaemia recorded in the infected groups were accompanied with significant hyperglobulinaemia. During the experiment glucose levels were significantly lower ( $P< 0.05$ ) in the infected sheep groups than the control. Whereas sheep administrated 200 and 400 metacercariae had the lowest glucose levels. Moreover, significant elevations in serum total bilirubin, activities of aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), lactate dehydrogenase (LDH) and gamma-glutamyl transferase (GGT) were also observed in infected sheep comparing with control one. The elevations in serum ALT, ALP, LDH and GGT levels were correlated to the given dose of *F. gigantica* metacercariae. In addition, serum urea and creatinine levels were significantly higher in infected sheep than the control.

The changes in the hematological and biochemical parameters reflect tissue damage, which is confirmed in this study with the histopathological examination of the liver and kidney of the control and infected groups. Tissue damages are correlated with the dose of metacercariae, the more infective does the more tissue damages.

In the present study the effect of *F. gigantica* on the hematological and biochemical values started few weeks before eggs were demonstrated in feces (6- 7 weeks post- infection). This study led to conclude that measuring the hematological and biochemical parameters could be useful in early diagnosis and prognosis of sheep fascioliasis.

## **Effect of Fascioliasis on hematological, serum biochemical and ....**

**Keywords:** *Fasciola gigantica*, sheep, haematological and biochemical responses, histopathological changes, liver, kidney.