

***Schistosoma haematobium*: Effects of low doses of Prednisolone on parasite establishment in guinea-pigs**

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ABSTRACT

In our previous study, administration of 5mg prednisolone for five days pre-*Schistosoma haematobium* infection in guinea-pigs elicited establishment of the parasite evidenced by inflammatory reactions and vacuolations in the liver and bladder cells. This study further investigates the ability of low doses of prednisolone given for short duration to induce more *S. haematobium* provoked histologic changes in infected guinea-pigs. Guinea-pigs were shared into six groups and the infected groups were subcutaneously injected with 250-300 *S. haematobium* cercariae. Twenty infected guinea-pigs each in group I and II were given 0.5mg (I0.5) and 1.5mg (I1.5) prednisolone respectively a day before infection and on day 5 post infection. Group III comprised 20 unimmunossuppressed infected (UI) guinea-pigs while groups IV and V comprised groups of animals given 0.5mg (D0.5) and 1.5mg(D1.5) prednisolone a day before infection and on day 5 post infection. Group VI is the normal group of 10 guinea-pigs. Guinea-pigs were killed, perfused, worms recovered and the liver, lungs, spleen, intestine, and bladder removed for histopathological examination at 6, 8, 11, 14 and 16 weeks pi. Six to sixteen weeks pi, worm recovery was higher in I1.5 group than in I0.5 group but the number of worms recovered from the immunosuppressed groups was higher than the UI group. The tissue sections of the normal, D0.5, and D1.5 guinea-pigs were normal from 6-16 weeks pi. No histologic change was seen in liver sections of UI while changes were only observed in the lungs at 16th week pi. Liver sections of the I0.5 at the 6th week pi showed mild-moderate hepatocyte degeneration, which progressed to only necrosis by 16th week pi. Liver sections of I1.5 guinea-pigs at the 6th week pi showed mildly haemorrhagic hepatic lobules with severe vacuolar degeneration of hepatocytes, which became severe hepatocyte necrosis at week 8. By 11th week pi, hepatocyte degeneration was observed again and at 16th week, became widespread. Sections from the lungs were devoid of visible lesions until week 11 pi. Although the characteristic *S. haematobium* granulomas were not recorded, administration of low doses of prednisolone (especially 1.5mg/kg) for short duration could enhance the establishment of *S. haematobium* in guinea-pigs.

Keywords: Guinea-pigs, *S. haematobium*, Prednisolone, Immunosuppression



Plate 1: Section of liver of the normal guinea-pigs showing the portal area (PA) and apparently normal hepatocytes (arrows).H & E x 400.



Plate 2: Section of the liver of unimmunosuppressed infected guinea-pigs showing the portal area (PA) and hepatocytes (arrows). No observable histologic change is seen. H & E x 400.

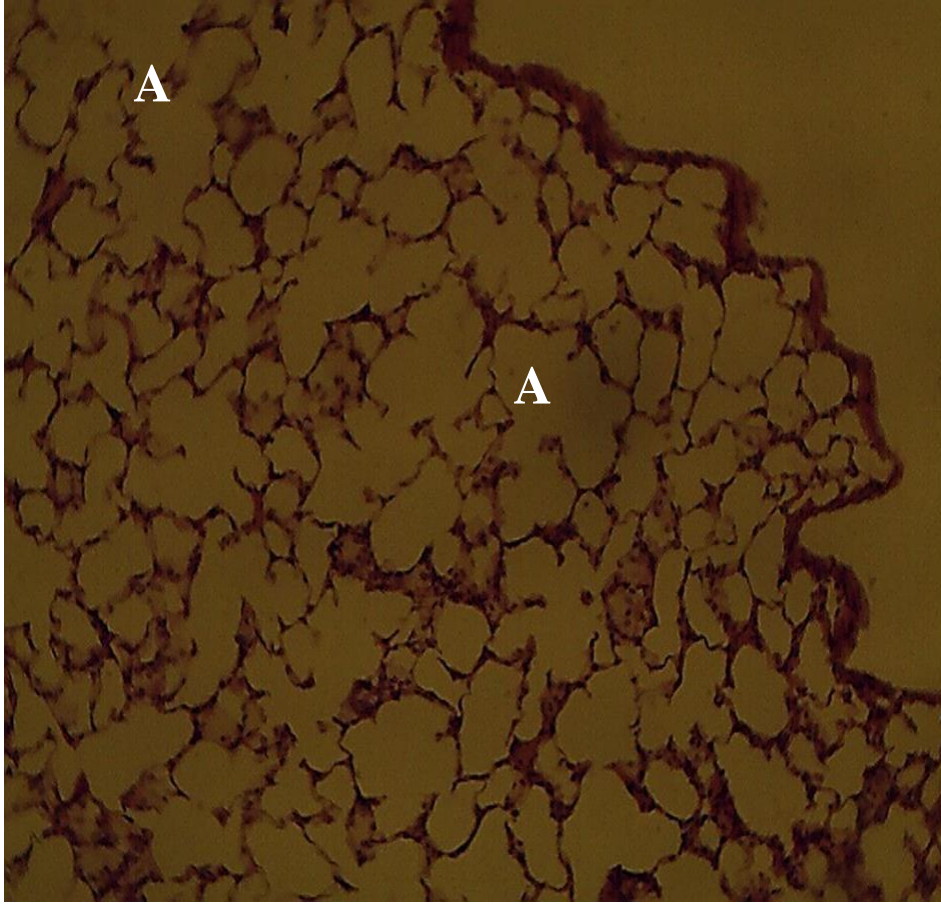


Plate 3: Section of the lung of normal control guinea-pigs showing normal structure. See the alveoli (A). H & E x 400.

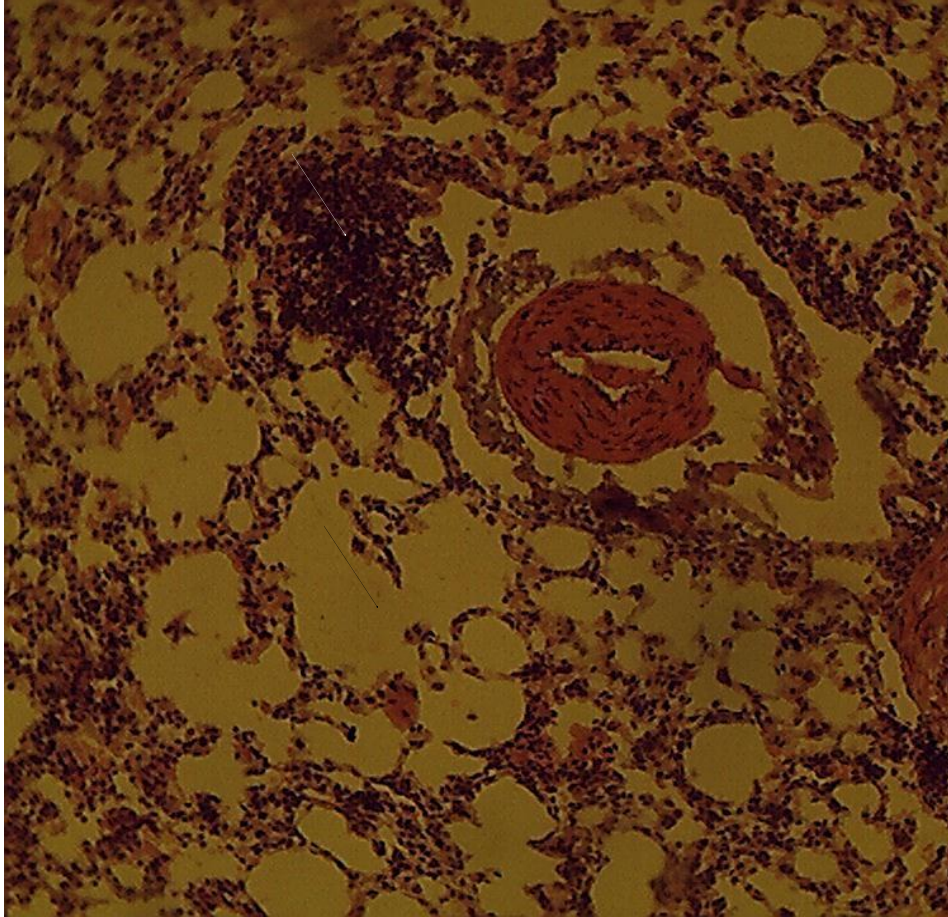


Plate 4: Section of the lungs of unimmunosuppressed infected (UI) guinea-pigs at 16 weeks pi showing aggregations of mononuclear cellular infiltrations around the pulmonary blood vessels (vasculitis- white arrow) and emphysema (black arrow). H and E x 400.

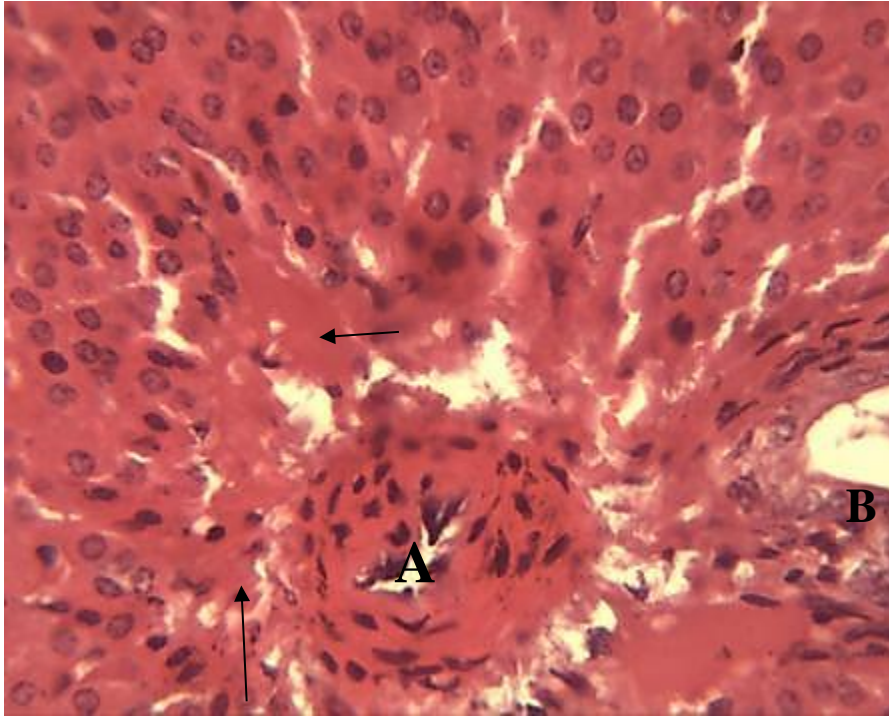


Plate 5: Section of the liver of I0.5 guinea-pigs at the 5th week pi showing a mild to moderate hepatocyte degeneration and necrosis in the periportal areas (arrow). Hepatic artery (A), bile duct (B). H&Ex400.

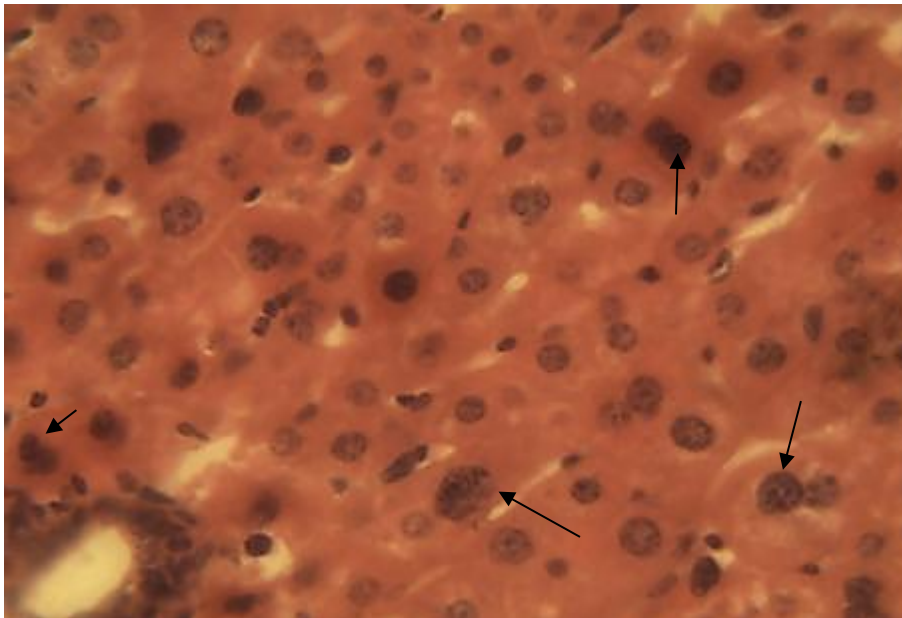


Plate 6: Section of liver of I0.5 guinea-pigs at 8th week pi, showing a mild to moderate hepatocyte regeneration evidenced by presence of large numbers of megalocytes and binucleate hepatocytes (arrow). H&Ex400.

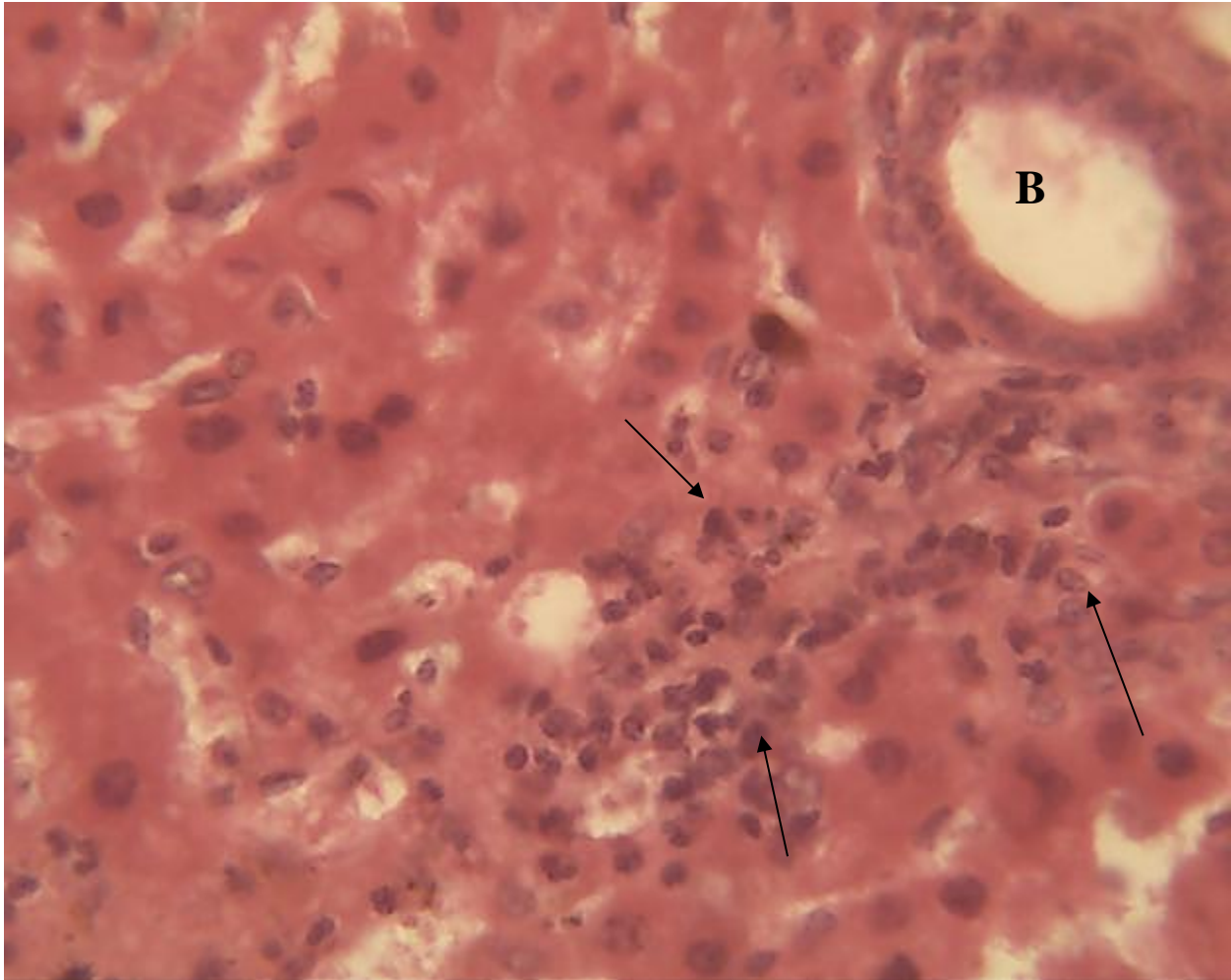


Plate 7: Section of the liver of IO.5 guinea-pigs at 11th week pi, showing a moderate infiltration of MN leukocytes in the periportal area (arrow), Bile duct (B).H&Ex400.

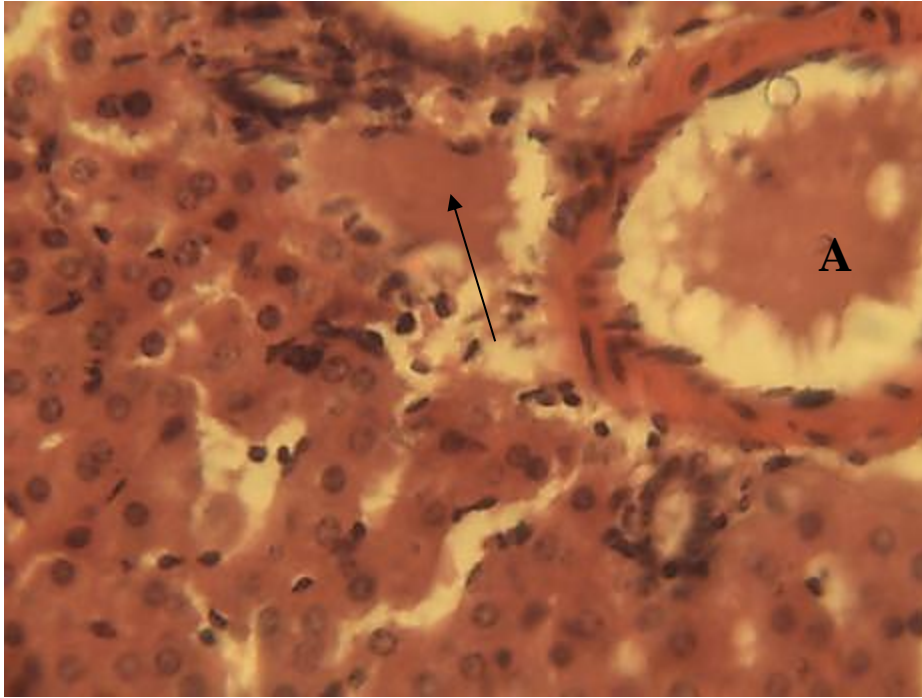


Plate 8: Section of the liver of I0.5 guinea-pigs at 14th week pi, showing mild exudation into the periportal areas (arrow). Hepatic artery (A). H&E x 400.

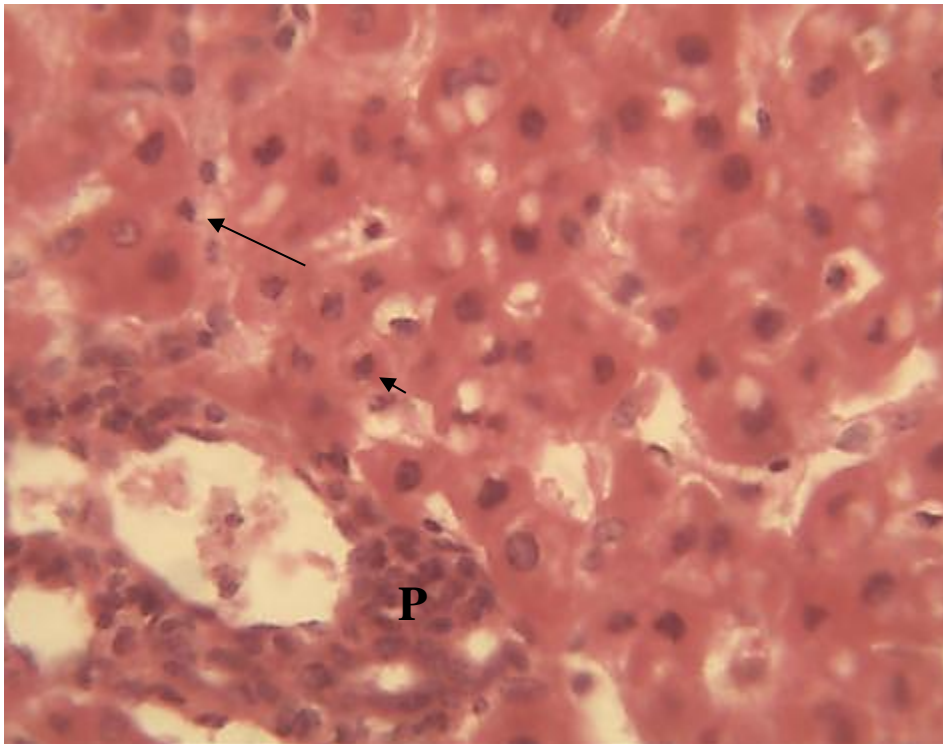


Plate 9: Section of the liver of I0.5 guinea-pig at 16th week pi, showing mild hepatocyte necrosis (with nuclear pyknosis) in the periportal areas (arrow) with MNL infiltration of the area (P). H&E x 400.

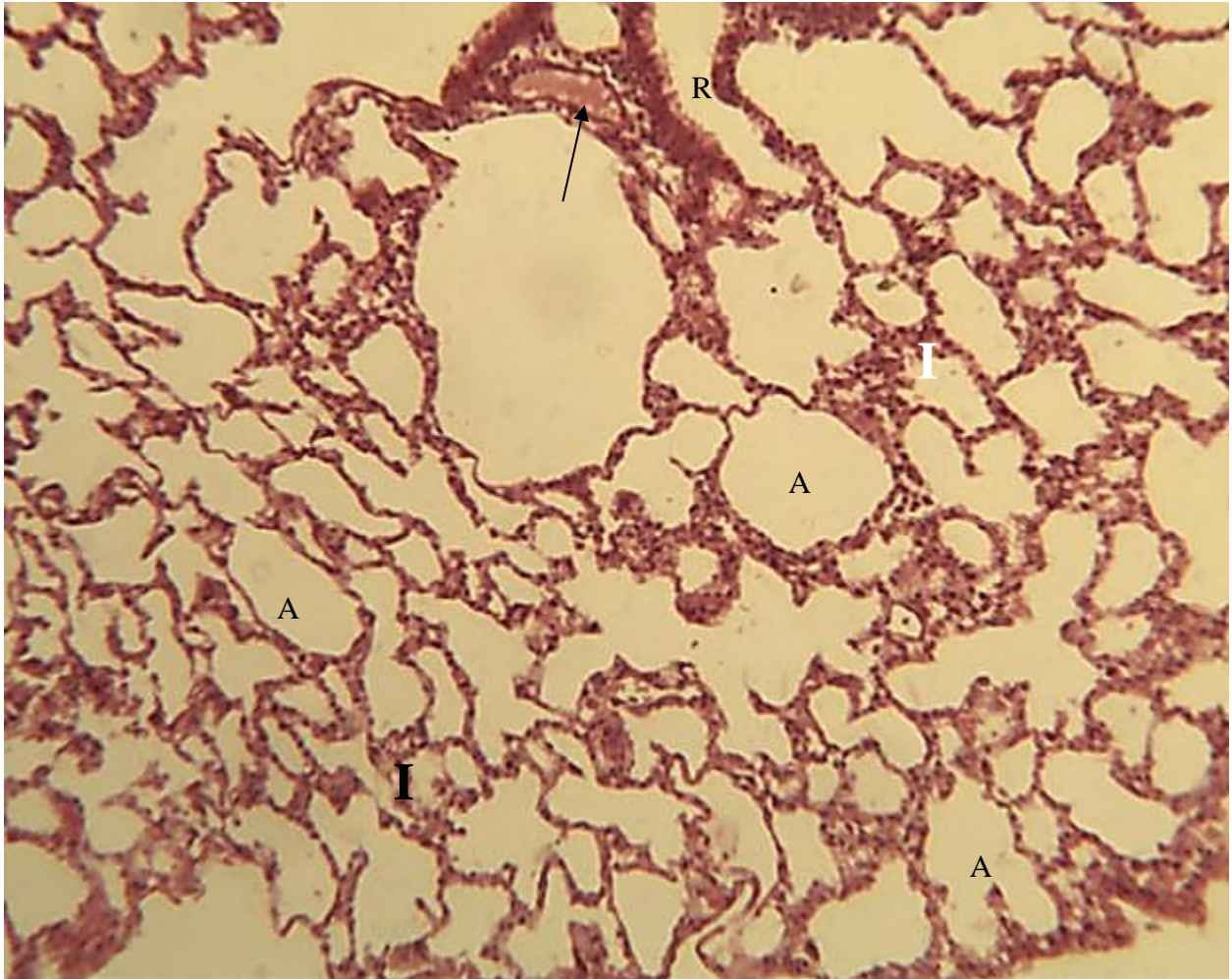


Plate 10: Section of the lungs of I0.5 guinea-pigs at 16 weeks pi, showing no significant histological changes. Alveoli (A), Interstitium (I), Respiratory bronchiole (R) and blood vessel (arrow). H&E x100.

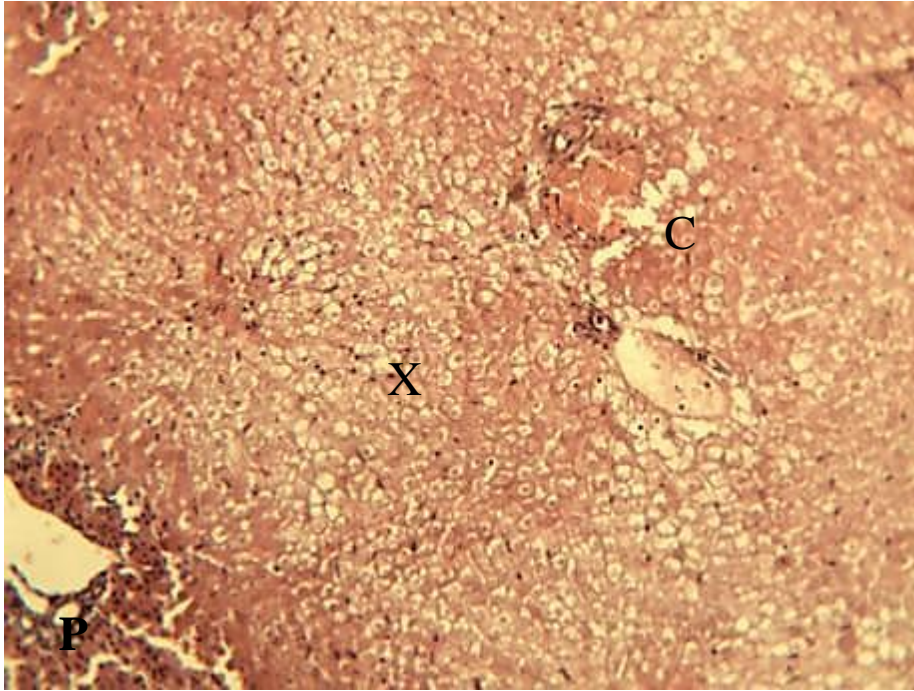


Plate 11: Section of the lungsof I1.5 guinea-pigs at 5th week pi, showing severe vacuolar degeneration of hepatocytes in the centrilobular to midzonal areas (X).Portal area (P), central vein (C).H&E x 40.

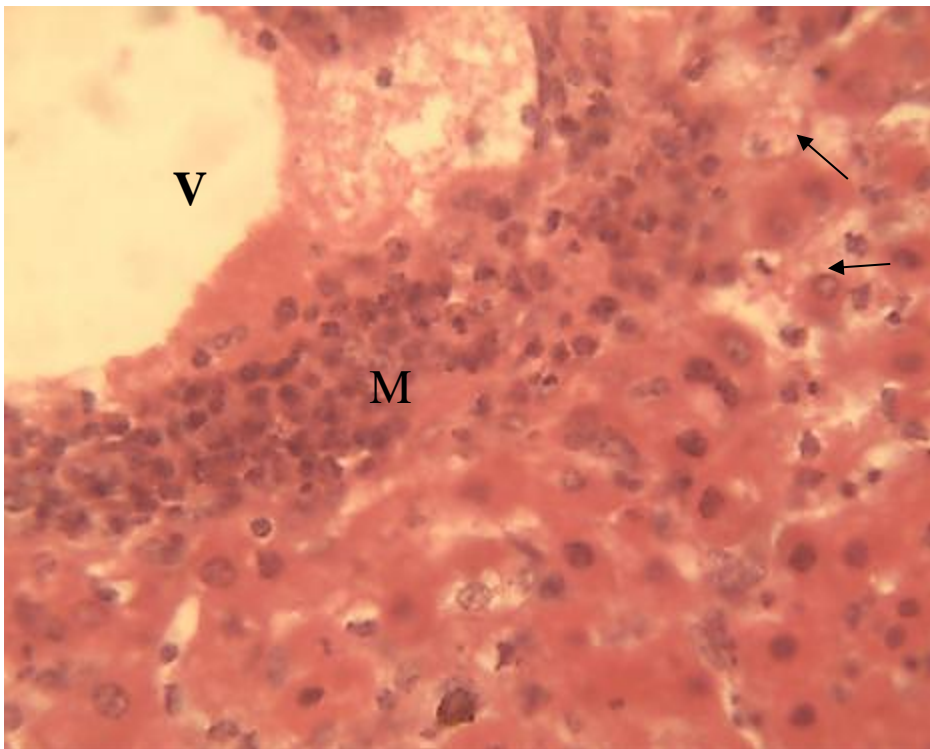


Plate 12: Section of the liver of I1.5 guinea-pigs at 8th week pi, showing severe necrosis of hepatocytes in the centrilobular areas (arrow), and moderate MNL infiltration (M) around the central vein (V). H&Ex400.

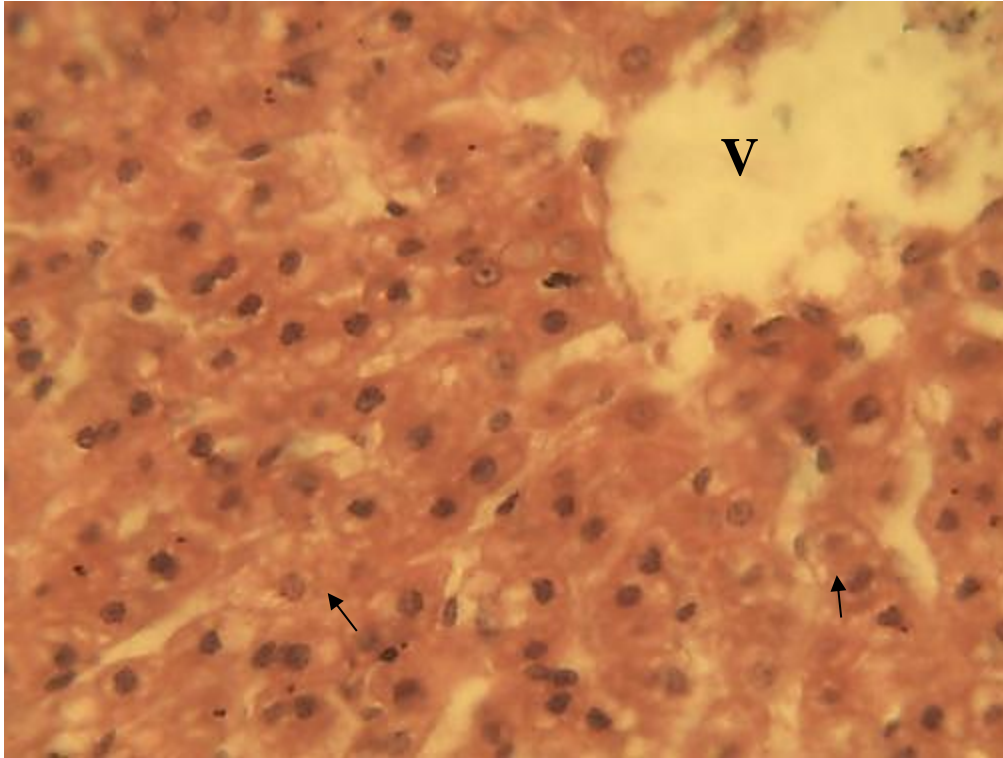


Plate 13: Section of the liver of I1.5 guinea-pigs at the 11th week pi showing mild to moderate vacuolar degeneration of the hepatocytes in the centrilobular areas (arrow), Central vein (V). H&E x 400.

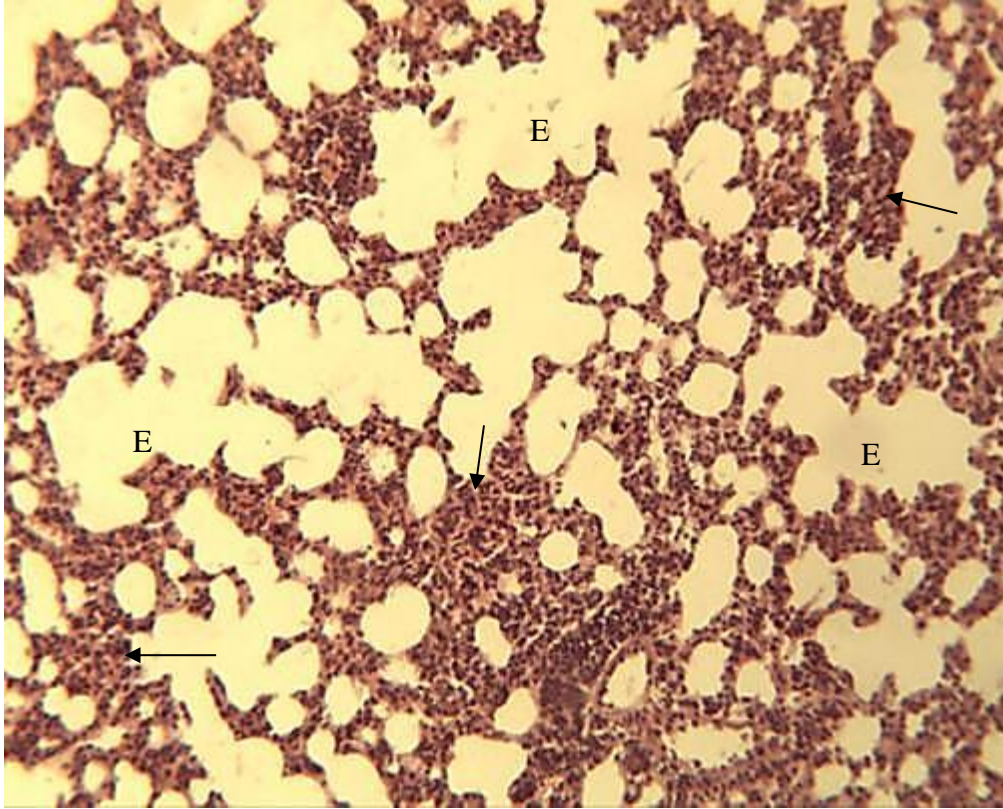


Plate 14: Section of the liver of I1.5 guinea-pigs at 11 weeks pi, showing emphysema (E) with rupture of the alveolar interstium and severe MNL infiltration of the alveolar interstitium (arrow).H&E x100.

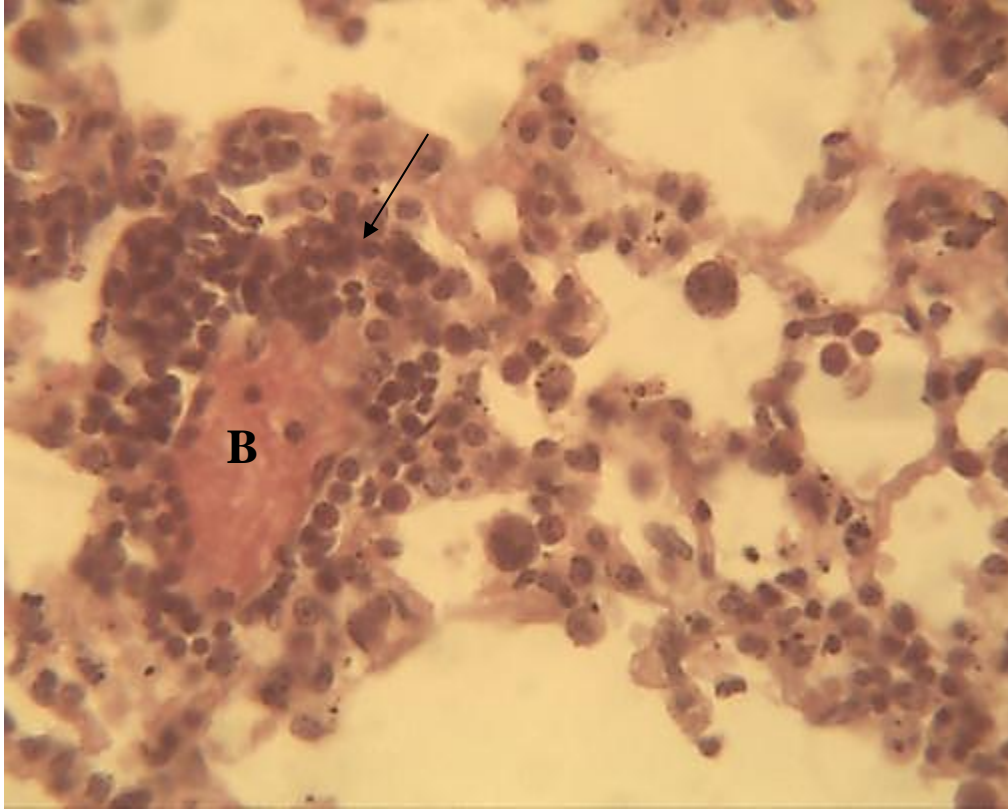


Plate 15: Section of the lungs of I1.5 guinea-pigs at 16 weeks pi, showing mild MNL infiltration of the interstitium with the same degree of MNL in the perivascular space (arrow), Blood vessel (B).H&E x 400.