SUMMARY
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The effect of *B. malayi* infection on the host, *M. natalensis* on antioxidant defence mechanism and its relation to DEC treatment, membrane bound enzymes, testicular enzyme markers and histopathological changes were studied. The adult worms were found in lungs, testes and heart and absent in liver and brain. Lungs contained the maximum number of worms followed by testes and heart.

The antioxidant enzymes, antioxidants and LPO were determined in liver, testes, brain, heart and lungs of the control and infected animals at various time intervals.

Following *B. malayi* infection, LPO increased significantly from 0 to 120 days in liver, testes, brain and heart and decreased in lungs to significant levels. A negative correlation was observed between LPO and the activity of SOD/catalase in liver, testes, brain and heart and it was significant in liver and testes between SOD and LPO and in brain and heart between catalase and LPO. On the contrary, a positive and significant correlation was observed in lungs for SOD.

In infected animals the antioxidant enzymes SOD and catalase increased initially in testes, brain and heart up to 30 days and declined thereafter, while in liver the activity increased significantly up to 60 days and declined later. In lungs, the enzyme activity showed significantly increasing trend throughout. A positive correlation was observed between the activity of SOD and catalase in liver, brain, heart and lungs and it was significant in brain and heart only.

The GST activity decreased significantly from 60 days in testes, brain and heart, while the liver showed decreasing trend from 90 days only. And in lungs, it increased significantly from 60 to 120 days. A positive correlation was seen between the activity of GST and GSH in all the organs and it was significant in liver, testes and brain only.

GR activity decreased significantly in liver, testes, brain and heart of the infected animals throughout the study period, while in lungs it showed an increasing trend from 30 days. G6PDH decreased significantly in liver, testes and heart from 30 to 120 days, while in
brain, it decreased from 0 day itself. However, in lungs its activity increased significantly throughout. The activity of GR/G6PDH had a positive correlation with GSH in all the organs and it was significant in testes, brain and heart alone.

GPx activity increased in testes, brain and heart upto 30 days and declined significantly thereafter, but liver showed a significant decline from 0 day itself. And in lungs, the activity increased from 30 days. There was a positive and significant correlation between the activity of GPx and GSH in all the organs.

The reduced glutathione in liver, testes and heart of the infected animals showed a significant decrease in their activity from 30 to 120 days and in brain from 0 to 120 days. But, the lungs showed an increasing trend from 30 days to 120 days. A negative correlation was observed between the activity of GSH and LPO in all the organs and it was significant in liver, testes and heart.

The total thiol level also showed significant decline in liver, testes and brain of the infected animals from 0 to 120 days and heart showed similar trend from 30 days only. However, in lungs significant increase was noticed. A significant and positive correlation was observed between the thiol status and GSH levels in all the organs.

In the infected animals, ascorbic acid level decreased significantly throughout in testes and heart and in liver and brain, it decreased from 30 days only. However, in lungs significant increase was noticed from 30 days of infection. The ascorbic acid level and GSH activity had positive correlation in all the organs and it was significant in liver, testes, brain and heart alone.

The enzymes SOD and catalase, which were significantly low in all the organs of the infected animals increased after DEC treatment except in testes. And in lungs, DEC treatment reduced the increased level of these enzymes to almost normal level.

The glutathione related enzymes and antioxidants which were reduced during *B. malayi* infection were almost restored back to normal level after DEC treatment in liver,
brain, heart and lungs. However, in testes, despite an increase in activity, these enzymes and antioxidants level did not reach the level found in the control.

The increased LPO observed in *B. malayi* infected animals in liver, brain and heart declined after DEC treatment. In testes, though LPO declined after DEC treatment, the levels were still higher than that of the control. In lungs, the LPO, which was decreased, showed an increase after DEC treatment. The levels of these antioxidant enzymes and LPO in the organs of control animals were found unaffected by DEC treatment.

The activity of membrane bound enzymes of brain, such as Na\(^+\) K\(^+\) ATPase, Ca\(^{2+}\) ATPase, Mg\(^{2+}\) ATPase, γ-GTP, acetylcholinesterase and alkaline phosphatase of the infected animals showed a significant decrease from 60 days.

Na\(^+\) K\(^+\) ATPase, Ca\(^{2+}\) ATPase, Mg\(^{2+}\) ATPase in RBC of infected animals showed a declining trend from 30 to 120 days and acetylcholinesterase decreased significantly throughout the study period.

The haemoglobin levels and RBC count in the infected animals were found to fall within the normal physiological range. Total WBC counts was significantly lower throughout the parasite development. The absolute count of lymphocytes decreased significantly from 30 days and the eosinophil and neutrophil count increased significantly throughout.

The testosterone levels increased initially upto 60 days and declined thereafter. γ-GTP increased significantly in the infected animals throughout the study period.

LDH-X enzyme bands in the infected animals were visible clearly on 30th day and faintly on 60th day and completely absent on 90th and 120th day, while the control was clearly visible in all the cases.

Histopathological studies were done in organs such as lungs, testes, heart, liver, brain, kidney and spleen. Either complete or sections of mf were observed in all these organs except in spleen. The pathological changes in these organs were of degenerative and
inflammatory nature indicative of cell injury and body's response. The adult parasite in the testes caused significant inflammatory changes, which led to severe damage to spermatogenesis. After DEC treatment, these changes in the testes became more chronic and testicular damage became irreversible.