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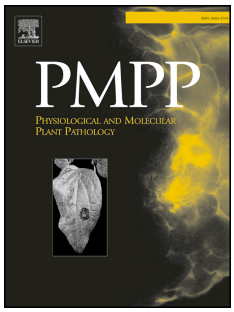

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Bioprospecting of *Prosopis juliflora* (Sw.) DC seed pod extract effect on Antioxidant and Immune system of *Spodoptera litura* (Lepidoptera: Noctuidae)

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Abstract

Chemical insecticides are largely used for the control of agricultural pests, in spite of harmful effects on non-target organisms and their persistence in the environment. Alternative pest control method involving of plant secondary metabolites has gained momentum recently. In the present study seed pod of *Prosopis juliflora* plant was studied for the lethal and sublethal effect on the *Spodoptera litura* larvae. Different solvent extracts of *Prosopis juliflora* seedpods were tested for insecticidal activity. The results showed that hexane seed pod extract of *Prosopis juliflora* with LC_{50} (24 h) (200.40 ppm) and LC_{90} (24 h) (1.01 ppm). Further, the effect of hexane seed pod extract an immune and antioxidant system of *S. litura* larvae were studied. The results show a significant increase in the total hemocyte count. Among haemocytes, Granulocytes, Plasmatocytes, Spherulocytes, Oenocytoids, and Prohemocytes showed an increase. Further an increased level in prophenoloxidase was observed. Catalase, Super Oxide Dismutase, Glutathione S-Transferase and Cytochrome P450 enzymes showed a significant increase. The chemical composition of hexane extract was analyzed using GC-MS and FTIR. GC-MS analysis showed the presence of five active compounds among which 9-Octadecyne had maximum peak value (63.314%). FT-IR analysis showed the presence of alkenes, alkyl halides, carboxylic acids, and aromatics. This study shows that *P. juliflora* seed pod hexane extract is effective in producing lepidopteran larval mortality and this may be due to the presence of 9-Octadecyne. In addition, this extract also increases the antioxidant and immune enzyme activity thus affecting the fitness of the insect. *P. juliflora* seedpod hexane extract could be as an alternative to conventional insecticides for