

## Abstract

*Aphis gossypii* is one of the most important greenhouse and crop pests with a wide range of hosts, which causes damages through feeding on vegetable sap and transmitting viral diseases. Currently, chemical methods are mainly used to control this pest. Considering the adverse effects of pesticides, it is essential to apply less chemical pesticide in pest control programs. The lethal and sublethal effects of ethanol seed extract of *Peganum harmala* and *Prosopis stephaniana* on one-day-old adults of cotton aphid were investigated under laboratory conditions. The bioassay was evaluated for 24 h after treatment. Reproductive life table parameters of new emerged aphid surveyed at sub-lethal concentrations (LC<sub>20</sub> and LC<sub>40</sub>) of extract and the biological reproductive table was calculated by Jackknife method. The mortality rate increased significantly with the increasing of extract concentration. The estimated LC<sub>50</sub> value of *P. harmala* and *P. stephaniana* extract was obtained 12.3 and 24.4 mg/leaf area (28.26 cm<sup>2</sup>), respectively. Laboratory exposure to sublethal concentrations of extract caused significant decrease in adult female longevity and fertility of surviving aphids and as a result caused significant reduction in the intrinsic rate of natural increase ( $r_m$  value).

Net reproductive rate ( $R_0$ ) obtained 134.5 nymphs/female. in control, while  $R_0$  obtained 87.8 and 96.2 female/female at LC<sub>20</sub> and 77.8 and 84.4 female/female in LC<sub>40</sub> of *P. harmala* and *P. stephaniana* extract, respectively. The intrinsic rate of population increase ( $r_m$ ) at LC<sub>20</sub> of *P. harmala* and *P. stephaniana* extract and control, were 0.4810, 0.4808 and 0.5457, respectively. While,  $r_m$  LC<sub>40</sub> concentration of *P. harmala* and *P. stephaniana* extract, were 0.4846 and 0.4659, respectively. The results of this study revealed extract of two tested plants could be used as a potential control agent for the aphid.

**Key words:** *Aphis gossypii*, Plant extract, Contact toxicity, Sublethal



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**Lethal and sub lethal effect of *Prosopis stephaniana* and *Peganum harmala* seed extract on *Aphis gossypii* Glover (Hem: Aphididae)**

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