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Research Note

Evaluation of safety of *Nomuraea rileyi* (Farlow) Samson to larval parasitoid, *Microplitis maculipennis* Szepl. and honeybee, *Apis cerena indica* Fabricius

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ABSTRACT: **Laboratory experiments were conducted to evaluate the safety of *Nomuraea rileyi* to larval parasitoid, *Microplitis maculipennis* and honeybee, *Apis cerena indica*. The concentration of the fungus used was 2 x 10^8 conidia per liter of water and Tweens 80 (0.02%) was used as spray emulsion. The fungus proved safe to larval parasitoid and honeybees. No mortality of the larvae or adults was noticed.**

KEY WORDS: *Apis cerena indica, Biosafety, Microplitis maculipennis, Nomuraea rileyi*

Castor semilooper, *Achaea janata* (Linn.) is a voracious feeder causing extensive defoliation and at times of severe incidence also feeds on developing capsules (Rai and Jayaramaiah, 1978). In nature, the pest is attacked by egg parasitoids, *Trichogramma chilonis* Ishii (96.5%) and *Telenomus proditor* Nixon (98.0%) and larval parasitoid, *M. maculipennis* Szepl. (72.08%) (Anon., 1987). Use of chemical insecticides adversely affects the natural enemy population and their continued use poses problems of insecticide resistance. In this direction biological control agents like fungi have distinct advantage on other insect pathogens because of their wider host range and amenability for easy mass production. Keeping this in view, laboratory experiment was conducted to test safety of the fungus to larval parasitoid *M. maculipennis* and honeybee, *Apis cerena indica*.

Rearing of *A. janata*

Larvae of *A. janata* were obtained from the Department of Zoology, Karnatak University, Dharwad. The larvae were reared in plastic containers fed on castor leaves and the mouth of the container was covered with muslin cloth. Food was changed twice a day till pupation. Pupae were kept for moth emergence in cage (35x25x45 cm). Adults were fed with 10 per cent sucrose solution through cotton swab in 50ml injection vials. Wet muslin cloth was hung for egg laying inside vials. Eggs were collected every day and sterilized with 0.1 per cent formalin, washed and incubated in glass tube to get disease free larvae for laboratory studies.

Safety of *N. rileyi* to *M. maculipennis*

Second and third instar larvae of *A. janata* in groups of 25 larvae were exposed for 24 hours to mated-adults of *M. maculipennis* in glass cages

with wooden bottom and sliding door. Such parasitised larvae were treated with *N. rileyi* spore suspension containing $2x10^8$ conidia/l and were fed with castor leaves. These treatments were replicated 11 times. Similarly, another 11 sets of 25 parasitised larvae were treated with water containing Tween-80 (0.02%). Observations on the adult emergence of *M. maculipennis* were recorded on 5th, 10th and 15th day after treatment. The treatments were compared by student 't' test.

Safety of *N. rileyi* to grub's of honeybees, *Apis cerena indica*

Two combs of *A. cerena indica* were selected. The spore suspension of *N. rileyi* was prepared in water and Tween-80 (0.02%) to obtain $2x10^8$ conidia/ litre. 6.5cm square area was selected on honeycomb A with 11 replications. The cells in the area were open. The spore suspension was taken in a disposable BD syringe and applied on the grubs of honeybees. The comb B was maintained as control. This comb was sprayed with water + Tween-80 (0.02%) and then the observations on fungus infectivity to grub's was recorded after 5th, 10th and 15th days after treatment. These two treatments were compared by student 't' test.

No deleterious effect of *N. rileyi* to these two beneficial insects was observed. The study pertaining to *M. maculipennis* revealed that there was no adverse effect of *N. rileyi* as indicated by normal adult emergence from the treated larvae. The adult emergence was 94.56 per cent in treated larvae and 96.32 per cent in control. There was no significant difference between these two treatments. This indicated the safety of *N. rileyi* to *M. maculipennis*. The results are in conformity with Phadke and Rao (1978) and Kamata *et al.* (1978) who reported non-infectivity of *N. rileyi* to *Telenomus proditor*. Hegde (2001) reported non-pathogenity of *N. rileyi* to predators, *Chrysoperla carnea* (Stephens), *Cheilomenes sexmaculatus* (Fabr.) and *Coccinella septempunctata* Linn.

Nomuraea rileyi was found safe to *A. cerena indica*. The period of adult emergence occupied 24 days in the fungus treated comb and 26 days in the control comb, which is statistically on par with each other. There was no mortality of the larvae or adult. Present study indicated that *N. rileyi* is safe to honeybee. Alves *et al.* (1996) also reported non-infectivity of *N. rileyi* to *Aphis mellifera*.

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