

Survival and development of *Menochilus sexmaculatus* (Fabricius) (Coleoptera: Coccinellidae) larvae on natural and formulated diets: an attempt for mass rearing

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Menochilus sexmaculatus (Fabricius) is an effective bio-control agent and requires mass rearing them to use in augmentative release. Rearing on natural prey demands the maintenance of host plants and aphid cultures. Therefore, it is necessary to examine the possibility of using artificial diets. The objective of this study was to examine the possible replacement of natural diet of aphids by alternative diet sources.

Larvae of *M. sexmaculatus* were provided with seven different diets: D1 egg yolk, D2 boiled chicken liver (10 g) in 60 °C, 100 ml hot water for 10 minutes and ground by using the motor and pestle, D3 boiled chicken liver (10 g) in 60 °C, 100 ml hot water for 10 minutes and ground by using the motor and pestle while adding 60 adult aphids, D4 boiled chicken liver (10 g) in 60 °C, 100 ml hot water for 10 minutes and grind by using the motor and pestle adding legume juice, D5 aphids, D6 ground house fly maggots and D7 fish meal powder. The survival rates and development durations of larvae were recorded. Each treatment was replicated 15 times. The data were analyzed using One way ANOVA followed by LSD mean separation using Minitab statistical software.

The survival percentage of the larvae varied significantly among the treatments ($P < 0.05$). The highest survival percentage (95 %) was recorded when the larvae were fed only on aphids while, the lowest was recorded when the larvae reared only on egg yolk and fish meal powder. The survival percentage of L3 and L4 stages was significantly varied, when they were fed on chicken liver. The total larval duration was also significantly varied with different diet regimes ($P < 0.05$). The fastest growth rate was recorded when all larval instars were fed exclusively on aphids. The longest duration was taken when L1 fed on aphids and other three instars fed on the chicken liver. This study revealed that the chicken liver can be used for mass rearing at the larval stages of L2, L3 and L4 with a compromise of survival rate.

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