OPTIMIZATION OF MASS REARING TECHNOLOGY OF THE ENTOMOPHAGOUS *BRACON HEBETOR* Say. UNDER CONTROLLED LABORATORY CONDITIONS

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Background: The entomophagous *Bracon hebetor* Say (Hymenoptera: Braconidae) is a larval ectoparasitoid used as a biological control agent against lepidopteran pests of the Pyralidae family. Due to its high reproductive capacity and short ontogenetic development cycle, *B. hebetor* can be successfully multiplied under controlled laboratory conditions. Its mass rearing requires a viable susceptible host, such as *Plodia interpunctella*, which supports completion of the parasitoid life cycle. The larvae of *P. interpunctella* also allow evaluation of the biological and reproductive parameters of the entomophagous species.

The aim of the present study was to optimize the multiplication technology of the entomophagous *Bracon hebetor* Say under controlled laboratory conditions, by estimating the influence of the host *Plodia interpunctella* on the biological and reproductive parameters of the parasitoid.

Materials and methods: Larvae of the species *Plodia interpunctella* were reared on a nutrient medium of cornmeal, dried apple, glycerin and yeast. Controlled laboratory conditions of 27 ± 1°C and 65 ± 5% humidity ensured uniform development and reduced physiological variability. 24-hour-old adults of the entomophagous insect *Bracon hebetor* were used for infestation. 25 pairs were introduced into 1 L boxes with 25 host larvae, respecting the optimal parasitism density. The containers were covered with gauze and maintained in a 12:12 photoperiod environment. Monitoring was performed daily for parasitism. The experiment included three independent replicates, each with 10 experimental units. After 10–12 days, emerging imagoes were evaluated, determining the parasitism rate, development duration, and sex ratio (♀: ♂).

Results: It was demonstrated that *Plodia interpunctella* larvae of III–V instars are optimal for the complete development of the entomophagous *Bracon hebetor*. The high parasitism rate indicates strong acceptability and trophic compatibility between parasitoid and host. Females of *B. hebetor* showed high reproductive potential, achieving on average up to 7 successive infestations during their life cycle. Total fecundity reached about 128 eggs per female, of which 122 larvae hatched (≈95.3%) and 115 reached the pupal stage (≈89.8%), reflecting high biological efficiency and offspring viability. Sex ratio analysis showed a predominance of males, with approximately 60.7% males and 39.3% females. The development cycle from egg to adult remained within species-specific limits and was strongly influenced by temperature (27 ± 1°C) and humidity (65 ± 5%). Maintaining these conditions ensured synchronized development and reduced mortality in immature stages, favoring the production of viable new generations.

Conclusion: The species *Plodia interpunctella* represents a suitable and efficient host for the multiplication of the entomophagous *Bracon hebetor* under controlled laboratory conditions, ensuring complete development and major viability of the offspring.

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