The Influence of Storage Temperature and Duration on the Fertility and Host-Killing Capability of *Closterocerus okazakii* (Hymenoptera: Eulophidae)[1]

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Abstract

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Closterocerus okazakii (Kamijo) is one of the dominant species in the parasitoids of *Liriomyza sativae* Blanchard in Taiwan. In an attempt to increase the availability of the biological control agent of *C. okazakii*, the influence of storage temperature and duration on this wasp was investigated. The results of the investigation showed that there was a significant difference in the percent emergence between 0-day-old pupae stored at 7℃ for 1–2 weeks (% emergences of 83.1–90.4%) and the control (% emergence of 97.8%). However, the percent emergence did not decrease if the 0-day-old pupae were stored at 10℃ for 1–2 weeks. When the pupae were stored at 7℃ for 1–2 weeks and the emergent wasps were reared at 25℃ with honey and host (*L. sativae*), the longevity and female proportion were not significantly different from the control; but the offspring production, host-killing capability and proportion host parasitized per fed were significantly decreased by 39.0–50.6、26.5–37.5 and 35.0%. When the pupae were stored at 7℃ for 3 weeks or 10℃ for 1–4 weeks, the female longevity, offspring production, and host-killing capability were significantly decreased by 29.4–42.2、65.8–72.7 and 42.1–60.6%, respectively, compared to those of the control. Adults (0-day-old) were fed only with honey at 15 and 25℃ for various periods for the study of storage conditions. After the end of the storage periods, wasps were kept at 25℃ with both honey and hosts to evaluate their offspring production and host-killing capability. The results revealed that offspring production and host-killing capability of the wasps significantly decreased by 60.6–68.0 and 26.0–36.2% compared to those of the controls after the adults had been stored at 15℃ for 10-20 days and 25℃ for 10 days, respectively. Daily oviposition and host-feeding patterns of females after strage were different from the control. Long-tern storage of pupae and adults of *C. okazakii* is not recommended. But if long-term storage is required, the best storage condition is maintaining the 0-day-old pupae at 7℃ for 1–2 weeks, followed by female wasps fed with pure honey at 15 and 25℃ for 10–20 and 10 days, respectively. The best storage conditions for wasp release as biopesticide are maintaining 0-day-old pupae at 7℃ for 1–2 weeks or 10℃ for 1–4 weeks; and female wasps fed with honey at 15℃ for 10–30 days or 25℃ for 10 days.

Key words: *Closterocerus okazakii*, *Liriomyza sativae*, Storage, Fertility, Host-killing capability.

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