The first attempt of biological control of a forest lepidopterous pests: Efficient rearing techniques of *Ooencyrtus pityocampae* and *Ooencytus kuvanae* (Hymenoptera: Encyrtidae)

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Abstract

Biological control is one of the main control methods that should be applied in forest. In France, there are three major lepidopterous pests in the forest area: *Thaumetopoea pityocampa*, *T. processionea* (Thaumetopoeidae) and *Lymantria dispar* (Lymantriidae). Two egg parasitoids, *Ooencyrtus pityocampae* and *O. kuvanae* (Hymenoptera: Encyrtidae), can be used against these insect pests in biological control. However, it is difficult to rear these parasitoids on their natural hosts in laboratory conditions. These natural hosts, *T. pityocampa*, *T. processionea* and *L. dispar*, are univoltine and can cause allergic reactions on human. Therefore, alternative hosts are needed to rear these parasitoids. Several potential hosts were tested in our laboratory. *Philosamia ricini* (Lepidoptera: Saturniidae) is selected for rearing these beneficial insects. This alternative host has several advantages such as it’s easy to rear on widespread host plants (*Ligustrum vulgare* or *Ailanthus* spp.), it isn’t subject to diapause, it has big eggs and is a multivoltine species. In this research, biological characteristics (emergence rate, development time, longevity and fecundity) of *O. pityocampae* and *O. kuvanae* were investigated on this new alternative host, *P. ricini*, under laboratory conditions (25±1°C, 65±5% R.H and 16:8 h (L: D)). Thus, we conclude that *P. ricini* has great potential for rearing *O. pityocampae* and *O. kuvanae* in biological control programs of these three lepidopterous pests.