

Optimization of Culture Conditions of *Paecilomyces Tenuipes*, Entomopathogenic Fungi Inoculated into the Silkworm Larva, *Bombyx Mori*

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Abstract : Entomopathogenic fungi is a *Cordyceps* species that is isolated from dead silkworm and cicada. Fungi on cicadas were described in old Chinese medicinal books and From ancient times, vegetable wasps and plant worms were widely known to have active substance and have been studied for pharmacological use. Among many fungi belonging to the genus *Cordyceps*, *Cordyceps sinensis* have been demonstrated to yield natural products possessing various biological activities and many bioactive components. Generally, It is commonly used to replenish the kidney and soothe the lung, and for the treatment of fatigue. Due to their commercial and economic importance, the demand for *Cordyceps* has been rapidly increased. However, a supply of *Cordyceps* specimen could not meet the increasing demand because of their sole dependence on field collection and habitat destruction. Because it is difficult to obtain many insect hosts in nature and the edibility of host insect needs to be verified in a pharmacological aspect. Recently, this setback was overcome that *P. tenuipes* was able to be cultivated in a large scale using silkworm as host. Pharmacological effects of *P. tenuipes* cultured on silkworm such as strengthening immune function, anti-fatigue, anti-tumor activity and controlling liver etc have been proved. They are widely commercialized. In this study, we attempted to establish a method for stable growth inhibition of *P. tenuipes* on silkworm hosts and an optimal condition for synnemata formation. To determine optimum culturing conditions, temperature and light conditions were varied. The length and number of synnemata was highest at 25°C temperature and 100~300 lux illumination. On an average, the synnemata of wild *P. tenuipes* measures 70 μ in length and 20 in number; those of the cultured strain were relatively shorter and more in number. The number of synnemata may have increased as a result of inoculating the host with highly concentrated conidia, while the length may have decreased due to limited nutrition per individual. It is not able that changes in light illumination cause morphological variations in the synnemata. However, regulation of only light and temperature could not produce stromata like perithecia, asci, and ascospores. Yamanaka reported that although a complete fruiting body can be produced under optimal culture conditions, it should be regarded as synnemata because it does not develop into an ascoma bearing ascospores.

Keywords : *paecilomyces tenuipes*, entomopathogenic fungi, silkworm larva, *bombyx mori*

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