

**EFFECT OF MODIFIED ATMOSPHERES ON MORTALITY OF  
*Platydema waterhousei* GELBIEN (COLEOPTERA:  
TENEBRIONIDAE) REARED ON DRIED LING-ZHI  
MUSHROOM *Ganoderma lucidum* (FR.) KARSTEN**

**INTRODUCTION**

*Ganoderma lucidum* (Fr.) Karsten, Ling-Zhi mushroom possesses medical properties and has been used in traditional Chinese medicine for more than 2000 years. This mushroom has been regarded as a panacea for all types of diseases. Scientists from many academies reported over 150 chemical types with pharmacological properties (Mau *et al.* 2001; Gao *et al.* 2004a). The mushroom is expensive because of its scarcity and universal remedy. Therefore farmers were incentive to cultivate this mushroom because of its commercially high price. During a long period of storing, packages of commercially dried Ling-Zhi mushroom is subjected to infestation with several mycetophagous beetles e.g. *Platydema waterhousei* Gelbien, *Cis chinensis* Lawrence, *Cis* sp., *Xylographus* sp., *Lasioderma serricornis* Fabricius, *Liposcelis* sp. (Visarathanonth *et al.*, 2000). Damages caused by *P. waterhousei* include both quantitative loss due to feeding and qualitative loss due to contaminations with its body parts, feces and fiber. The infestation during storage may make the mushroom totally inedible. Thus the loss is directly summable in financial terms.

In the past, the protection of agricultural products in storage relied on pesticides to control storage pests. However, the present direction is towards alternative non-toxic control methods that assume no harm to the health of operator or consumer, and are environmentally safe. The use of modified atmospheres is one of the most promising alternatives (Donahaye *et al.*, 1996). The modified atmospheres, lethal to insects, can be obtained by flushing CO<sub>2</sub> and N<sub>2</sub> or a combination of both into an exposure chamber contributing to removal of O<sub>2</sub>. The insects were then placed under the stress of both hypercarbic (high CO<sub>2</sub>) and hypoxic (low O<sub>2</sub>)

conditions (Danahaye, 2000). Information resulting from this study could be applicable for the effective control of *P. waterhousei* in the field.

### **Objective**

This experiment was conducted to study the effect of modified atmospheres on mortality of *P. waterhousei* Gelbien.