INTRODUCTION

The common house fly, *Musca domestica* Linnaeus, and blow fly, *Chrysomya megacephala*, are insects of considerable medical importance worldwide including Thailand. Since adults of both species adapt their lives to domestic living, feeding and breeding on human food, organic waste or feces. Their alternate movement between filth and human food makes them ideally mechanical transmitters of several pathogens (e.g., virus, bacteria, protozoa, helminth eggs) that can cause illness and disease in humans (Greenberg, 1973). Additionally, flies can cause annoyance in humans and agronomic livestocks. The economic loss in livestocks business resulting from flies annoyance and/or myiasis has been recorded (Zumpt, 1965). In the appropriate temperature condition, particularly in summer, can accelerate the fly population and their medical and agronomic importance are also simultaneously. The alleviation of these problems by urgent fly control is necessary.

The conventional method for fly control in the short-term period is the use of insecticides. Nevertheless, the widespread and massive applications of these hazardous chemical insecticides frequently produce the risk of developing insect resistance and dangerous insecticidal residual for humans and environment. The long persistence of such chemicals in environment can also accumulate in animal tissues which involving the food chains or food webs and eventually humans. These impacts of synthetic insecticides on humans and environment are attentive.

Bio-insecticides, the botanical insecticides base on natural compounds from plants, are expected to be the possible application as selective, efficacious and toxicologically safe insecticides. Several reports have been shown the efficacy of natural compounds on insects (Faouzia *et al.*, 1993; Inder Pal and Hideo, 1997; Lamiri *et al.*, 2001). As for flies, the majority has been found as the assessment of crude extracts from many botanical sources. These results were quite unsatisfied since there is only small amount of the active compounds that are toxic to insects. In this regard, assessment of the pure active compound extracted from

plants against flies is of interest. The effective substance can be further synthesized or modified.

Eucalyptol or 1,8-cineole, the major component of eucalyptol oil and other plants, is one of the monoterpenes substances. Eucalyptol is safe for humans. It has been used as medicine and aromatherapy for very long time (Tripathi *et al.*, 2001). According to the primarily lipophilic property, several monoterpenoids have been reported as having toxic capability to herbivore insects, thus was considered as a potential, alternative biopesticides. Toxicity of eucalyptol on several species of medical or economical insects (e.g., triatomine bug, red flour beetle, lessor grain borer, rice weevil, sawtoothed grain beetle, house fly, Hessian fly, German cockroach, stored food mite) have been recorded (Laurent *et al.*, 1997; Prates *et al.*, 1998; Lamiri *et al.*, 2001; Tripathi *et al.*, 2001; Lee *et al.*, 2003). Thus, it may have some effects against insects in the family Diptera, *M. domestica* and *C. megacephala*. However, the toxicity of eucalyptol on these two fly species has not been found in the literatures. Therefore, the objective of this study was to assess the toxicity of eucalyptol against adults and larvae of both fly species, thus providing the baseline knowledge for natural products in fly control management.