

Abstract

The study on the efficacy of crude solvent extracts of 10 local medicinal plants grown in the upper south of Thailand and their application methods to control the third instar larvae of common cutworm (*Spodoptera litura* F.) was carried out in the laboratory of Chumphon College of Agriculture and Technology from June 2005 – April 2007. The plant parts used in the study consisted of stems and leaves of *Pouzolzia pentandra* Benn., old leaves of *Piper sarmentosum* Roxb., old leaves of *Acacia insuavis* Lace., rhizomes of *Gloriosa superba* Linn., rhizomes of *Homalomena aromatica* Schott, stolons and roots of *Derris trifoliata* Lour., stolons and roots of *Derris scandens* Benth, tuberous rhizomes of *Tacca leontopetaloides* Ktze, roots of *Stemona tuberosa* Lour. and old leaves of *Gnetum gnemon* var.tenerum. Three different experiments were each conducted by using the Factorial in CRD. Each experiment was replicated five times. The first one was aimed to find out the most effective solvent extracts of the 10 herbs to cause mortality of larvae, inhibit larval development to pupae and reduce adult emergence activity, by using the solvent extracts from water, ethanol and hexane at 10% concentration. The second was intended to explore the most suitable solvent herbal extracts and their concentrations of the selected treatments in the first experiment and four levels of concentrations, 1%, 3%, 5% and 10% were tested for this trial. The third was determined to seek the most effective application method among leaf dipping, body dipping and combination of leaf dipping and body dipping in the most effective solvent extract found in the second trial.

The result of the first experiment revealed that the ethanol and water extracts of *G. superba* caused 100% larval mortality within 3 and 5 days of the experiment and showed LT_{50} at 1.26 days and 1.55 days respectively. As for hexane and ethanol extracts of *T. leontopetaloides*, the result showed a low larval death rate during the first 4 days of the trial, but they caused high larval mortality (85 and 100%). on the fifth day, inhibited 100% larval development to pupa stage, with LT_{50} of 2.18 days and 2.88 days respectively. The ethanol extract of *S. tuberosa* also resulted in low larval mortality during the first 3 days of the experiment (32.5-75.0%), but on the fourth day it caused

80% larval mortality with the LT_{50} of 2.14 days. However, It could inhibit 85% larval development.

The result of the second experiment indicated that the interaction between the herbal extracts and their concentrations affected the mortality of larvae as well as larval and pupal development. On the third day of the experiment, 3% ethanol extract of *G. superba* Linn. caused 100% larval mortality while 5% *T. leontopetaloides* Ktze ethanol and hexane extracts triggered high mortality rates of 98% and 96% respectively.

In the third experiment, however, it clarified that after three days of the trial, the applications of the three solvent extracts found in the second experiment by the leaf dipping and combination of leaf dipping and body dipping resulted in 92-100% of larval mortality which were significantly different from those of the body dipping method (16-26%).