

Plodia interpunctella Hübner

LC$_{50}$ of 18 plant essential oils on first instar larvae of Indian meal moth, *Plodia interpunctella* Hübner

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Indian meal moth, *Plodia interpunctella* Hubner is one of the most important stored-product insects that are controlled by fumigants. However, the use of plant essential oils and their constituents may have the advantage over conventional fumigants in terms of low mammalian toxicity and can be used as alternatives to conventional fumigants. Therefore, in this research, fumigant toxicity of 18 plant essential oils was investigated on first instar larvae of Indian meal moth. Experiment has been done in 6 concentrations and 4 replications and each replicate including 10 first instar larvae. LC$_{50}$ of essential oils has determined by SAS 6.12 software. Results of fumigant toxicity of the oils showed that all plants had LC$_{50}$ values less than 26 µl/l air. Indicating the strong fumigant toxicity caused on first instar larvae. *A. graveolens* was less toxic (LC$_{50} = 25.48$ µl/l air); while *Cinnamomum zeylanicum*, *Carum carvi*, *Achillea millefolium* and *Melissa officinalis* were the most toxic with LC$_{50}$ values of 2.12, 5.06, 5.20 and 5.57 µl/l air, respectively. Consequently, most of these plant essential oils such as *C. zeylanicum*, *C. carvi*, *A. millefolium* and *M. officinalis*, may have high toxicity potential for using in control program of Indian meal moth in storage.