

## **Insecticidal properties of *Piper nigrum* fruits extracts and essential oils against *Spodoptera litura*.**

### **ABSTRACT**

Chemical analysis by GC and GC-MS revealed presence of 39 compounds in the essential oil fraction of *Piper nigrum* fresh fruits. Limonene was the major compound present with 35.06% of total oil followed by beta-pinene (12.95%) and linalool (9.55%). Insecticidal properties of *Piper nigrum* fruit extracts and essential oils were investigated against tobacco army worm, *Spodoptera litura* using topical application bioassay on uniform weighted second instar larvae in the laboratory. The hexane extract was most effective in killing the larvae and showed the highest toxicity at 48 h after treatment. Toxicity of extracts decreased in the order of hexane (LD50: 1.8 mg/g) > acetone (LD50: 18.8 mg/g) > chloroform (LD50: NA, the toxicity was very low) > essential oil (no mortality). Insect development and growth index observations showed that the hexane extract had antifeedant properties resulting in severe growth inhibition of *Spodoptera litura*.

**Keyword:** *Piper nigrum*; *Spodoptera litura*; Botanical insecticide; Topical bioassay.