Toxicity of the essential oils from *Piper hispidinervum* C. DC. and *Piper callosum* Ruiz Pav. to cupuassu fruit borer *Conotrachelus* sp. (Coleoptera: Curculionidae)

Flávia B. Gomes, Marcelo R. de Oliveira, Francisco Célio M. Chaves

Embrapa Amazônia Ocidental – Manaus, Brazil
marcelo.roseo@embrapa.br

Keywords: Piperaceae, insecticide activity, *Theobroma grandiflorum*.

The genus *Piper* has various plants species with insecticide potential, for example *Piper hispidinervum* C. DC. and *Piper callosum* Ruiz & Pav. One way for to comprove the insecticide activity of plants is to test the application of its essential oil and to verify the insect mortality. The target-insect used in experiments was the curculio *Conotrachelus* sp. This insect is considered a pest in the cupuassu (*Theobroma grandiflorum*) tillage. Therefore, the aim with this work was evaluated the toxicity of the essential oils from *P. hispidinervum* and *P. callosum* to the cupuassu fruit borer *Conotrachelus* sp. The essential oils were obtained by hydrodistillation. The experiments were performed in laboratory conditions and the acute toxicity tests (48h) were performed by contact in contaminated filter paper and contact/ingestion in sugarcane pieces (1,2). The essential oils were diluted in acetone and tested in these concentrations: 2, 4, 8 and 16 $mg.mL^{-1}$ (test by contact in filter paper) and 4, 8, 16 and 32 $mg.mL^{-1}$ (test by contact/ingestion in sugarcane pieces). Acetone was the control group. In the test by contact in filter paper 1 mL of solution was pipetted on the filter-paper and in the test by contact/ingestion, sugarcane pieces were immersed in the solution with essential oil and acetone for thirty seconds. After the solvent evaporation, four adults insects, non-sexed, were placed in the Petri dishes (90 mm) and kept in climatized chamber with 27±2ºC and 12h photophase. The experimental design used was completed randomized design (CRD) with four replicates. The mortality data were statistically analyzed by dose-response using logistic model and the LC_{50} were estimated using Delta method of the DRC package compiled by R® software (3). The two essential oils tested showed acute toxicity to the curculio, the test by contact in filter-paper showed that the higher toxicity occurs with essential oil of *P. hispidinervum* with LC_{50} of 3.36 $mg.mL^{-1}$, when compared to essential oil of *P. callosum* with LC_{50} of 4.60 $mg.mL^{-1}$. The test by contact/ingestion in sugarcane pieces showed that the higher toxicity also occurs with essential oil of *P. hispidinervum* with LC_{50} of 12.08 $mg.mL^{-1}$, when compared to essential oil of *P. callosum* with LC_{50} of 15.26 $mg.mL^{-1}$.

1. Lima, R. K. et al. Arq. Inst. Biol., 2014, **81**, 22-29.
1. Lima, R.K. et al. Acta Amaz., 2009, **39**, 377-382.
2. R Core Team, A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. 2014. URL http://www.R-project.org/.

Acknowledgements: Fapeam.

ISBN: 978-85-66836-11-0