



Bioactivity of Limonoids obtained from ethanolic extracts of residual biomass of “andiroba” (*Carapa guianensis*, Meliaceae) against *Bemisia* biotype B (Hemiptera: Aleyrodidae)

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The industrial extraction of vegetal oil from “andiroba” (*Carapa guianensis*) produces annually 250 tons of residues. For this reason a biotechnological aim is to find a correct destination for this residual biomass. “Andiroba” oil is known for its insect repellent activity due to the content in limonoids, a class of secondary metabolites belonging to terpenes [1]. “Andiroba” limonoids were already quantified in different extracts of the industrial residues, isolating the compound corresponding to *limonoid 7- deacetyl 7-oxogedunin* [2]. Whitefly (*Bemisia* biotype B) is a plague of agronomical interest because it affects several cultivars. Industrial residue of “andiroba” was extracted with ethanol by Soxhlet apparatus. Limonoids were obtained from ethanolic extracts and purified by recrystallization using *n*-hexane as solvent; non-polar compounds were dissolved in *n*-hexane while limonoids precipitated, recovered through vacuum filtration. For the insecticide activity, cabbage sprouts were infested inside greenhouse during 48 h with natural photoperiod at 25.5 ± 4.6 °C and $65.3 \pm 13.7\%$ relative humidity. Leaflets containing 50 eggs were selected for the treatment with limonoids and put in *voil* cages. The tested concentrations of limonoids were 200 mg/ml and 100 mg/ml; H₂O and methanol were used as controls. The assay was carried out with five repetitions and experimental design was entirely casual (3x5). After seven days, the infestation same parameters in the greenhouse, flyers were analyzed under the magnifying glass to check the development of insects. It was observed that the insects developed normally in the control samples. However, treatments of 200 mg/ml and 100 mg/ml of limonoids there was 100% mortality of the insects in five repetitions. The concentrate caused the stagnation of whitefly eggs and no damage to the development of cabbage leaflets. These results show the efficacy of limonoids as potential insecticide agents. This property represents the use of an alternative industrial discard as source of substances that could substitute toxic pesticides.

Keywords: limonoids, biomass, andiroba, whitefly, insecticide activity.

References:

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