Nematicidal activity of aqueous extracts of *Tephrosia toxicaria* Pers. against root-knot nematode (*Meloidogyne javanica* and *M. enterolobii*)

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ABSTRACT

Nematodes are listed among the major diseases harmful agricultural productivity, affecting the root system of plants, the absorption and translocation of nutrients, water and minerals and thus interfering with important physiological processes involved in the growth and productivity. The control with chemical nematicidal is too costly and the products are highly toxic to humans and the environment. Considering the demands sustainable alternatives in agriculture for pathogen control many studies have focused on the search for natural products with nematicidal action, however, it is essential to the verification and validation of this action to propose formulations with this activity. The objective of this study was to evaluate the effect of aqueous extracts of plant *Tephrosia toxicaria* in hatches eggs and mortality of juvenile J2 root knot nematode, *Meloidogyne javanica* and *M. enterolobii* incubated with extracts of different plant parts (leaves, stems and roots). For this purpose, three types of aqueous extracts were incubated at different doses (0, 50, 100, 200, 400, and 800 µL) with six replicates of 50 eggs/J2 in 96 well plates. The analysis of the outbreak of J2 was taken through the area under the hatching progress curve (AUHPC) calculated by the equation proposed by Campbell and Madden (1990), while the mortality rate of J2 was concomitantly evaluated for hatching observations starting to 48 hours after the test mounting and elapsed for 12 days. The assessments were counted all J2 properties in each 48 hours period. It was observed for stem extract 100% mortality from dose 400 µL, and mean hatching 35% to 200 µL with *M. javanica* and *M. enterolobii*. To extract the root, there was 100% mortality from 100 µl, and zero hatching from 50 µl with similar results for both nematodes. As for the extract of leaves, we observed 100% mortality at a dose of 50 µl and hatching zero. For the three evaluated plant materials, which resulted in higher mortality was the aqueous extract of the leaves. Generally with respect to the outbreak of J2 of *M. javanica* and *M. enterolobii*, it was found that from 200 µL, regardless of the extract gave complete absence of hatching, represented by the area under the hatching progress curve. With these results, it is suggested to the chemical characterization

of each extract to know the active ingredients present in them, and find what or which are responsible for nematicidal activity observed in this bioassay.

Keywords: Bioextracts; Sustainability; root-knot nematode; bioassay.