



Phytotoxic effects of essential oils of *Eugenia brejoensis* (Myrtaceae) leaves.

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Eugenia brejoensis Mazine is a shrub-tree of 1.6–11 m, endemic of hinterland highland forest enclaves, locally called “brejo”, in the Caatinga Domain, in coastal vegetation and on Quaternary or Tertiary plains called “restinga” and “floresta de Tabuleiro” (Sergipe and Espírito Santo states) (1). The aim of the present work was to determine a possible phytotoxicity of EOs of *E. brejoensis* on the seed germination and the shoot and root elongation of the sensitive indicator lettuce (*Lactuca sativa* L.). Leaves from three individuals of a population were harvested in May 2015, at the Catimbau National Park (Caatinga Domain), Pernambuco, Brazil. A voucher specimen was deposited in the herbarium of Agronomic Institute of Pernambuco State (registry: IPA84480). Leaves (300 g) were subjected to hydrodistillation in a Clevenger-type apparatus for 3 h. The EOs were analyzed by GC/FID and GC/MS. The percentage composition was obtained by normalization from FID. EOs components were identified by comparison of both mass spectra and linear retention indices with spectral library and literature. Lettuce seeds were purchased from a local seed shop, sterilized for 5 min with NaClO (2%), and then rinsed with distilled H₂O (2). Four replicates, each comprising 50 seeds, were prepared for the contact tests with EOs (dispersed as an emulsion in dist. H₂O using Tween 20 [0.1%]), using sterile Petri dishes (90 mm diameter) lined with double-sterile filter paper (Whatman No. 2). Four doses of the EOs (0.125, 0.25, 0.5 and 1 µL/mL) were obtained by dilution of the emulsion in deionized H₂O. The dishes were then moistened with 5 mL of oils at different concentrations or controls (H₂O, used as a negative control and glyphosate water solution (100 µL/mL), positive control). Oil yields were 1.56 %. A total of 36 compounds were identified, accounting for 91.3 % of the total composition of the leaves of *E. brejoensis*. The major components belong to sesquiterpene hydrocarbons (61.4 %) and oxygenated sesquiterpenes (27.3 %). The major constituents were δ-cadinene (21.3 %), β-caryophyllene (15.7 %), α-muurolol (9.0 %), α-cadinol (8.2 %) and bicyclogermacrene (8.0 %). A number of three unidentified compounds were found, accounting 6.7 % of the total components. Seed germination and seedling early growth varied according to the concentration of the oil. Germination of lettuce seeds was totally inhibited by the highest dose of 0.5 and 1 µg/mL. The oil was not effective when tested at the lowest concentration of 0.125 µg/mL. The oil inhibited the early growth of lettuce. The dose-dependent inhibitory effect was observed on the elongation of the lettuce roots and shoots. Hence, the root and shoot elongation seemed to be more affected by the oils than the seed germination. It was demonstrated that the *E. brejoensis* EOs inhibited or reduced the germination and/or growth of lettuce. To the best of our knowledge, this is the first study reporting the phytotoxic activity of the EOs obtained of *E. brejoensis*. This species might be a good raw source of phytotoxic compounds that could be developed as herbicides.

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