

Differences in the essential oil composition of *Baccharis dracunculifolia* DC. (Asteraceae) from different regions of Uruguay: in the search for chemotypes

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Uruguay is a country immersed in the Pampean-Uruguayense phytogeographical district, which also includes parts of the Eastern Argentina and Southern Brazil [1]. This country accounts for more than 2500 Angiosperm native species, 254 of them (54 families) having woody character [1]. These species occurred in vegetal communities and can be roughly divided into those coming from the forests or shrublands [1]. One of the most representative species of the last group is *Baccharis dracunculifolia* DC. (Asteraceae), a shrub/little tree that can reach until 5 m high, profusely aromatic, resinous, and rich in essential oils (EOs) of economic interest in perfumery [2]. Previously, we have studied the volatile composition of this species growing wild in Uruguay, extracted by SDE and analyzed by GC/MS, considering the variation according to the dioecism and seasonality [3,4]. In this contribution, we present advances in the study of *B. dracunculifolia* EO composition with relation to the geographical variation in different regions of Uruguay, in the search for possible chemotypes of this species.

Aerial parts of *B. dracunculifolia* at flowering and vegetative stages were collected during 2021 in different seasons and places of Uruguay (in brackets the corresponding administrative divisions/Departments): “Parque Gran Bretaña” (Rivera), “Iporá” (Tacuarembó), “Las Flores” (Maldonado), “Sauce” (Canelones) and “La Colorada” (Montevideo). The branches were carefully separated, processed, and extracted in male and female ones (when at flowering). The extraction of the EOs was performed at laboratory scale by steam distillation with the aid of a Clevenger apparatus. The chemical analyses of their composition were performed by GC/MS (Shimadzu QP2020) employing a capillary column Rxi-1MS (30 m x 0.25 mm x 0.25 µm; composition of the stationary phase: 100%-dimethylpolysiloxane). The oven program was set as follows: 50°C (5 min), 50-235°C at 5°C/min, 235°C (2 min). Injector and interface temperatures: 280°C. Ionization energy: 70 eV; scan range: 50-350 amu. Software match comparisons with commercial or in-house made libraries [3,4], and linear retention index (LRI) calculations allowed for the identification of the EO components.

The results indicated that the chemomarker and distinctive component of *B. dracunculifolia* EO, (*trans*)-nerolidol [2], was present as a main compound (14.2-20.7%) only in the specimens from the Northern regions of Uruguay (Rivera and Tacuarembó), while at the Southern (Canelones, Maldonado, Montevideo) it was absent or at trace levels. These results are in line with our previous data [3,4], suggesting the presence in Uruguay of two well-differentiated chemotypes. Other major compounds of interest also presented variations according to the seasonality or geographical location of the populations, among them α- and β-pinene, limonene, spathulenol and viridiflorol. This suggests a high influence of environmental factors on the chemical composition of this EO, which is relevant when considering that *B. dracunculifolia* is an exploitable aromatic species. More studies are needed to understand the actual reasons of such a variation.

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