

Essential oils of different populations of *Baccharis halimifolia* L. from USA

Abad-Calderón, Rubén¹; Belichenko, Mikhail²; Lázaro-Lobo, Adrián³ and Palá-Paúl, Jesús^{2,*}

¹ Dpto. de Química en Ciencias Farmacéuticas. Unidad Docente de Edafología., Facultad de Farmacia, Universidad Complutense de Madrid, 28040-Madrid, Spain.

² Dpto. Biodiversidad Ecología y Evolución, Facultad de Ciencias Biológicas, Universidad Complutense de Madrid, 28040-Madrid, Spain.

³ Biodiversity Research Institute (IMIB), CSIC-University of Oviedo-Principality of Asturias, Mieres, Spain

* Correspondence: Quibey@bio.ucm.es

Baccharis halimifolia L. is a bush species belonging to the *Asteraceae* family. It is native to the Southeastern region of North America. It is a heliophilic, dioecious plant with inflorescences in capitula containing numerous whitish flowers. Blooms from August to November. It has a high seed production rate, with a single adult plant capable of reaching 1.5 million seeds per year. It also draws attention to its great capacity for regrowth, through root shoots, which allows it quickly reestablish itself after a fire. The essential oils from three populations along a latitudinal gradient from Louisiana and Mississippi states were extracted by hydrodistillation in a steam current with cohobation and analyzed using Gas Chromatography (GC) and Gas Chromatography-Mass Spectrometry (GC/MS). Five individuals were sampled in each population. The yield of the analyzed samples, based on dry weight, ranged from 0.4% to 1.1%. The observed differences among the three populations appear to show a positive correlation with soil pH. Regarding the chemical composition, a total of 60 compounds have been identified, representing between 74.8% and 89.4% of the total analyzed oils. The major compounds were β -pinene (5.5-21.9%), caryophyllene oxide (5-11.2%), and δ -cadinene (5.5-10.2%). Variations in sesquiterpenes were evident, displaying an apparent correlation with the geographic location of the studied populations.

Keywords: *Baccharis halimifolia*; Essential oil; Chemical composition; Climate change; β -pinene.