Chemical composition of the essential oil of *Pimenta dioica* (L.) Merrill from Guatemala

Francisco Pérez Sabino[1], Max Mérida Reyes[1], Edwin Taracena[1], Bessie Oliva[1], Manuel Muñoz Wug[1], José V. Martínez[2], Daniel L. R. Simas[3], Antonio Jorge R. da Silva[3]

[1] Escuela de Química, Facultad de Ciencias Químicas y Farmacia, Edificio T-12, USAC, zona 12, Guatemala City, Guatemala.
[2] Facultad de Agronomía, Edificio T-9, USAC, zona 12, Guatemala City, Guatemala.
[3] Instituto de Pesquisas de Produtos Naturais, UFRJ. Bloco H, Centro de Ciências da Saúde, UFRJ, CEP: 21941-902, Rio de Janeiro, Brazil.
fpsabino@usac.edu.gt

Keywords: *Pimienta dioica*, essential oil, Guatemala.

Pimenta dioica (L.) Merrill, a tree to 20 m high, grows and is cultivated in wet forest, usually on limestone at 350 m or less in the Northern provinces of Petén, Izabal and Alta Verapaz, Guatemala. The plant is native of Central America, Southern Mexico and the Caribbean islands. In Guatemala, the fruit is used as a condiment for flavoring food and is usually sold in the markets (1). It is also employed in domestic medicine. In an ancient practice, some Maya people often apply the powdered seeds to the corpses of children, believing that thus they are preserved indefinitely. In Jamaica, the production of allspice from its fruits is an important industry (1,2). As part of a project on screening the economic potential of the Guatemalan aromatic resources, the composition of the essential oil of leaves and fruits of *P. dioica* was determined as a first stage to evaluate its biological and anti-inflammatory activities. Leaves and flowers were collected in August 2014, at a population located at the Northern Province of Izabal. The fruits and leaves were separately air dried, milled and extracted by 2 h in a Clevenger-type apparatus. Average yields of 1.4 % and 0.6 % (w/w) were obtained for fruits and leaves, respectively. The GC/MS analyses were performed using a Shimadzu 2010 Plus system coupled with a Shimadzu QP-2010 Plus selective detector (MSD), equipped with a DB5-MS capillary fused silica column (60 m X 0.25 mm I.D. X 0.25 µm film thickness). The oven temperature program initiated at 60ºC, then rose at 3ºC/min to 246ºC, held for 20 min. He (99.999%) was used as carrier gas with a flow rate of 1.03 mL min^{-1}; split ratio of 1:50. Mass spectra were taken at 70 eV, and ions (*m/z*) recorded in the range of 40–700 Da. GC/FID analyses were carried out using a Shimadzu 2010 GC apparatus with DB5 fused-silica capillary column (60 m X 0.22 mm i.d. X film thickness 0.25 µm, Restek, France). The oven temperature was programmed from 60 to 246 ºC at 3 ºC min^{-1} and then held isothermally at 246 ºC for 20 min. Nitrogen was used as carrier gas (1.44 mL min^{-1}). The oil components were identified by their mass spectra and retention indices. Relative amounts of components were calculated based on GC peak areas without using correction factors. The major components of the fruit oil were eugenol (71.7 %), β-myrcene (11.2 %) and (*E*)-caryophyllene (7.7 %)and of the leaf oil were eugenol (76.2 %), β-myrcene (10.7 %) and (*E*)-caryophyllene (4.2 %). Due to the important presence of eugenol as major component and the reported antioxidant, anticancer and antifungal activities (2), the oil of both fruit and leaves will be tested for their activity.

1. McVaugh, R. Flora of Guatemala. Fieldiana: Botany, 1963, **24**, 382-385.
2. Rao, P.S.; Navinchandra, S.; Jayaveera, K.N., Int. Curr. Pharm. J. 2012, **1**, 221-225.

Acknowledgements: CAPES, CNPq, IPPN/UFRJ, CONCYT/Guatemala (Proyecto FODECYT 12-2013)

ISBN: 978-85-66836-11-0