

## Chemical composition of the essential oil of *Tagetes subulata* Cerv. from Guatemala

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Keywords: GC/MS, Guatemala, *trans*-piperitone oxide, terpinolene, *Tagetes*.

The genus *Tagetes* (Asteraceae) consists of at least 56 species native to America but some have been naturalized in countries of Europe, Africa and Asia (1). Plants of this genus are known for various medicinal uses and for their production of essential oils. *Tagetes subulata* Cerv. grows in moist fields or open banks, commonly in pine-oak forests or in brushy slopes in different regions of Guatemala, mainly at 800-1900 m. It is also found from Mexico to Colombia (2) and Venezuela (3). The objective of this study was to determine the composition of the essential oil of *T. subulata* and to compare it with the composition of the oils of other *Tagetes* species analyzed previously in Guatemala as part of the prospection of this genus. Thus, the flowering aerial parts of *T. subulata* were collected in November 2023 from a wild population found at an altitude of 1408 m above sea level, in La Brea, Quesada, in the province of Jutiapa, in eastern Guatemala. The essential oil was extracted by hydrodistillation using a Clevenger-type apparatus for 2 h yielding 0.3%. The composition of the oil was analyzed by GC/MS 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). The oven temperature program initiated at 60 °C, then rose at 3 °C min<sup>-1</sup> to 246 °C and then held isothermally at 246 °C for 5 min. He was used as carrier gas (1.03 mL min<sup>-1</sup>); split ratio of 1:50. Mass spectra were taken at 70 eV. The m/z values were recorded in the range of 40–700 Da. The oil components were identified by their mass spectra and retention indices. The relative amounts of the components were calculated based on the peak areas without using correction factors. The compounds found in higher concentration in the essential oil of *T. subulata* were *trans*-piperitone oxide (43.3%), terpinolene (15.5%), piperitone oxide (15.5) and D-limonene (6.4%). In a study carried out in Venezuela, the essential oil of *T. subulata* presented terpinolene (26.0%), piperitone (13.1%) and limonene (10.8%) as its main components (3). In other species of *Tagetes* collected in Guatemala, different major compounds have been found, such as 3-carene-2-one (44.5%) and (Z)-tagetone (11.5%) in *T. tenuifolia* and, (E)-anethole (73.4%) and methyl chavicol (7.2%) in *T. filifolia* (4), thus, the oil of *T. subulata* could have different biological properties that should be investigated. This is the first report on the composition of the essential oil of *T. subulata* collected in Guatemala.

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