



## METABOLOMIC ANALYSIS IN SEVEN POPULATIONS OF *Galphimia glauca* CULTIVATED IN GREENHOUSE AND UNDER *IN VITRO* CONDITIONS

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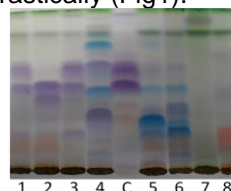
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**Introduction.** *Galphimia glauca* is a plant used in Mexican traditional medicine for the treatment of mental disorders. Scientific studies have shown anxiolytic and sedative effects of the plant extracts on both mice and humans. (Herrera *et al.*, 2006; Herrera *et al.*, 2007) The mayor compound causing these effects is a triterpene, denominated as galphimine B (GB). Galphimine B and eight other related triterpenes constitute a family of metabolites with neuropharmacological activities (Cardoso-Taketa, 2004). Metabolomic analysis conducted in seven populations of *G. glauca* collected in different locations of México have shown that two of them, growing in the Municipality of Dr. Mora, Guanajuato, and in Jalpan, Queretaro, differs from the rest of the populations, due to the presence of galphimines (Cardoso *et al.*, 2008). This situation could be attributed to changes in the general metabolism of the plant caused by ecological stress as well as to climate variations, and insect attacks among other factors. Cultivation on greenhouse constant conditions of individuals from the seven previously studied populations is undertaken, in which a metabolomic analysis will be conducted.

**Methods.** Collection of *G. glauca* individuals was performed in the following locations of Mexico: Guanajuato (Dr. Mora), Morelos (Miacatlán, Cuernavaca and Tepoztlán), Querétaro (Jalpan), Jalisco (Guadalajara) and Chiapas, (Tuxtla Gutierrez). Identification was performed at the HUMO Herbarium (Voucher number 15189, 15426, 15011, 15485, 15018, 15014, 15421 respectively) The living specimens were transplanted to a greenhouse under homogeneous constant conditions. Propagation of the plant was conducted according to reported protocols (Rojas *et al.*, 2005). The metabolomic analysis of the individuals is conducted according to a previous established methodology by Cardoso-Taketa *et al.*, 2008, to determine the presence of galphimines.

**Results.** Collection of 10 individuals from each one of the seven populations was performed and seeds were also collected. The viability of seeds was determined to be of 50 %. Morphological differences were observed among populations

collected, since the plant *G. glauca* collected in Guanajuato and Querétaro is characterized by the presence of inflorescences in a terminal raceme, while the rest show inflorescences grouped in several terminal racemes. Sowed of individuals (10 from each population) was carried out in the substrate (soil, peatmoss, vermiculite and perlite) yielding a survival rate of 50%. An analysis on thin layer chromatography of the individuals extracts was performed showing that each population has a different chemical profile in content of galphimines (Fig. 1), depending on the locality of compilation, the geographical, climatic conditions and on the soil composition. As a consequence the pharmacological activity can change drastically (Fig1).



**Fig.1.** Comparison of TLC profiles of methanolic extracts from *Galphimia glauca* populations studied: C- Control showing the presence of galphimines; 1,2-Jalpan Qro.; 3-Dr. Mora Gto.; 4-Guadalajara Jal.; 5,6,7- Tepoztlán, Miacatlán y Cuernavaca Mor.;8- Tuxtla Gtz Chiapas. The TLC mobile phase was prepared with  $\text{CHCl}_3:\text{CH}_3\text{COOCH}_2\text{CH}_3(1:2 \text{ v/v})$ .

**Conclusions.** The morphological characteristics of the populations collected in Dr. Mora Gto and Jalpan Qro. are different from the other five populations. The seven populations in the study present different chromatographic profiles in relation to the presence of the galphimines. The viability of the seeds of *G. glauca* is 50 %.

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