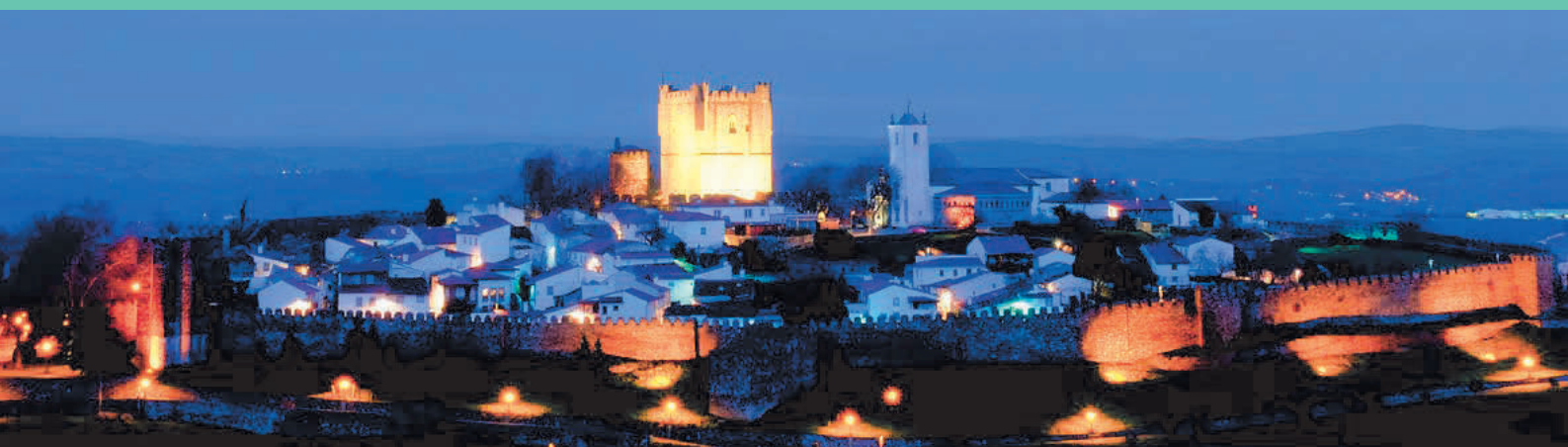


XXII Encontro Luso-Galego  
**Química**

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## GC-MS profile of *Calendula* L. species: a comparative analysis

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*Calendula* L. (Asteraceae) is an unexplored genus on a chemical level since studies concerning this subject were only carried out in *C. officinalis* and *C. arvensis* species [1-3]. The present study focus on 4 taxa of this genus growing in Portugal: *Calendula officinalis*, *C. arvensis*, *C. suffruticosa* subsp. *algarbiensis* and *C. suffruticosa* subsp. *lusitanica*. The hexane extracts were analysed by gas chromatography/mass spectrometry (GC-MS) leading to the identification of 63 compounds. Pyrrolizidine alkaloids (33.7%), terpenes (19.9%) and carboxylic acids derivatives (18.8%) were the most abundant families in *C. officinalis*. Regarding *C. arvensis* extract, carbohydrates (30.3%), terpenes (28.8%) and carboxylic acids derivatives (26.8%) supremacy was observed. In *C. suffruticosa* subsp. *lusitanica*, pyrrolizidine alkaloids (42.4%), terpenes (20.0%) and carboxylic acids (18.8%) were the principal chemical families whereas in the case of *C. suffruticosa* subsp. *algarbiensis*, terpenes (23.9%), pyrrolizidine alkaloids (22.4%) and carbohydrates (20.4%) dominated the extract. The lipophilic characterization of the two *C. suffruticosa* subspecies are been reported for the first time. Additionally, several carbohydrates, terpenes and fatty acids as well as the class of pyrrolizidine alkaloids are also being described for the first time in *Calendula* genus. Despite the similarity in the main components a differentiation among the taxa can be made which was verified through PCA analysis.

In conclusion, the compounds detected for the first time as well as the first description of the lipophilic composition of *C. suffruticosa* subspecies *lusitanica* and *algarbiensis* provides in-depth information about the chemical composition and variation of *Calendula* genus. Through the accomplished findings, including a PCA, a taxonomic differentiation among the taxa is suggested, although this requires the analysis of further samples. Additionally, some of the compounds found in significant quantities are known for their medicinal and nutritional properties which could prove the medicinal and nutritional applications of *C. officinalis* and *C. arvensis* and highlight the potential of the other species in this area.

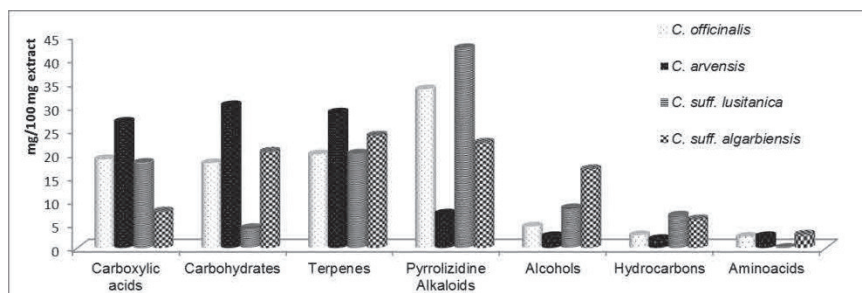


Fig. 3. Variation of the chemical composition among the four studied taxa

### Acknowledgements

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