medical sciences forum

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Abstract

Phytochemical and Bioactivity Studies from *Plectranthus ecklonii* †

Márcia Santos Filipe [1,2,‡], Eva María Domínguez-Martín [1,2,‡], Ana María Díaz-Lanza [2], Salvatore Princiotto [1] and Patricia Rijo [1,3,*]

1 CBIOS—Universidade Lusófona's Research Center for Biosciences and Health Technologies, Campo Grande 376, 1749-024 Lisbon, Portugal
2 Departamento de Ciencias Biomédicas (Área de Farmacología; Nuevos agentes antitumorales, Acción tóxica sobre células leucémicas), Facultad de Farmacia, Universidad de Alcalá de Henares, Ctra. Madrid-Barcelona km, 28805 Alcalá de Henares, Madrid, Spain
3 Instituto de Investigação do Medicamento (iMed.ULisboa), Faculdade de Farmácia, Universidade de Lisboa, 1649-003 Lisboa, Portugal
* Correspondence: patricia.rijo@ulusofona.pt or p1609@ulusofona.pt
† Presented at the 8th International Electronic Conference on Medicinal Chemistry, 1–30 November 2022; Available online: https://ecmc2022.sciforum.net/.
‡ Both authors share first authorship.

Abstract: *Plectranthus* is a well-known genus belonging to the Lamiaceae family and is mainly distributed in tropical areas of the globe. Furthermore, *Plectranthus* species are particularly rich in phenolic compounds and abietane-type diterpenes, such as royleanones, widely used in traditional medicine against a vast range of diseases, including skin disorders and cancer. In order to study the phytochemical composition and the biological activity of *P. ecklonii Benth.*, ultrasound-assisted extractions were carried out using methanol and acetone as solvents. It is known from the literature data that phenolic compounds are predominant in the methanol extracts, while the phytochemical analysis of the acetone extracts from our research group evidenced abietanes as the most frequently occurring secondary metabolites. Methanol extracts were screened to assay their potential bioactivity as antimicrobials, antioxidants, and on skin-related enzymes, as well as their general toxicity. The results showed only a moderate effect against bacteria, but a very promising antioxidant activity, and no relevant general toxicity. High tyrosinase inhibition was observed, together with an excellent inhibitory activity on collagenase, making the methanolic extract a promising raw material to be used for the development of dermo-cosmetic formulations, especially those with antiaging activity. Fractionation and further purification were carried out on the acetone extracts, highlighting a significant cytotoxic activity, mainly due to the presence of diterpenes, with an observed IC_{50} in the low-micromolar range. Considering the potential applications for internal and topical uses, further studies are currently ongoing on both the extracts to investigate other relevant biological activities and ascertain their safety.

Keywords: *Plectranthus*; Lamiaceae; cancer; dermatology; diterpenes; royleanones

Citation: Santos Filipe, M.; Domínguez-Martín, E.M.; Díaz-Lanza, A.M.; Princiotto, S.; Rijo, P. Phytochemical and Bioactivity Studies from *Plectranthus ecklonii*. *Med. Sci. Forum* **2022**, *14*, 71. https://doi.org/10.3390/ECMC2022-13431

Academic Editor: Alfredo Berzal-Herranz

Published: 1 November 2022

Supplementary Materials: The following are available online at https://www.mdpi.com/10.3390/ECMC2022-13431/s1.

Author Contributions: Conceptualization, P.R.; validation, P.R.; formal analysis, M.S.F. and E.M.D.-M.; investigation, M.S.F. and E.M.D.-M.; resources, P.R.; data curation, S.P. and P.R.; writing—original draft preparation, A.M.D.-L. and P.R.; writing—review and editing, S.P. and P.R.; supervision, S.P. and P.R.; funding acquisition, P.R. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Foundation for Science and Technology (FCT, Portugal) grant numbers UIDB/04539/2020 and UIDP/04539/2020. EMD-M is supported by a predoctoral FPU-UAH 2019 fellowship from university of Alcalá de Henares.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.