BOOK of ABSTRACTS

4th INTERNATIONAL CONFERENCE ON PLANT BIOLOGY

(23rd SPPS Meeting)

6-8 OCTOBER 2022
BELGRADE

Serbian Plant Physiology Society

Institute for Biological Research "Siniša Stanković"
National Institute of Republic of Serbia, University of Belgrade

Faculty of Biology, University of Belgrade

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CIP - Каталогизација у публикацији - Народна библиотека Србије, Београд

581(048)

INTERNATIONAL Conference on Plant Biology (4 ; 2022 ; Belgrade)

Book of Abstracts / 4th International Conference on Plant Biology [and] 23rd SPPS Meeting, 6-8 October 2022, Belgrade ; [organized by] Serbian Plant Physiology Society [and] Institute for Biological Research "Siniša Stanković", University of Belgrade [and] Faculty of Biology, University of Belgrade ; [editor Milica Milutinović]. - Belgrade : Serbian Plant Physiology Society : University, Institute for Biological Research "Siniša Stanković" : University, Faculty of Biology, 2022 (Zemun : Alta Nova). - 169 str. : ilustr. ; 24 cm

Tiraž 30. - Registar.

ISBN 978-86-912591-6-7 (SPPS)

1. Društvo za fiziologiju biljaka Srbije. Sastanak (23 ; 2022 ; Beograd)

a) Ботаника - Апстракти

COBISS.SR-ID 74996233

Multidrug-resistant cancer cells are sensitive to abietane diterpenoids from *Plectranthus* species

PP3-12

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Plants of the genus *Plectranthus* (Lamiaceae) are used in traditional medicine. Here, the anti-cancer effects of the three abietane diterpenoid derivatives from *Plectranthus* species are described. Compounds' effects (comp. 1 = VI31.1.1, comp. 2 = VI20.1.1, comp. 3 = RoyBz) were tested in human lung cancer cells, in sensitive NCI-H460 and chemoresistant NCI-H460/R, as well as in colon cancer cells, sensitive DLD1, and chemoresistant DLD1-TxR. The resistant cells were more sensitive than corresponding parental cells to 1 and 2 in MTT assay, with IC_{50} values ranging from 3 to 10 μM. For the most potent 3 (IC_{50} as low as 1 μM), resistant cells had up to 2 times higher IC50 values than sensitive cells. The growth inhibition effect by all three compounds was more pronounced in cancer cells, compared to normal human fibroblasts (MRC-5). Only 2 induced a significant cell death effect showing 70% non-viable cells in NCI-H460. The effect the compounds might have on the P-gp extrusion pump was also tested using doxorubicin and rhodamine 123 accumulation assays. Compounds 1 and 2 caused a significant increase in the accumulation of both P-gp substrates, doxorubicin, and rhodamine 123. The compounds isolated from *Plectranthus* showed anticancer potential in lung and colon cancer cells. Importantly, they displayed collateral sensitivity - a phenomenon when the chemoresistant cells are more sensitive to the compounds than corresponding sensitive cells. The compounds inhibited the P-gp activity implying MDR modulating potential.

Keywords: *Plectranthus*, abietane diterpenoid, anticancer effect

Acknowledgment: This research was funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia (ref. number 451-03-68/2022-14/ 200007) and by the STSM grant awarded by STRATAGEM COST Action CA17104 "New diagnostic and therapeutic tools against multidrug resistant tumours".