

CURRENT RESEARCH TOPICS IN PHARMACY: *Pharmacology Debates*

April 19th, 2023 10.00 AM ISTANBUL

FOR REGISTRATION:



First Session- Moderator: Esra TATAR 10.00-11.30 AM

Welcome- Prof. Hatice Kübra Elçioğlu
Marmara University, Istanbul, Türkiye

The roles of cheminformatics in natural product-based drug discovery-Prof.Long Chiau Ming
School of Medical and Life Sciences, Sunway University, Kuala Lumpur, Malaysia

Applications of machine learning to the lead discovery: Practical approaches – Dr.Said Moshawih
Universiti Brunei Darussalam, Gadong, Brunei Darussalam

Second Session – Moderator: Ayşe Nur HAZAR YAVUZ 12:00-13.30 PM

Can Vitamin C supplements prevent premature rupture of membranes and preterm birth- Assist. Prof. Ana V. Pejčić
University of Kragujevac, Kragujevac, Serbia

Drugs affecting newborn weight, length and head circumference at birth -Assist.Prof. Milos N. Milosavljevic
University of Kragujevac, Kragujevac, Serbia

From traditional medicine to brain tumor therapy using Plectranthus diterpenes- Assoc.Prof. Patricia Rijo
Lusofona University, Lisbon, Portugal

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Third Session- Moderator: Mehmet GÜMÜŞTAŞ 14.00-15.30 PM

Side effects of COVID 19 vaccines and the contribution of graphenes- Assoc.Prof.Beril Anılanmert
Institute of Forensic Sciences and Legal Medicine, Istanbul University-Cerrahpaşa, Istanbul, Türkiye

Knowledge and behaviour of medical university students about drug store and use-Assist.Prof.Klodiola Dhano
Aldent University, Tirana, Albania

The advancement of herbal-based treatments for hair loss- Dr.Oğuzhan Aydemir
Istinye University, Istanbul, Türkiye

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***PLECTRANTHUS*: FROM TRADITIONAL MEDICINE TO BRAIN TUMOR THERAPY WITH DITERPENES**

Patricia RIJO 

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Cancer remains one of the leading global causes of death, representing a worldwide concern due to its high incidence and mortality rates. The search for natural molecules with antitumor activity has been a significant area of interest in cancer research. Particularly, compounds derived from plants have demonstrated potential in inhibiting tumor growth and inducing programmed cell death, making them promising candidates for the development of new anticancer therapies. In this context, the botanical genus *Plectranthus* spp. has emerged as a crucial source of prototype natural molecules in cancer research.

Compounds with an abietane skeleton, such as 7 α -acetoxi-6 β -hidroxirooleanona (Roy), 6,7-desidrorooleanona (DeRoy), 6 β ,7 α -dihidroxyrooleanone (DiRoy), and Parvifloron D (ParvD), have shown antiproliferative activity in various cancer cell lines, including leukemia (CCRF-CEM), lung adenocarcinoma (A549), and glioblastoma (H7PX). These compounds exhibited cytotoxicity within the concentration range of 0-100 μ g/mL and induced apoptosis by regulating pro and antiapoptotic genes. Remarkably, Roy and ParvD were the most active in CCRF-CEM and A549 cell lines, impacting mitochondrial membrane potential and ROS levels. Roy caused increased nuclear DNA damage in A549 cells, while ParvD increased mtDNA damage in CCRF-CEM cells. The compound displayed cytotoxic activity against glioblastoma, inducing apoptosis through the intrinsic mitochondrial pathway and disrupting the G2/M cell cycle. Its antitumor efficacy surpassed that of the first-line treatment temozolomide in glioblastoma and showed potential against triple-negative breast cancer, reducing cell viability, inducing

apoptosis, and inhibiting cell migration and invasion, indicating potential anti-metastatic effects [1].

A recent study focused on compounds isolated from the acetonic extract of *P. hadiensis* stems, a plant used in the treatment of brain tumors. Different abietane-type diterpenes, such as Roy and DiRoy, were identified, and their antiproliferative activity was evaluated in glioma cell lines. Roy demonstrated strong antiproliferative and cytotoxic effects against tumor cells, with low IC50 values in various cell lines. Additionally, a new fluorescence derivative, BODIPY-Roy, confirmed the increased intracellular fluorescence associated with Roy's antiproliferative activity, suggesting its potential as a basis for the development of new therapeutic strategies against glioblastoma [1,2].

Keywords: Natural Products; *Plectranthus*; diterpenoids; glioblastoma

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- [2] Domínguez-Martín EM, Magalhães M, Díaz-Lanza AM, Marques MP, Princiotta S, Gómez AM, Efferth T, Cabral C, Rijo P. Phytochemical study and antiglioblastoma activity assessment of *Plectranthus hadiensis* (Forssk.) Schweinf. ex Sprenger var. *hadiensis* Stems. *Molecules*. 2022;27(12):3813. [\[CrossRef\]](#)