medical sciences forum

MDPI

Abstract

In Vitro Cytotoxicity of 7,3′,4′-Trihydroxyflavones in Lung Fibroblasts †

Isabela Santos [1,*], Hélio M. T. Albuquerque [2], Artur M. S. Silva [2], Eduarda Fernandes [1] and José Miguel P. Ferreira de Oliveira [1,*]

1 LAQV, REQUIMTE, Laboratory of Applied Chemistry, Department of Chemical Sciences, Faculty of Pharmacy, University of Porto, 4050-313 Porto, Portugal
2 LAQV, REQUIMTE, Department of Chemistry, Campus Universitario de Santiago, University of Aveiro, 3810-193 Aveiro, Portugal
* Correspondence: up202112015@edu.fc.up.pt (I.S.); jmoliveira@ff.up.pt (J.M.P.F.d.O.)
† Presented at the 8th International Electronic Conference on Medicinal Chemistry, 1–30 November 2022; Available online: https://ecmc2022.sciforum.net/.

Abstract: According to the World Health Organization (WHO), cancer is the second cause of death globally. Conventional cancer therapy includes surgery, chemotherapy, and radiotherapy. Nevertheless, therapy is often limited by low efficacy or significant adverse side effects. Therefore, safer and more efficient therapeutic agents are essential. Flavonoids, compounds largely found in the plant kingdom, have shown promising cancer-inhibiting properties. Although the cytotoxic effect of flavonoids in human cancer cell lines is widely reported, the corresponding effect in healthy human cells is underreported. The present study aims to evaluate the toxicity of a group of flavonoids hydroxylated at C-7, C-3′, and C-4′ in lung fibroblasts. To achieve this, the MRC-5 human lung fibroblast cell line was incubated with flavonoids, 0–160 μM, with additional hydroxy groups at C-3, C-6, or C-5′, or chlorine at C-3. After incubation for 48 h, the inhibition of cell viability and growth was measured using WST-8 and sulforhodamine B assays, respectively. The presence of the 3- or 5-hydroxy groups was associated with lower cytotoxicity at low concentrations (40 μM); meanwhile, at higher concentrations (>40 μM), only the presence of the 5-hydroxy group seemed to be related to low cytotoxicity. Although additional studies are required, these results reveal substituted flavonoids with lower in vitro toxicity in healthy human cells.

Keywords: cell viability; flavonols; pulmonary cells

Citation: Santos, I.; Albuquerque, H.M.T.; Silva, A.M.S.; Fernandes, E.; Ferreira de Oliveira, J.M.P. In Vitro Cytotoxicity of 7,3′,4′-Trihydroxyflavones in Lung Fibroblasts. *Med. Sci. Forum* **2022**, *14*, 59. https://doi.org/10.3390/ECMC2022-13254

Academic Editor: Alfredo Berzal-Herranz

Published: 1 November 2022

Supplementary Materials: The poster can be downloaded at: https://www.mdpi.com/article/10.3390/ECMC2022-13254/s1.

Author Contributions: Conceptualization, I.S., J.M.P.F.d.O., and E.F.; methodology, I.S.; formal analysis, I.S. and J.M.P.F.d.O.; investigation, I.S.; resources, A.M.S.S.; writing—original draft preparation, I.S.; writing—review and editing, J.M.P.F.d.O., E.F., H.M.T.A. and A.M.S.S.; visualization, I.S.; supervision, J.M.P.F.d.O. and H.M.T.A.; project administration, J.M.P.F.d.O. and E.F.; funding acquisition, J.M.P.F.d.O. and E.F. All authors have read and agreed to the published version of the manuscript.

Funding: This work received financial support from the European Union (FEDER funds through COMPETE POCI-01-0145-FEDER-029243) and National Funds (FCT, Fundação para a Ciência e Tecnologia) through project PTDC/MED-QUI/29243/2017 and from PT national funds (FCT/MCTES) through grant UIDB/50006/2020. J.M.P.F.O. thanks FCT for funding through program DL 57/2016—Norma transitória (ref. SFRH/BPD/74868/2010). I.S. thanks FCT for the financial support for the PhD grant (UI/BD/153618/2022), through the PhD Programme in Sustainable Chemistry.

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.