



University of Novi Sad
**INSTITUTE
OF FOOD
TECHNOLOGY
IN NOVI SAD**

feedH
congress

16-18 October, 2024
Novi Sad, Serbia

5th

INTERNATIONAL CONGRESS
**FOOD TECHNOLOGY,
QUALITY AND SAFETY**

e-ABSTRACT BOOK

ISBN 978-86-7994-063-6

V INTERNATIONAL CONGRESS “FOOD TECHNOLOGY, QUALITY AND SAFETY”, 16-18 OCTOBER 2024, NOVI SAD, REPUBLIC OF SERBIA

Publisher

University of Novi Sad
Institute of Food Technology in Novi Sad
Bulevar cara Lazara 1
21000 Novi Sad
Republic of Serbia

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- Food and Feed Research, Journal of the Institute of Food Technology in Novi Sad, University of Novi Sad, Republic of Serbia

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Food Technology, Processing and Engineering

BIOACTIVITY OF METHANOLIC PULP EXTRACT FROM PUMPKIN (*Cucurbita moschata*) IN HUMAN KERATINOCYTES

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The study investigated the potential of pumpkin pulp extracts from two *Cucurbita moschata* accessions grown in Serbia as skin-friendly agents with antioxidant and sun protecting properties. The research aimed to address the underrepresentation of pumpkin pulp in bioactivity studies despite its potential as a rich source of beneficial compounds for skin health. Methanolic pumpkin pulp extracts (MPE) were prepared from two accessions, MO 31 and MO 32, sourced from the breeding collection of the Institute of Field and Vegetable Crops in Novi Sad, Serbia. The MPE were characterized for their carotenoid content using HPLC-DAD, revealing different levels of carotenoids in each accession. Cumulative carotenoid content in MO 31 and MO 32 was 0.29 and 0.09 mg/g, respectively. The cytotoxicity of the extracts was assessed using viability assay MTT in human keratinocyte (HaCaT) cells, and showed no significant decrease in cell viability at concentrations of 10, 100, and 1000 µg/mL after 24 hours of exposure. The antioxidant potential of the extracts was evaluated by H2DCFDA assay, measuring their ability to reduce reactive oxygen species (ROS) levels in HaCaT cells co-incubated with 1mM hydrogen peroxide. Both MO 31 and MO 32 extracts significantly reduced oxidative stress at a concentration of 10 µg/mL, with similar effects observed at higher concentrations. Additionally, the in vitro sun protecting factor (SPF) of the extracts was determined using absorbance measurements and the Mansur equation, revealing notable SPF values of 4.15 and 5.16 for MO 31 and MO 32, respectively. Overall, the study demonstrates that the *Cucurbita moschata* pulp extracts possess potential as photoprotective and antioxidant properties, with no observed toxicity to skin cells. These findings suggest the extracts could be promising components in natural cosmetic formulations aimed at combating dermal photoaging and oxidative stress.

Keywords: pumpkin pulp, reactive oxygen species, cytotoxicity, photoprotective

Acknowledgements: This study was supported by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia (Agreement no. 451-03-66/2024-03/200019).

CIP - Каталогизација у публикацији
Библиотеке Матице српске, Нови Сад

663/664:658.562(048.3)
614.31(048.3)

INTERNATIONAL Congress "Food Technology, Quality and Safety" (5 ; 2024 ; Novi Sad)

e-Abstract book [Elektronski izvor] / 5th International Congress "Food Technology, Quality and Safety", 16-18 October 2024, Novi Sad ; [main editor Ljubiša Šarić]. - Novi Sad : Institute of Food Technology, 2024

Način pristupa (URL): https://fins.uns.ac.rs/publications/?_sft_publicationss=zbornik. - Opis zasnovan na stanju na dan 22.10.2024.

ISBN 978-86-7994-063-6

а) Животне намирнице -- Контрола квалитета -- Апстракти б) Животне намирнице -- Хигијена -- Апстракти

COBISS.SR-ID 155106313