

9th Conference of Young Chemists of Serbia

Book of Abstracts

4th November 2023

University of Novi Sad - Faculty of Sciences

CIP – Kategorizacija u publikaciji
Narodna biblioteka Srbije, Beograd

9th Conference of Young Chemists of Serbia

Novi Sad, 4th November 2023

Book of Abstracts

Published and organized by

Serbian Chemical Society and Serbian Young Chemists' Club

Karnegijeva 4/III, 11000 Belgrade, Serbia

Tel./fax: +381 11 3370 467; www.shd.org.rs; office@shd.org.rs

Publisher

Dušan **SLADIĆ**, president of Serbian Chemical Society

Editors

Jelena **MILOVANOVIĆ**

Vuk **FILIPOVIĆ**

Života **SELAKOVIĆ**

Snežana **PAPOVIĆ**

Branko **KORDIĆ**

Jelena **KESIĆ**

Mila **LAZOVIĆ**

Mihajlo **JAKANOVSKI**

Page Layout and Design

Jelena **KESIĆ**

Mila **LAZOVIĆ**

Mihajlo **JAKANOVSKI**

Circulation

20 copies

ISBN 978-86-7132-084-9

Printing

Development and Research Centre of Graphic Engineering

Faculty of Technology and Metallurgy, Karnegijeva 4, Belgrade, Serbia

Scientific Committee

Dr. Jelena Milovanović - University of Belgrade - Institute of Molecular Genetics and Genetic Engineering, Belgrade, Serbia

Dr. Vuk Filipović - University of Belgrade - Institute of Molecular Genetics and Genetic Engineering, Belgrade, Serbia

Dr. Života Selaković - University of Belgrade, Faculty of Chemistry

Dr. Snežana Papović - University of Novi Sad, Faculty of Sciences

Dr. Branko Kordić - University of Novi Sad, Faculty of Sciences

Organizing Committee

Jelena Kesić - University of Novi Sad, Faculty of Sciences

Mila Lazović - Innovation Centre of Faculty of Chemistry Ltd., Belgrade, Serbia

Mihajlo Jakanovski - Innovation Centre of Faculty of Chemistry Ltd., Belgrade, Serbia

European Young Chemists' Network

Gaia De Angelis, Global Connection Team Leader

Sponsorship

The organizing committee is grateful for the donations of the selected sponsor participants:

European Young Chemists' Network



Analysis doo



Ministry of Science, Technological Development and Innovation



Република Србија
МИНИСТАРСТВО НАУКЕ,
ТЕХНОЛОШКОГ РАЗВОЈА И
ИНОВАЦИЈА

Acknowledgement

Acknowledgement to the University of Novi Sad - Faculty of Sciences for the use of the space of the faculty during the 9th Conference of Young Chemists' of Serbia.

Thanks to the Board of the Serbian Chemical Society for the supporting during organization of the Conference.

Deeply acknowledgments to the European Young Chemists' Network for the financial support of the best oral and poster presentations.

Thanks to the Analysis doo for confidence and the promoting material.

Contents

Plenary Lecture	1
Invited Lectures	5
Oral presentations	11
Poster presentations	25
Chemistry and Society	27
Chemistry meets Biology	31
Developments in chemical synthesis	63
Environmental awareness	79
Physical and computational chemistry	97
Phytochemistry and Food Chemistry	117
Solution chemistry and Chemical equilibrium	149
Supramolecular Chemistry and Functional Materials	151
Author index	167

The effect of thermal treatment of hazelnuts on cold-pressed oil and biscuits properties

Jelena M. Kurtić, Mirjana N. Radovanović, Marko M. Petković, Nemanja M. Miletić
University of Kragujevac - Faculty of Agronomy in Čačak, Čačak, Serbia

Hazelnut oil is a high-value nutritional product, especially the one obtained by cold pressing. But it can undergo oxidative and thermo-oxidative changes due to its characteristic chemical composition, especially the presence of unsaturated fatty acids. In this research, the influence of thermal treatment on the quality of cold-pressed oil and biscuits with this oil was examined. Hazelnut kernels were exposed to the following thermal treatment: 180 °C during 24 minutes. Hazelnut oils were obtained by laboratory screw press at a temperature lower than 50 °C (OP650W, Gorenje, Slovenia). Changes in hazelnut oil were determined by analyzing the following quality parameters: content of water and volatile matter (gravimetrically), refractive index (Abbe refractometer, A.KRÜSS, Germany), acid and peroxide values (volumetrically), specific absorbance and appearance of the UV-Vis spectrum (Cary 3000, Agilent, USA). Thermal treatment did not affect the content of water and volatile matter in the oil (for fresh and thermally treated hazelnut oil it was same value 0,04%) and the peroxide value (in both case it was 0 mmol O₂/kg oil). On the other hand, thermal treatment affected the deterioration of the other quality parameters of cold-pressed hazelnut oil. The value of the refractive index decreased in thermally treated hazelnut oil from 1.4655 to 1.4644. There was an increase in the value of specific absorbances. Increases in specific absorbance in thermally treated hazelnut oil are an indicator of the presence of primary and secondary oxidation products. Also the appearance of the spectra indicated certain oxidative changes.

In contrast, the analysis of the sensory properties showed that the cold-pressed oil obtained from thermally treated hazelnuts, which received a maximum of 20 points, was a preferable option. The same applies for biscuits made from cold-pressed oil of thermally treated raw material, which proved to be very effective, with 18.08 points. All quality parameters of cold-pressed hazelnut oils in accordance with the regulations, regardless of the application of heat treatment and observed changes.

References

1. E. Dimić, *Hladno ceđena ulja*, Tehnološki fakultet, Novi Sad, **2005**, 99.
2. E. Dimić, J. Turkulov, Tehnološki fakultet, Novi Sad, **2000**.

Acknowledgments

This work was supported by the Ministry of Science, Technological Development and Innovation of Republic of Serbia under the project 451-03-68/2022-14.