



Serbian Chemical Society
Serbian Young Chemists' Club



Eight Conference of the Young Chemists of Serbia

Book of Abstracts

Belgrade

29th OCTOBER 2022



8th Conference of Young Chemists of Serbia
Book of Abstracts

29th October 2022
University of Belgrade, Faculty of Chemistry

CIP – Kategorizacija u publikaciji
Narodna biblioteka Srbije, Beograd

8th Conference of Young Chemists of Serbia

Belgrade, 29th October 2022

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**

Marko **RODIĆ**

Vuk **FILIPOVIĆ**

Života **SELAKOVIĆ**

Jelena **KESIĆ**

Mila **LAZOVIĆ**

Mihajlo **JAKANOVSKI**

Page Layout and Design

Vuk **FILIPOVIĆ**

Jelena **KESIĆ**

Mila **LAZOVIĆ**

Mihajlo **JAKANOVSKI**

Circulation

20 copies

ISBN 978-86-7132-080-1

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

Dr. Marko Rodić – University of Novi Sad, Faculty of Sciences

Dr. Vuk Filipović – University of Belgrade, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia

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

Organizing Committee

Jelena Kesić – University of Novi Sad, Faculty of Sciences

Mila Lazović – Innovative Centre of the Faculty of Chemistry, Belgrade

Mihajlo Jakanovski – Innovative Centre of the Faculty of Chemistry, Belgrade

European Young Chemists' Network

Dr. Maximillian Menche, chair of the EYCN

Sponsorship

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

European Young Chemists' Network



Analysis doo



Ministry of Education, Science and Technological Development, Republic of Serbia



Acknowledgement

Acknowledgement to the University of Belgrade, Faculty of Chemistry for the use of the space of the Faculty during the 8th Conference of Young Chemists' of Serbia.

Thanks to the Serbian chemical society for the supporting during organization of the Conference.

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

Thanks to the Analysis d.o.o. for support and the promoting material.

Poster presentations

Analytical chemistry

The effect of methanesulfonic and glutaric acids on the solubility of clofazimine

Nemanja Ž. Marjanović¹, Olivera S. Marković², Miloš P. Pešić¹, Tatjana Ž. Verbić¹

¹ University of Belgrade, Faculty of Chemistry, Belgrade, Serbia

² University of Belgrade, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Belgrade, Serbia

In the modern drug research the number of practically insoluble potential drugs is increasing. Poor aqueous solubility can cause poor oral absorption and low bioavailability of drugs. Hence, solubility enhancement is considered as one of the most important challenges in the formulation and development of the dosage forms of drugs. Clofazimine (CFZ) is an antibiotic drug which is used in the treatment of tuberculosis and leprosy. It is recently shown that CFZ has inhibitory activity against certain coronaviruses and can antagonize the replication of SARS-CoV-2.¹ Since CFZ is highly lipophilic molecule with extremely low solubility, it is quite a challenge to find appropriate method for CFZ solubilization. The aim of this work was to investigate the effect of methanesulfonic (MSA) and glutaric (GA) acids on the solubility of CFZ. The effect of MSA on the solubility of CFZ was studied by the pH-Ramp *shake-flask* method (pH-RSF).² The solubility of CFZ was determined in the presence of GA in two ways: 1) by melting a mixture of CFZ and GA in different molar ratios, and then dissolving in water; 2) using the pH-RSF method. Interactions between CZ and GA were investigated by IR spectroscopy. It is shown that both MSA and GA increase the solubility of CFZ in acidic suspensions prepared by pH-RSF method. Also, solubility enhancement was observed in the molten CFZ-GA mixtures (molar ratio 1:1 and 1:4) compared to mixtures prepared without melting. Besides that, the IR spectra of these mixtures revealed that characteristic CFZ band was shifted in molted CFZ-GA mixture (molar ratio 1:1) probably due to CFZ-GA interactions. Preliminary results presented in this study illustrate that MSA and GA can be used for solubility improvement of CFZ.

References

1. S. Yuan, X. Yin, X. Meng, J. F-W. Chan, Z-W. Ye, L. Riva, L. Pache, C. C-Y. Chan, P-M. Lai, *et al*, *Nature*. **2021**, 593, 418.
2. O. Marković, N. Patel, A. Serajuddin, A. Avdeef, T. Verbić, *Mol. Pharmaceutics*. **2022**, 19, 710.

Acknowledgments

The authors would like to thank the Ministry of Education, Science and Technological Development of Republic of Serbia (Grants No: 451-03-68/2022-14/200026, 451-03-68/2022-14/200168) for financial support.

Supported by



**Ministarstvo prosvete,
nauke i tehnološkog razvoja**
Ministry of Education, Science and
Technological Development

