

## Book of Abstracts

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29<sup>th</sup> October 2022 University of Belgrade, Faculty of Chemistry

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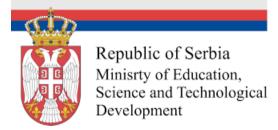
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Belgrade, 29 <sup>th</sup> October 2022	8 <sup>th</sup> Conference of Young Chemists of Serbia
	Poster presentations



**Analytical chemistry** 

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

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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).<sup>2</sup> 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.

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