







PREPARATION OF COMPOSITE BASED ON CAFFEIC ACID AND FUMED SILICA AND EVALUATION OF ITS ANTIOXIDANT AND ANTIMICROBIAL PROPERTIES

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Abstract. The aim of this work was the preparation of a composite comprising caffeic acid (CA) and fumed silica (A300), and comparison of antioxidant and antimicrobial properties of CA in solution and in composite. The CA+A300 composite with CA content of about 25 mg/g was obtained using the sorptive modification of silica with CA solution under fluidized bed conditions. Antioxidant properties of the CA solution and the CA+A300 composite were studied using DPPH[•] and Folin-Ciocalteu assays, in addition OH[•] and NO[•] scavenging activity and antimicrobial properties against *Staphylococcus aureus* 209 strain were estimated. The results have shown that CA is very effective in the reaction with DPPH[•] radicals and that the inclusion of CA in the composite results in the slowing down of this reaction. The CA solution and the CA+A300 composite had a similar activity as NO[•] radicals' scavengers and as antimicrobial agents, whereas the CA solution was more effective in inhibition of OH[•] radicals. It has been assumed that the difference in activity between the CA+A300 composite and the CA solution may be due to the gradual release of CA from the composite into reaction mixtures and by the increase in this release as CA is consumed in the reactions.

Keywords: caffeic acid, fumed silica, composite, antioxidant, radical scavenger, antimicrobial activity.

Received: 20 June 2022/ Revised final: 05 August 2022/ Accepted: 10 August 2022
